

IX. International Applied Social Sciences Congress 2025

FULL PAPER PROCEEDINGS BOOK

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IX. INTERNATIONAL APPLIED SOCIAL SCIENCES CONGRESS (C-IASOS 2025) FULL PAPER PROCEEDINGS BOOK

13th-15th October 2025

"Applicable Knowledge for a Sustainable Future"

Editor in Chief

Dr.Ercan ÖZEN

Editors

Dr. Adalet HAZAR
Dr. Larisa MISTREAN
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Dr. Esat SAÇKES

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FOREWORD

Esteemed Academics, Researchers, and All Stakeholders in the Scientific Community.

Embarking on our journey with the motto ‘Applicable Knowledge for a Sustainable Future,’ the IXth International Congress on Applied Social Sciences (C-IASOS 2025) adopts the main theme of "*Shaping the Future in an Era of New Challenges: Social, Economic and Environmental Stability and Sustainability*" held in Rome's historic and academic setting from 13 to 15 October 2025, both in person and online, this gathering served as a platform for interdisciplinary dialogue and cooperation on the path to sustainable development.

Our conference presented an impressive picture in terms of both quantity and quality. Over 350 scientists from 39 different countries came together with a shared global awareness and responsibility. The 188 scientific papers presented in the Congress, not only the high level of participation but also the depth, diversity and innovative character. These studies transcended the traditional boundaries of the social sciences, creating a fertile ground for discussion intersecting with the perspectives of the natural sciences and engineering.

The intellectual depth of the conference has been further enriched by the contributions of our invited speakers. All distinguished speakers also delivered insightful presentations addressing our main theme from different angles, covering a wide range of topics from energy markets to global corporate sustainability practices, financial technologies to social inequalities.

The studies compiled in this book address sustainability as a whole. The United Nations Sustainable Development Goals (SDGs) framework has formed the basis for many of the papers. Critical sub-topics such as the green transition shaped under the European Green Deal, the circular economy, recycling, waste and water management have been discussed in detail. Resilience strategies against the climate crisis and sustainable economic growth models, as well as the catalytic role of artificial intelligence and digital technologies in this transformation, were among the highlighted topics. Each paper contributed to making knowledge ‘actionable’ by offering valuable outputs ranging from theoretical frameworks to practical policy recommendations.

We extend our heartfelt gratitude to all our esteemed partner institutions in this meaningful academic journey, including the host Sapienza University, and other partner universities. We extend our sincere thanks to all participants who shared their valuable time and knowledge at our conference, to our invited speakers, to our referees, and to all our colleagues who contributed to every stage of the organisation.

We hope that this proceedings book will serve as a testament to the global academic effort towards building a sustainable and resilient future, inspiring readers, laying the groundwork for new research questions, and acting as a valuable resource for policymakers.

Yours sincerely,

Prof. Dr. Simon GRIMA, University of Malta, MALTA

SUMMARY INFORMATION FOR CIASOS CONGRESS 2025

CiasoS Congress 2025 was held in Rome- Italy, at the Sapienza University of Rome as hybrid form during 13-15 October 2025 by CiasoS Science Platform which inludes Malta University (Malta) (Host University of CiasoS Congress 2023), Academy of Economic Studies of Moldova (ASEM) (Moldova), University of Rijeka - Faculty of Tourism and Hospitality Management (Croatia), Graphic Era University (India) and Haxhi Zeka University, Business Faculty (Kosovo), host University of CiasoS Congress 2024.

There are participants from 39 different countries at the Congress as follows: Albania, Algeria, Austria, Azerbaijan, Bosnia and Herzegovina, Brasil, Bulgaria, Chile, China, Georgia, Germany, Greece, Hungary, India, Iran, Italy, Kazakhstan, Kosovo, Latvia, Lithuania, Malaysia, Malta, Moldova, Morocco, Nigeria, North Macedonia, Pakistan, Philippines, Poland, Portugal, Romania, Saudi Arabia, Slovakia, Switzerland, Türkiye, United Arab Emirates, United Kingdom, Ukraine and USA.

188 papers in total have been presented in the congress while submitted 228. While 67 of 188 papers were presented onsite, others presented online. From 5 continents and 39 different countries 352 authors contributed the CiasoS 2025. 65 of 188 full text papers were published in the full text proceedings book. 32,60% of the all papers were presented by Turkish participants in the 9th CiasoS Congress. 15,51% of the papers comes from North Macedonia, 11,23% from Romania, 5,35% from Moldova, 3,74 from Italy, 3,74% from Albania, 3,21% from Kosovo, 3,21% from Poland, 2,67% from Geogia and 18,74% from other 30 countries.

The special topic of the CiasoS 2025 was "*Shaping the Future in an Era of New Challenges: Social, Economic and Environmental Stability and Sustainability*". So, there were twelve keynote speakers on the preliminary session on the line with the Congress topic.

The Session started by the welcome speech of Prof.Dr. Emma Galli who is the head of the department of Social and Economic Sciences of Sapienza Univesity of Rome. Following the opening speech, the keynote presentations began. Parallel presentations continued in three halls over two days. Online presentations were also held simultaneously. The event provided a platform for high-quality scientific discussions. The congress also hosted a preparatory meeting for the formation of an international science and research association, INSPIRE.

The congress was successfully concluded following the technical committee meeting held on October 15th, 2025.

CIASOS CONGRESS 2025 AWARDS

Award Name: IX. C-iasoS Congress Science Award
Paper Title :Greenwashing in the Era of Sustainability and Its Implications for Food Security. (Paper Id: 25-161)
Author/s : Dr. Timofei Olga, Dr. Perciun Rodica, Dr. Iordachi Victoria and Dr. Stoian Eugeniu.

Award Name :IX. CiasoS Congress Thematic Award - Managing Risks towards a Sustainable Future
Paper Title : Environmental Responsibility and Profitability: The Double-Edged Impact of ESG in European Energy Firms. (Paper Id: 25-042)
Author/s :Dr. Gratiela Georgiana Noja, Dr. Ana-Cristina Nicolescu, Dr. Alexandra-Mădălina Țăran, Dr. Alina Ionașcu, Dr. Eleftherios Thalassinos.

Award Name: IX.CiasoS Congress Online Presentation Award- Best Paper
Paper Title : Identifying Credit Risk Trends in Consumer Loans: A Data-Driven Approach Based on Machine Learning. (Paper Id: 25-015)
Author/s : Dr. Reyhan Can & Saliha Tuncel Yada

Award Name: IX.CiasoS Congress Online Presentation Award- Second Best Paper
Paper Title : Determinants of Artificial Intelligence Adoption in the European Enterprises: A Cross-Country Analysis. (Paper Id: 25-203)
Author/s : Dr. Constantin-Marius Apostoaie, Dr. Irina Bilan, Dr. Eugenia Bușmachiu

Award Name: Online Presentation Award- Third Best Paper
Paper Title : E-Waste Management in Nigeria: Challenges, Impacts, and Pathways to Sustainability. (Paper Id: 25-148)
Author/s : Richard Bukola Oguntoye, PhD. Andrea Imperia

CIASOS Congress 2025 Full Program

13 October 2025 Monday

08:00 - 09:00 Registration

09:00 - 09:30 Welcome Note & Opening Ceremony
- Prof. Emma Galli
- Prof. Andrea Imperia
- Prof. Ercan Özen
- Prof. Simon Grima

09:30 - 10:50 Keynote Addresses (Plenary Session - Hall 1)
- **Prof. Eleftherios Thalassinos:** *Uncertainty and Asymmetric Oil Shocks in Global Equity Markets*
- **Prof. Inna Romanova:** *The European Waste Management Market: Quo Vadis*
- **Prof. Kesra Nermend (Online):** *Integrating Psychophysiological and Machine Learning Methods to Model Sustainable Consumer Decision-Making*
- **Prof. Grațiela Georgiana Noja:** *Synergies Between Education, Environmental Performance, and Economic Welfare: Modelling Sustainability in an Evolving Global Landscape*

11:00 - 11:30 Coffee Break

11:30 - 13:00 Parallel Sessions (Face to Face / Online)
- Hall 1, Hall 2, Hall 3 & Online Webinars

13:00 - 14:00 Lunch Break

14:00 - 16:20 Parallel Sessions (Face to Face / Online)
- Hall 1, Hall 2, Hall 3 & Online Webinars

14 October 2025 Tuesday

09:00 - 11:20 Parallel Sessions (Face to Face / Online)
- Hall 1, Hall 2, Hall 3 & Online Webinars

11:00 - 11:30 Coffee Break

11:30 - 13:00 Parallel Sessions (Face to Face / Online)
- Hall 1, Hall 2, Hall 3 & Online Webinars

13:00 - 14:00 Lunch Break

14:00 - 15:40 Parallel Sessions (Face to Face / Online)
- Hall 1 & Online Webinars

Inspire Meeting (Online)
- Kesra Nermend
- Dimitrios Maditinos

PLENARIES

13 October 2025 Monday 09:00 - 11:00

HALL 1: SALA LAUREE Session Chair: Prof. Eleftherios Thalassinos / Prof. Inna Romanova

09:30 - 09:50 Uncertainty and Asymmetric Oil Shocks in Global Equity Markets *Prof. Eleftherios Thalassinos*

09:50 - 10:10 The European Waste Management Market: Quo Vadis *Prof. Inna Romanova*

10:10 - 10:30 Integrating Psychophysiological and Machine Learning Methods to Model Sustainable Consumer Decision-Making *Prof. Kesra Nermend (Online)*

10:30 - 10:50 Synergies Between Education, Environmental Performance, and Economic Welfare: Modelling Sustainability in an Evolving Global Landscape *Prof. Grațiela Georgiana Noja*

PARALLEL SESSIONS - MORNING (10:00 - 11:20)

HALL 2: AULETTA DI SOCIOLOGIA Session Chair: Assist. Prof. Dr. Recep Özsürünç

10:00 - 10:20 An Evaluation on E-Hearing Practice in Civil Courts as an Instance of Digitalisation in Trial *Ayşe Kılınç*

10:20 - 10:40 The Relationship Between the Use of Artificial Intelligence and Trust in Consumer Behavior Towards Health Supplement Products *Oylum Ekşi, Oğuz Yavuzyılmaz, Bilsen Bilgili*

10:40 - 11:00 Between Desire and Demand: Female Subjects in the Novels Fatih-Harbiye and Cumbadan Rumbaya *Hilal Demir Bayraktar, Soner Akpınar*

11:00 - 11:20 Perceptions and Experiences of Preparatory Class Students on the Use of ChatGPT for English Learning: A Qualitative Study *Fatma Kaya*

HALL 3: SALA RIUNIONI Session Chair: Assoc. Prof. Dr. Yonca Altındal

10:00 - 10:20 The Role of Women's Enterprise Production and Business Cooperatives in Türkiye: From Gastronomy Perspective *Nihan Akdemir*

10:20 - 10:40 Analysis of the Long-Term Relationship between External Debt Stock and Foreign Direct Investment Flows in Türkiye (2000-2024 Period) *Levent Sezal*

10:40 - 11:00 The Role of Decent Work in Mitigating the Negative Effects of Underemployment on Job Satisfaction Among Women *Banu Saadet Ünsal Akbıyık*

11:00 - 11:20 Evaluation of Indicators of Achievement of Gender Equality as Sustainable Development Goals *Dilay Güvenç*

PARALLEL SESSIONS - LATE MORNING (11:30 - 13:00)

HALL 1: SALA LAUREE Session Chair: Prof. Roy Cerqueti / Prof. Tomasz Dorożyński

11:30 - 11:50 Climate Transition Risk and Asset Pricing: Evidence from Turkey and Major EU Economies *Sevilay Ece Gümüş Özuyar*

11:50 - 12:10 How can MNEs impact sustainability in a turbulent business environment?: Lessons learned from Asian companies *Prof. Tomasz Dorożyński*

12:10 - 12:30 How the new International Scenario Affects Economic Stability *Prof. Dimitrios Maditinos*

12:30 - 12:50 Governance and Sustainability in Waste Management *Prof. Christian Moser*

HALL 2: AULETTA DI SOCIOLOGIA Session Chair: PhD. Özden Şentürk

11:30 - 11:50 Determination of Hedonic Factors in Terms of Rational and Conspicuous Consumption in Holiday Services *Oylum Ekşi*

11:50 - 12:10 Attitudes Toward Artificial Intelligence, Privacy Risks of Digital Assistants, and the Interaction with Family Cohesion: A Quantitative Examination *Kevser Şahinbaş, Recep Özsürünç*

12:10 - 12:30 Humble Leadership and Job Performance: The Role of Creative Team Climate in the Healthcare Sector *Özlem Tuna, Münevvere Yıldız*

12:30 - 12:50 The Role of Village Institutes and State Factories in Production Culture and Society Building in Türkiye *Kubilayhan Göç, Gülser Kutluay*

HALL 3: SALA RIUNIONI Session Chair: Prof. Dr. Bilsen Bilgili

11:30 - 11:50 Factors affecting the state of having agricultural insurance *Emine Kaya, Abdulkadir Barut, Orhan Gündüz, Cuma Akbay*

11:50 - 12:10 Assessing the Determinants of Environmental Quality in G7 Nations: Empirical Evidence Under Cross-Sectional Dependence *Merve Gungor Parlakyigit*

12:10 - 12:30 Gender Equality in Sustainable Development: A Sociological Interpretation *Yonca Altındal*

12:30 - 12:50 The Legal Dimension of the Greece-Italy Maritime Boundary Agreement and the Maritime Areas Renounced by Italy *Ferhat Aznevi*

PARALLEL SESSIONS - AFTERNOON (14:00 - 16:20)

HALL 1: SALA LAUREE Session Chair: Prof. Sergio Scicchitano / Prof. Andrea Imperia

14:20 - 14:40 Economic Performance of Polish Direct Investment. Evidence from the Warsaw Stock Exchange *Anetta Kuna-Marszałek, Tomasz Dorożyński*

14:40 - 15:00 Italy's Opposition to the ESM Reform: Causes and Consequences for EU Financial Stability *Tomasz Dorożyński, Gratiela Georgiana Noja, Andrea Imperia*

15:00 - 15:20 Environmental Instability and Sustainable Risk Assessment in Forestry *Prof. Thomas Burkhardt*

15:20 - 15:40 The Rome Waste Management Plan - Incinerator: A Wrong Choice *Giuseppe Girardi*

15:40 - 16:00 Municipal solid waste collection in the city of Rome (Italy): an analysis *Franco Medici, Giorgio Tosato*

16:00 - 16:20 Landfill Mining on MSW sites: A Sustainability Perspective *Prof. Giovanni Perillo*

HALL 2: AULETTA DI SOCIOLOGIA Session Chair: Prof. Dr. Bilsen Bilgili

14:20 - 14:40 A Digital Response to the Climate Crisis: Artificial Intelligence, Ethical Governance and Social Inclusion *Özden Şentürk*

14:40 - 15:00 Measuring the Dynamics of ESG-Related Uncertainty: Evidence from the Sustainability Uncertainty Index *İbrahim Halil Ekşi, Berna Doğan Başar*

15:00 - 15:20 Circular Economy-Related Sustainability Practices in the Hospitality Industry: A Case Study of Kolin Hotel *Gökhan Turak*

15:20 - 15:40 An Evaluation of the Literature on Complementary Health Insurance in Türkiye *Yavaş Engin*

15:40 - 16:00 Gender, Skills, and the Green Transition in Emerging Economies *Theranda Beqiri, Gonxhe Beqiri, Fjolla Trakaniqi, Vlora Berisha Dranqolli*

16:00 - 16:20 Sustainable Tourism at a Crossroads: Insights for a Strategic Shift *Vlora Berisha Dranqolli, Behrije Ramaj Desku, Blake Rayfield, Theranda Beqiri*

HALL 3: SALA RIUNIONI Session Chair: Prof. Inna Romanova

14:20 - 14:40 Evaluation of Carbon Tax Regulations in Terms of the Principle of Proportionality: A Legal Perspective for Türkiye *Feyzanur Karakiz*

14:40 - 15:00 Deposit Refund Systems as Effective Tools for the Circular Economy Transition *Perciun Rodica, Iordachi Victoria, Timofei Olga*

15:00 - 15:20 Greenwashing in the Era of Sustainability and Its Implications for Food Security *Timofei Olga, Perciun Rodica, Iordachi Victoria, Stoian Eugeniu*

15:20 - 15:40 A Comparative Analysis of ESG Perception Among Students of European Higher Education Institutions *Loredana Mirra, Inna Romānova, Magdalena Markiewicz*

15:40 - 16:00 Transparency under question: washing impact on credibility of sustainability reporting *Petya Petrova*

16:00 - 16:20 Circular Economy in North Macedonia, Opportunities and Barriers *Sali Zhaku, Sheherzada Murati*

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14 October 2025 Tuesday

PARALLEL SESSIONS - MORNING (09:00 - 11:20)

HALL 1: SALA LAUREE Session Chair: Prof. Graţiela Georgiana Noja / Prof. Inna Romanova

09:00 - 09:20 Sectoral Value Added and Environmental Governance in the European Union: An Empirical Analysis of Pollution Intensity *Sorana Vatavu, Oana-Ramona Lobont, Nicoleta-Claudia Moldovan, Florin Costea*

09:20 - 09:40 Linking Financial Incentives to Firm Performance in the Context of Sustainable Development: European Insights *Alexandra-Mădălina Ţăran, Marilen-Gabriel Pirtea, Mihaela Diaconu*

09:40 - 10:00 Forensic Accounting Role in Combating Fraud: A Catalyst for Economic Resilience and Social Governance *Diana Dumitrescu, Nicolae Bobitan*

10:00 - 10:20 The Digital Transformation of the European Labour Market: Assessing the Opportunities and Challenges *Criste Cristina, Lobont Oana-Ramona, Pele Mircea, Ionascu Alina*

10:20 - 10:40 Navigating the Green Paradox of AI: A Cluster-Based Analysis of Environmental and Technological Disparities in the European Union *Grațiela Georgiana Noja, Alina Ionașcu, Alexandra-Mădălina Ţăran, Tomasz Dorożyński, Andrea Imperia*

10:40 - 11:00 Taxing Pollution, Funding Transition: EU Environmental Tax Revenues and Emissions Policy *Lobont Oana-Ramona, Barbulescu Mariana-Alexandra, Criste Cristina, Ran Tao, Mihit Lavinia Daniela*

11:00 - 11:20 Perceived needs and challenges in developing social services in Romania. Addressing the vulnerabilities from social workers' perspectives *Alexandra Damaschin*

HALL 2: AULETTA DI SOCIOLOGIA Session Chair: Prof. Dr. Mirko Perano

09:20 - 09:40 The impact of the real effective exchange rate (REER) on the balance of payments in emerging economies *Vjolca Hasani-Limani, Raman Ismaili*

09:40 - 10:00 Poverty and Inequality, Panel Data Analysis of Chosen Macro Indicators of the Western Balkans *Kajdafe Ademi, Edrina Emini, Shiret Elezi, Driton Maljichi*

10:00 - 10:20 Managing financial risk in the age of artificial intelligence and algorithmic trading *Atixhe Maksuti, Ali Maksuti, Valon Ameti*

10:20 - 10:40 Solow Model and Economic Convergence in South-East European Countries *Kajdafe Ademi, Elsana Aqifi, Lindita Muaremi, Sindise Salihi*

10:40 - 11:00 Financial convergence and systemic risk: Redefining sectoral interdependencies in the global market *Ali Maksuti, Sindise Salihi*

11:00 - 11:20 Modern Challenges in Hotel Business Development: A Case Study of Best Western Kutaisi *Eliso Gvelesiani, Irma Dikhaminjia, Nano Tsertsvadze*

HALL 3: SALA RIUNIONI Session Chair: Prof. Dr. Brikend Aziri

09:00 - 09:20 Public debt in time of uncertainty and its impact on growth: Case of North Macedonia *Shiret Elezi, Milena Boshkoska Klisaroski, Marija Midovska Petkoska*

09:20 - 09:40 Causes and consequences of job satisfaction among managers in the Republic of North Macedonia *Brikend Aziri, Valon Ameti, Ali Maksuti*

09:40 - 10:00 Economic Specialization, Structural Concentration and Knowledge-Based Development in Atacama (Northern Chile) *Héctor Fuentes Castillo, María Díaz Campillay*

10:00 - 10:20 Determinants of agri-food exports in a small open economy: Evidence from the Republic of Moldova *Alexandru Stratan, Viorica Lopotenco, Liliana Staver*

10:20 - 10:40 The Relevance of Nurses' Professional Development in the Context of Sustainable Development *Viktorija Piščalkienė, Lijana Navickienė, Aurimas Galkontas*

10:40 - 11:00 North Macedonia's Activity towards Approach to the European Union Internal Market *Faton Shabani*

PARALLEL SESSIONS - LATE MORNING (11:30 - 13:00)

HALL 1: SALA LAUREE Session Chair: Prof. Simon Grima

11:30 - 11:50 Models for the social responsibility of public administration *Paolo D'Anselmi, Alin Stancu*

11:50 - 12:10 Capital Market in Latvia: Uncovering the Potential *Inna Romānova, Irina Solovjova, Marina Kudinska, Simon Grima*

12:10 - 12:30 The Role of Generative AI in Acceleration of Enterprises' ESG Performance for Sustainable Development Goals *Larisa Mistrean, Zorina Şişcan, Liliana Staver*

HALL 2: AULETTA DI SOCIOLOGIA Session Chair: Prof. Dr. Viktorija Piščalkienė

11:30 - 11:50 Macroeconomic dynamics in the Western Balkans: The relationship between GDP growth, inflation and unemployment *Arta Tachi, Fatmir Besimi*

11:50 - 12:10 The Impact of the Banking Sector on Economic Development in the Republic of North Macedonia *Teuta Qerimi Sadiku, Blerta Kondri, Albiona Demiri Bekteshi, Almira Curri Memeti*

12:10 - 12:30 Employee Commitment and Total Quality Management as Mediators between Leadership Styles and Innovation *Edrina Emini Deari, Argjina Karemani Zylbeari, Selvije Thaçi, Aida Yzeiri Baftijari*

12:30 - 12:50 Inflation, Output Growth and their Uncertainties. A multivariate GARCH M modeling for North Macedonia *Bardhyl Dauti*

HALL 3: SALA RIUNIONI Session Chair: Prof. Dr. Héctor Fuentes Castillo

12:10 - 12:30 Exploring the Impact of Economic Freedom on Entrepreneurial Innovation and Business Growth: A Case of North Macedonia *Arjeta Amzai*

PARALLEL SESSIONS - AFTERNOON (14:00 - 15:40)

HALL 1: SALA LAUREE Session Chair: Prof. Larisa Mistrean

14:00 - 14:20 Technological Disruption, Globalization and Income Inequality: Implications for Economic Growth in Balkan Countries and Western Europe *Dardane Ismaili Imeri*

14:20 - 14:40 Cryptocurrencies and Global Finance: from Economic Implications and Regulatory Challenges *Agim Mamuti, Mirko Perano, Claudio Del Regno, Francesca Santonicola, Nicola Prudente*

14:40 - 15:00 Green Finance and Innovation Management: Leveraging Financial Instruments for Sustainable Development *Eshija Shehabi, Ali Maksuti*

15:00 - 15:20 Pre- and Post-GenAI Hotel Technologies: A Systematic Review of Service Quality and Satisfaction for Value *Claudio Del Regno, Nicola Prudente, Francesca Santonicola, Marco Pellicano*

15:20 - 15:40 The Role of Social Entrepreneurship in Achieving the Sustainable Development Goals in Azerbaijan *Rasmiyya Abdullayeva, Allahyar Muradov, Shakir Aliyev*

ONLINE SESSIONS

13 October 2025 Monday

13:40 - 15:10

Webinar 1 Session Chair: Prof. Dr. Oya Korkmaz

Causality Relationship between Consumer Confidence Index and Economic Growth in the Turkish Economy *Suna Korkmaz, Oya Korkmaz*

Identifying Credit Risk Trends in Consumer Loans: A Data-Driven Approach Based on Machine Learning *Reyhan Can, Saliha Tuncel Yada*

Digital Twins in Tourism: Doors to a New Era *Ali Kurnaz*

Disenfranchisement of the Homeless and Its Effect on the Poverty Cycle in Türkiye *Mürşide Şimşek*

Legal And Ethical Dimensions Of The "Finfluencer" - "Finomen" - In The Turkish Context *Didem Kayalıdereden*

Theoretical Assessment of the Interest Rate Policies of the Central Bank of the Republic of Turkey (CBRT) within the Framework of the Taylor Rule (2002-2024) *Çağrı Emre Mermi*

Webinar 2 Session Chair: Dr. Nadezhda Kostadinova

Capacity Building for Sustainable Tourism *Nadezhda Kostadinova*

ESG and digitalization of the financial system in the relationship between profitability, social equity and environmental responsibility *Valentin Marian Antohi, Marius Sorin Dincă, Costinela Fortea*

Different concepts of health tourism in Europe and the meaning of health tourism worldwide *Marica Mazurek*

The Contribution of Sustainable Territorial Brands to Regional Tourism: A Comparative Study of Brazil and Portugal *Renato da Costa dos Santos, Giovana Goretti Feijó Almeida, Paulo Almeida*

Beyond the Beehive Apitherapy's Role in Modern Medical Tourism *Nino Topadze, Maia Diakonidze, Aleks Nasuashvili*

Beyond the Hive: The Crucial Role of Caucasian Beekeeping in Biodiversity, Sustainable Rural Development and Tourism *Roza Lortkipanidze, Maia Diakonidze, Aleks Nasuashvili*

Webinar 3 Session Chair: Dr. Fisnik Morina

Managerial vs non - managerial employees job satisfaction *Brikend Aziri, Raman Ismaili*

The Green Silk Road: China's Bid for Environmental Leadership *Paulo Afonso B. Duarte, Flávio Bastos da Silva*

The right to justice as a sustainable development goal in the age of new technologies *Kinga Flaga-Gieruszyńska, Sebastian Szczepański*

Harnessing Science and Technology Diplomacy for Interest Regulation in Mediterranean Infrastructure Reconstruction Projects *Yixin Zhang*

Digital Transformation in the Publishing Industry: Trends and Challenges in an Evolving Market *Annika Vinod, Violeta Cvetkoska*

The Role of Television in Socio-Cultural Sustainability: Preservation and Promotion of Cultural Heritage *Arzu İsayeva*

Webinar 4 Session Chair: Dr. Mihaela Popuţa

In Ai We Trust: Convenience Versus Competence *Mihaela Popuţa*

Integrated TOE, Adoption of AI and Employer's Reputation Model: HR Analytics perspective *Rehana Farhat, Muhammad Khalid Sohail*

AI-Driven Customer Loyalty Analysis for Regional Agricultural Brands: Non-Linear Dynamics and Digital Strategies from Jiangxi Province, China *Wang Xingxing, Hayyan Nassar Waked*

A Sustainable Future and Artificial Intelligence: Option or Necessity *Butnaru Ciobotar Alina, Grosu Veronica, Badicu Galina*

Theoretical Foundations of National Image Strategies in the Context of Sustainable Digital Diplomacy and Public Relations: The Case of Azerbaijan *Umud Orujov, Aytekin Zeynalova*

Financial Statement Manipulation in Construction: Comparative Detection Models and Econometric Evidence on Blockchain Prevention *Baigon Temirlan Erlanuly, Saparbayeva Saule Saulebayevna*

15:20 - 16:30

Webinar 1 Session Chair: Prof. Dr. Cuma Akbay

AI Search Engines: Understanding User Intentions Through Knowledge and Benefits: A Knowledge Management Orientation Perspective *Yusuf Ozan Yıldırım, Tarık Ziyad Çelik*

Building Resilient Socio-ecosystems in Dryland Mountains: Adaptive Strategies for a Changing Climate *Cuma Akbay, Hamdi Ayyıldız*

Making Farmers on the Mediterranean Coast Resistant to Climate Change in Terms of Water Use Methods with Dry Farming Systems *Cuma Akbay, Hamdi Ayyıldız*

Rhetoric-Based Reception Analysis of Public Service Announcements on Environmental Issues in Digital Public Sphere *Deniz Özer Alper*

Determinants of Purchasing Second-Hand Products through Mobile Applications *Neslihan Yazar, Hale Fulya Kaya*

Webinar 2 Session Chair: Assoc. Prof. Dr. Maia Diakonidze

Learners' and Teachers' Perception of the Use of Albanian Language in Learning English Language *Ernest Ismeti, Arta Toçi*

Education and social sustainability challenges through art. Dramatization as an instrument of knowledge and inclusiveness in pre-university and university systems *Erenestina Gjergji (Halili)*

From Visitor Spending to Community Prosperity: The Ripple Effect of Sustainable Tourism *Maia Diakonidze, Medea Chelidze, Guguli Kurashvili*

The Impact of Socio-Demographic Factors in Albanian Consumer Ethnocentrism *Eldian Balla, Leidja Matja*

Historical significance of the development of science, education and culture in Azerbaijan-Türkiye relations *Shahismayil Ismayilov*

Webinar 3 Session Chair: Prof. Dr. Beata Świecka

Hierarchies in volatility transmission: a cross-sectional investigation of cryptocurrency, stock and commodity markets *Mehmed Ganić, Berina Oruç*

Consumer Debt and Threat of Insolvency in Poland. A Generational Approach *Beata Świecka*

Legal Framework Of Circular Economy And Green Recovery In Context Of European Integration *Veaceslav Zaporojan*

Relationship between rewards, recognition and perceieved organizational support on job stress by employees in Bosnia and Herzegovina *Ognjen Riđić, Selma Vranović*

Cross-Country Analysis of Economic Convergence in the European Union *Drăgănescu Marius Augustin, Avram Alexandru*

Webinar 4 Session Chair: Prof. Dr. Seval Kardeş Selimoğlu

Comparative Bibliometric Analysis of Research on Accounting Fraud and Fraud Audit in Kazakhstan, Turkey, and the United States *Seval Kardeş Selimoğlu, İndira Nurzhanova*

Calculating Earnings Management of BIST 100 Companies According to the Kothari Method *Melek Nur Osanmaz, İbrahim Halil Ekşi*

A Study on Determining the Design Similarities of Destination Logos from an Expert Opinion Perspective *Semi Kara, Bilsen Bilgili*

Strategic Planning, Controlling and Coordination in Green Chain Management: Barriers Faced by Textile Sourcing Firms in Turkey *Dilek Şahin Yomralıoğlu*

Local Vendors as catalysts for regenerative tourism: Evidence from tourism-integrated markets *Rabia Cengizhan, Meltem Altınay Özdemir*

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14 October 2025 Tuesday

09:00 - 10:00

Webinar 1 Session Chair: Assoc. Prof. Dr. S. Şehnaz Altunakar Mercan

Post-Pandemic Fiscal Sustainability: Public Debt and Budget Reforms in Emerging Economies *Bahar Kaya, S. Şehnaz Altunakar Mercan*

Important and Urgent: A Strategic Prioritization Approach in Institutional Building of Human Security *Sinem Yıldırımalp, Havva Sert, Hatice Turut, Zehra Hopyar, Büşra Yiğit, B. Yasin Çakmak, Fatma Zehra Toçoğlu*

Analyzing the Effect of Covid-19 Pandemic on Consumer Behavior under Structural Breaks: Evidence from the U.S *Esra N. Kılcı*

Evaluation of the Future of Sustainable Tourism in Turkey within the Framework of the S-O-R Model *Mehtap Türkan, Özgür Yılmaz*

Webinar 2 Session Chair: Prof. Dr. Medea Tchelidze

Mapping the Mindful Traveler: Key Trends Shaping International Wellness and Recreational Tourism *Maia Diakonidze, Nana Sharabidze, Nino Topadze*

Achieving Business Sustainability through Operational Risk Management *Olga Caminschi*

Information aggression as a tool for undermining sustainable development: international political aspect *Elvin Talishinsky*

The Impact of Monetary Policy on Banking Sector Development: A Panel Analysis for Southeastern European Countries (2005-2024) *Donjeta Morina, Liridona Nikqi*

Webinar 3 Session Chair: Prof. Dr. Prasenjit Chatterjee

Global Supply Chain Optimization Using Lean and Six Sigma Methodology *Manasi Khadake, Violeta Cvetkoska*

The Future of Sustainable Finance: Examining the Role of ESG-Labelled Bonds in Advancing SDGs *Rachna, Manjit Kour*

A Bibliometric Analysis of Past Studies on Supplier Selection Based on Retrospection of 2016-2025 *Partha Sarathi Mandal, Sanjib Biswas, Prasenjit Chatterjee*

Human–AI Handovers: A Dynamic Authority Reversal (DAR) Framework for Trust Calibration and Transitional Accountability *Victor Frimpong, Charles Tawk, Agim Mamuti*

Webinar 4 Session Chair: Dr. Fisnik Morina

The Application of Machine Learning Methods to Sales Forecasting in Managerial Accounting *Viktor Furda, Mariya Shygun*

The Impact of Fiscal Policy on Economic Growth in Southeast European Countries *Kadë Morina*

The Use of Artificial Intelligence in the Blue Economy to Reduce Operational Costs and Increase Economic Efficiency: A Cost–Benefit Analysis of Investments in European Maritime Sectors *Fisnik Morina*

The impact of e-banking service factors on client satisfaction and sustainable retention in developing and emerging countries: Case Study from the Republic of Kosovo *Mimoza Morina, Duresa Kilaj, Fisnik Morina*

10:10 - 11:10

Webinar 1 Session Chair: Prof. Dr. Melike Gül

Innovative Marketing-Smart Logistics Synergies for Sustainable Resilience in the Era of Digital Transformation *Murat Başal*

Examination of Sustainable Education Policies in Türkiye *İsmail Dönmez*

The Effect of Artificial Intelligence on Travel Agency and Airline Activities: A Survey on Employees' Perspective *Melike Gül, Kudret Gül*

Sustainable Leadership: A Bibliometric Analysis (Web of Science) *Aslı Ercan Önbıçak, Aslı Kaya, Hikmet Emir Önbıçak*

Webinar 2 Session Chair: Prof. Dr. Fabio Musmeci

E-Waste Management in Nigeria: Challenges, Impacts, and Pathways to Sustainability *Richard Bukola Oguntoye*

The role of the Digital transformation in driving the European Union to achieve the European Green Deal and Digital transformation Strategy *Phoomsavarth Mittarvanh*

Emotional Support as an Innovation for Sustainable and Inclusive Vocational Education of Students with Special Needs *Inga Mikutaviciene*

Recycling Efficiency of Composting and Integrated Waste Plants: Evidence from Rome *Fabio Musmeci*

Webinar 3 Session Chair: Dr. Aamir Aijaz Syed

The Impact of Sustainability Regulations on the Financial Performance of Public Companies: A Case Study of Hidroelectrica *Ana-Maria-Lorena Iorgulescu, Alexandru Avram*

Targeted Trends: Unlocking the Power of Social Media Marketing on Mobile Banking Apps *Oltiana Muharremi, Ellin Prophett, Julia R. Wedge*

Fiscal Reforms in North Macedonia for fiscal sustainability and economic growth *Liridona Seferi, Merale Fetahi-Vehapi, Shpresa Alija*

Implementing the Sustainable Development Goals in the National Migration Strategy: Challenges and Perspectives *Etleva Dyrmyshi Barjamaj*

Webinar 4 Session Chair: Assoc. Prof. Dr. Ender Baykut

Risk-based budgeting in healthcare: a strategy for the Republic of Moldova *Iulian Secrieru, Angela Secrieru*

Building a Sustainable and Safe Moldovan Healthcare System: Between Strategy and Tactics *Pisarenco Constantin, Pisarenco Serghei*

Impact of Digital Transformation on Corporate ESG Performance: Evidence from Indian Listed Firms *Meena Sharma, Radhika*

Cybersecurity Education for Tourism Professionals: Building Digital Resilience *Aurora Daka, Dolantina Hyka*

11:30 - 12:30

Webinar 1 Session Chair: Dr. Marie Therese Villa-Caoile

European Regional Development Funds: Analysis of NUTS2 regions *Pricopiuc (Gag) Hadasa Ligia*

The AI-driven revolution in decision-making: North Macedonia Case *Simona Mitreva, Violeta Cvetskoska*

Technological Disruption, Globalization and Income Inequality: Implications for Economic Growth in Balkan Countries and Western Europe *Dardane Ismaili Imeri*

Mediating Moldovan Culinary Identity: Specialized Translation, AI, and Sustainable Gastrotourism *Roscovan Nina, Staver Liliana*

Webinar 2 Session Chair: Dr. Hasim Deari

Italian Brands in North Macedonia. Empirical evidence from consumer perspectives *Hasim Deari*

Airbnb and the Social Reshaping of Space: Platform Capitalism in Post-Socialist Albania *Brunilda Zenelaga, Shqipe Zika*

Sustainable Tourism at a Crossroads: Insights for a Strategic Shift *Vlora Berisha Dranqolli, Behrije Ramaj Desku, Blake Rayfield, Theranda Beqiri*

Importance of ethics on the philosophy of education considering future challenges *Aida Goga*

Webinar 3 Session Chair: Dr. Rasmiyya Abdullayeva

Digital Sustainable Entrepreneurship in Türkiye: Organizational Insights from Clothing Rental Companies *Seda Güğerçin*

"The Muqaddimah" in The Context of Trade, Sales ande Marketing Concepts *Oğuz Yavuzyılmaz*

The Concepts of Trade, Sales, and Marketing in the Context of Kutadgu Bilig *Oğuz Yavuzyılmaz*

Webinar 4 Session Chair: Dr. Saman Hashemipour

A Study on the Interaction Between Consumer Choice and Ambience in Pop-Up Restaurants *Rana Şat, Mehmet Sarıoğlan*

The Role of Gastronomy Tourism in Local Development and Social Stability in Sındırgı *Rana Şat, Batuhan Eren Şerametli*

Developing The Components and Elements and Determining the Talent Identification Model for Children, Adolescents, and Youth in Iran *Alireza Rajebi*

Father–Son Conflict in Shahnameh, Hildebrandslied, and Kafka's Letters to His Father *Saman Hashemipour, Gökçen Gür*

12:40 - 13:30

Webinar 1 Session Chair: Assoc. Prof. Dr. Sevilay Ece Gümüş Özuyar

Sustainable Development Goal Alignment in Circular Economy Research on Rural Sustainability *Ioana Tatarciuc, Dadiana Dabija, Carmen Nastase*

Climate Transition Risk and Asset Pricing: Evidence from Turkey and Major EU Economies *Sevilay Ece Gümüş Özuyar*

Solow Model and Economic Convergence in South-East European Countries *Kajdafe Ademi, Elsana Aqifi, Lindita Muaremi, Sindise Salihi*

Poverty and Inequality, Panel Data Analysis of Chosen Macro Indicators of the Western Balkans *Kajdafe Ademi, Edrina Emini, Shiret Elezi, Driton Maljichi*

Webinar 2 Session Chair: Prof. Dr. Agim Mamuti

Economic and Ethico-Social Interventions in the Current Context *Mircea Cricovean, Simina Maris*

The future organization of regional changes: comparative analysis of energy dependence for Ukraine's neighboring countries *Stefan-Catalin Topliceanu*

A Comparative Analysis of the Healthcare Systems in KSA and UK: Towards Understanding Efficiency, Accessibility, and Quality of Care *Bander Balkhi, Agim Mamuti*

Comparing Healthcare Efficiency and Patient Care across High- and Lower-Middle-Income Contexts *Agim Mamuti, Bander Balkhi*

Webinar 3 Session Chair: Prof. Rametulla Ferati

Determinants of Artificial Intelligence Adoption in the European Enterprises: A Cross-Country Analysis *Constantin-Marius Apostoaie, Irina Bilan, Eugenia Buşmachiu*

Dystopian Imaginaries of the Anthropocene: A Computational Reading of Sustainability, Risk and Resilience in Canonical Novels *Elena-Andreea Bărbulescu*

The COVID-19 effect on the Rentability Analysis of Small and Medium Enterprises in North Macedonia *Rametulla Ferati, Bardhyl Ferati, Ruzhdi Matoshi*

Entrepreneurial Marketing in Innovative Companies: Some Examples of Global Companies *Yamina Ben Ahmed, Abdelkader Houari Maaradj*

Webinar 4 Session Chair: Prof. Dr. Adalet Hazar

Sentiment Analysis of Environmental Sustainability Reporting: Evidence from Technology Firms *Belgin Rana Çardak, Hatice Çardak, Özge Sezgin Alp, Adalet Hazar, Şenol Babuşcu*

From Policy Uncertainty to Market Sustainability: Cointegration Analysis of CPU and BIST *Semra Demir*

Revisiting the Load Capacity Curve Hypothesis: How GDP and Climate Policy Uncertainty Shape Environmental Quality *Serkan Göksu, Ender Baykut*

The Hidden Power of Central Banks: Advancing Financial Integration and Sustainability in the Mediterranean *C. Coşkun Küçüközmen*

14:00 - 15:00

Webinar 1 Session Chair: Prof. Muhammad Khalid Sohail

Challenges of sustainability and crisis management in logistics and tourism with reference to the VSG Glory ship casualty in the Red Sea *Grzegorz Mazurkiewicz*

North Macedonia's Activity towards Approach to the European Union Internal Market *Faton Shabani*

The relationship between self-esteem and aggressive behavior in adolescents. An empirical analysis of psychological and social factors *Prendi Ardita*

Assessing the contribution of green taxation to a sustainable and equitable development model in the European Union *Costinela Fortea, Valentin Marian Antohi, Rohail Hassan, Marius Sorin Dincă*

Webinar 2 Session Chair: Assoc. Prof. Dr. H. Gonca Diler

Institutional challenges for vulnerable children left „home alone" by their parents: Romania case study regarding migration *Mitrea Geta*

Free Legal Aid as an Instrument for Shaping Legal Security in a Modern Civil Society *Aleksandra Klich, Marcin Białecki*

The Relationship Between Bitcoin and Traditional Financial Assets: Linkages with Gold and the Dollar *Ahmet Eltaş, Letife Özdemir*

The Impact of ESG Scores on Sovereign Borrowing Costs in Selected Middle Eastern and Central Asian Countries *Huriye Gonca Diler*

Webinar 3 Session Chair: Dr. Esat Saçkes

Testing the Cost Stickiness Hypothesis within the Scope of the BIST Chemistry and Pharmaceutical Sector *Ahmet Akyol, N. Serap Vurur*

The Effects Of Globalization On The Sustainable Tourism Economy: An Economıc, Social And Environmental Analysis *Jiyan Kılıç, Esat Saçkes*

Sustainability Communication on Hotel Websites Example of Balıkesir Province *Esat Saçkes, Fulya Güngör*

A Research on the Current Status of Hotel Automation Software Training in Universities and Its Correspondence in the Industry *Esat Saçkes*

Table of Contents

Causality Relationship between Consumer Confidence Index and Economic Growth in the Turkish Economy **1**
Suna Korkmaz, Oya Korkmaz

AI Search Engines: Understanding User Intentions Through Knowledge and Benefits: A Knowledge Management Orientation Perspective **9**
Yusuf Ozan Yıldırım, Tarık Ziyad Çelik

Digital Twins in Tourism: Doors to a New Era **20**
Ali Kurnaz

Rhetoric-Based Reception Analysis of Public Service Announcements on Environmental Issues in Digital Public Sphere **33**
Deniz Özer Alper

Determinants of Purchasing Second-Hand Products through Mobile Applications **46**
Neslihan Yazar, Hale Fulya Kaya

Different concepts of health tourism in Europe and the meaning of health tourism worldwide **63**
Marica Mazurek

The Effects of Globalization on the Sustainable Tourism Economy: An Economic, Social and Environmental Analysis **71**
Jiyan Kılıç, Esat Saçkes

The Relationship Between Bitcoin and Traditional Financial Assets: Linkages with Gold and the Dollar **78**
Ahmet Eltaş, Letife Özdemir

Learners' and Teachers' Perception of the Use of Albanian Language in Learning English Language **87**
Ernest Ismeti, Arta Toçi

Post-Pandemic Fiscal Sustainability: Public Debt and Budget Reforms in Emerging Economies **101**
Bahar Kaya, S. Şehnaz Altunakar Mercan

AI-Driven Customer Loyalty Analysis for Regional Agricultural Brands: Non-Linear Dynamics and Digital Strategies from Jiangxi Province, China **111**
Wang Xingxing, Alireza Mohammadi

North Macedonia's Activity towards Approach to the European Union Internal Market **128**
Faton Shabani

Perceptions and Experiences of Preparatory Class Students on the Use of ChatGPT for English Learning: A Qualitative Study **138**
Fatma Kaya

Education and social sustainability challenges through art. Dramatization as an instrument of knowledge and inclusiveness in pre-university and university systems **148**
Erenestina Gjergji (Halili)

Testing the Cost Stickiness Hypothesis within the Scope of the BIST Chemistry and Pharmaceutical Sector **158**
Ahmet Akyol, N. Serap Vurur

Humble Leadership and Job Performance: The Role of Creative Team Climate in the Healthcare Sector **163**
Özlem Tuna, Münevvere Yıldız

Analyzing the Effect of Covid-19 Pandemic on Consumer Behavior under Structural Breaks: Evidence from the U.S **172**
Esra N. Kılcı

Gender Equality in Sustainable Development: A Sociological Interpretation **179**
Yonca Altındal

Factors affecting the state of having agricultural insurance **185**
Emine Kaya, Abdulkadir Barut, Orhan Gündüz, Cuma Akbay

Calculating Earnings Management of BIST 100 Companies According to the Kothari Method **194**
Melek Nur Osanmaz, İbrahim Halil Ekşi

"The Muqaddimah" in The Context of Trade, Sales and Marketing Concepts **205**
Oğuz Yavuzyılmaz

The Concepts of Trade, Sales, and Marketing in the Context of Kutadgu Bilig **218**
Oğuz Yavuzyılmaz

The Role of Television in Socio-Cultural Sustainability: Preservation and Promotion of Cultural Heritage **231**
Arzu İsayeva

Municipal solid waste collection in the city of Rome (Italy): an analysis **239**
Franco Medici, Giorgio Tosato

Evaluation of the Future of Sustainable Tourism in Turkey within the Framework of the S-O-R Model **251**
Mehtap Türkan, Özgür Yılmaz

The Relationship Between the Use of Artificial Intelligence and Trust in Consumer Behavior Towards Health Supplement Products **260**
Oylum Ekşi, Oğuz Yavuzyılmaz, Bilsen Bilgili

A Study on Determining the Design Similarities of Destination Logos from an Expert Opinion Perspective **269**
Semi Kara, Bilsen Bilgili

Global Supply Chain Optimization Using Lean and Six Sigma Methodology **276**
Manasi Khadake, Violeta Cvetkoska

The Impact of Socio-Demographic Factors in Albanian Consumer Ethnocentrism **285**
Eldian Balla, Leidja Matja

Human-Al Handovers: A Dynamic Authority Reversal Framework for Trust Calibration and Transitional Accountability **291**
Victor Frimpong, Charles Tawk, Agim Mamuti

Digital Sustainable Entrepreneurship in Türkiye: Organizational Insights from Clothing Rental Companies **298**
Seda Güğerçin

Risk-based budgeting in healthcare: a strategy for the Republic of Moldova **308**
Iulian Secrieru, Angela Secrieru

Information aggression as a tool for undermining sustainable development: international political aspect **324**
Elvin Talishinsky

Historical significance of the development of science, education and culture in Azerbaijan-Türkiye relations **332**
Shahismayil Ismayilov

The Effect of Artificial Intelligence on Travel Agency and Airline Activities: A Survey on Employees' Perspective **341**
Melike Gül, Kudret Gül

The Rome Waste Management Plan - Incinerator: A Wrong Choice **351**
Giuseppe Girardi

Greenwashing in the Era of Sustainability and Its Implications for Food Security **371**
Timofei Olga, Perciun Rodica, Iordachi Victoria, Stoian Eugeniu

Macroeconomic dynamics in the Western Balkans: The relationship between GDP growth, inflation and unemployment **386**
Arta Tachi, Fatmir Besimi

Cryptocurrencies and Global Finance: from Economic Implications and Regulatory Challenges to a Managerial Framework for Co-Creating Sustainable Value **397**
Agim Mamuti, Mirko Perano, Claudio Del Regno, Francesca Santonicola, Nicola Prudente

Targeted Trends: Unlocking the Power of Social Media Marketing on Mobile Banking Apps **409**
Oltiana Muharremi, Ellin Prophett, Julia R. Wedge

A Study on the Interaction Between Consumer Choice and Ambience in Pop-Up Restaurants **418**
Rana Şat, Mehmet Sarıoğlan

Fiscal Reforms in North Macedonia for fiscal sustainability and economic growth **431**
Liridona Seferi, Merale Fetahi Vehapi, Shpresa Alija

Recycling Efficiency of Composting and Integrated Waste Plants: Evidence from Rome **445**
Fabio Musmeci

Developing the Components and Elements and Determining the Talent Identification Model for Children, Adolescents, and Youth in Iran **453**
Alireza Rajebi

Pre- and Post-GenAI Hotel Technologies: A Systematic Review of Service Quality and Satisfaction for Value **466**
Claudio Del Regno, Nicola Prudente, Francesca Santonicola, Marco Pellicano

Airbnb and the Social Reshaping of Space: Platform Capitalism in Post-Socialist Albania **477**
Brunilda Zenelaga, Shqipe Zika

Preparing education for the future: The role of Ethics and Philosophy **491**
Aida Goga

Entrepreneurial Marketing in entrepreneurial projects-"startups ": Some Examples of Global Companies **497**

Benahmed Yamina, Houari Aek Maaradj

The relationship between self-esteem and aggressive behavior in adolescents. An empirical analysis of psychological and social factors **506**
Prendi Ardita

Sustainability Communication on Hotel Websites Example of Balıkesir Province **517**
Esat Sackes, Fulya Güngör

A Comparative Analysis of the Healthcare Systems in KSA and UK: Towards Understanding Efficiency, Accessibility, and Quality of Care **528**
Agim Mamuti, Bander Balkhi

Capacity Building for Sustainable Tourism **550**
Nadezhda Kostadinova

In Ai We Trust: Convenience Versus Competence **562**
Mihaela Popuța

Important and Urgent: A Strategic Prioritization Approach in Institutional Building of Human Security **570**
Sinem Yıldırımalp, Havva Sert, Hatice Turut, Zehra Hopyar, Büşra Yiğit, B. Yasin Çakmak, Fatma Zehra Toçoğlu

An Examination of Sustainable Education Policies in Türkiye **590**
İsmail Dönmez

Financial Statement Manipulation in Construction: Comparative Detection Models and Econometric Evidence on Blockchain Prevention **598**
Baigon Temirlan Erlanuly, Saparbayeva Saule Saulebayevna

Determination of Hedonic Factors in Terms of Rational and Conspicuous Consumption in Holiday Services **613**
Oylum Ekşi

Comparative Bibliometric Analysis of Research on Accounting Fraud and Fraud Audit in Kazakhstan, Turkey, and the United States **621**
Seval Kardeş Selimoğlu, İndira Nurzhanova

Theoretical Foundations of National Image Strategies in the Context of Sustainable Digital Diplomacy and Public Relations: The Case of Azerbaijan **642**
Umud Orujov, Aytekin Zeynalova

The Role of Women's Enterprise Production and Business Cooperatives in Türkiye: From Gastronomy Perspective **650**
Nihan Akdemir

The Role of Decent Work in Mitigating the Negative Effects of Underemployment on Job Satisfaction among Women **658**
Banu Saadet Ünsal Akbıyık

Deposit Refund Systems as Effective Tools for the Circular Economy Transition: Evidence from the Republic of Moldova **664**
Perciun Rodica, Iordachi Victoria, Timofei Olga

Cybersecurity Education for Tourism Professionals: Building Digital Resilience **680**
Aurora Daka, Dolantina Hyka

Evaluation of Indicators of Achievement of Gender Equality as Sustainable Development Goals **689**
Dilay Güvenç

Sustainable Development Goals in Albania's Migration Policy: Analysis of the National Migration Strategy' Action Plan **698**
Etleva Barjamaj (Dyrmyshi)

Causality Relationship between Consumer Confidence Index and Economic Growth in the Turkish Economy

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Abstract

Introduction: The consumer confidence index is an important indicator for households to evaluate both their personal financial situation and the general state of the economy. Households form expectations about the future state of the economy and determine their spending and saving tendencies accordingly.
Aim: To investigate the relationship between the consumer confidence index, which is an important indicator in determining the consumption and saving tendency of households, and economic growth for the Turkish economy.
Method: VAR method was used to examine the relationship between consumer confidence index and economic growth. Three-month data for the period 2004:01-2024:03 were taken into account in the analysis. Granger causality test was performed to determine whether there is a relationship between two variables.
Findings: As a result of the Granger causality test conducted to determine the relationship between consumer confidence index and economic growth, a one-way causality relationship was found from the consumer confidence index to economic growth.
Conclusion: The findings showed that the consumer confidence index affects economic growth in the Turkish economy. Consumer confidence index affects economic growth positively.
Originality and value: Since the data obtained are reliable and there are sufficient observations for analysis, the results obtained in the analysis are reliable and compatible with the theory.

Keywords: consumer confidence index, economic growth, granger causality test
Jel Codes: C32, D12, O47

1. Introduction

The consumer confidence index is calculated from the monthly consumer tendency survey results. The survey enables the assessment of consumers' current and future expectations regarding their personal financial situation and the overall economy, as well as the identification of their spending and saving tendencies. The balance method used by the European Union is used in calculating the indices. The balance coefficient is calculated by subtracting the percentage of negative answers from the percentage of positive answers for each trend question. The balance coefficient is calculated by subtracting the percentage of negative answers from the percentage of positive answers for each trend question. By adding 100 to the balance coefficient, a separate diffusion index is obtained for each question (TÜİK, 2025).

The consumer confidence index provides necessary information about current and future economic information to both consumers and economic decision-makers. Consumer confidence index plays an important role in determining public policies as well as making business decisions. The consumer confidence index also affects economic growth by determining households' consumption and saving tendencies. While positive changes in consumer confidence affect economic growth positively, negative changes affect economic growth negatively. A decline in the consumer confidence index indicates a weakening economy and decreased

confidence. Accordingly, consumers will reduce their spending on goods and services in the economy. This will cause economic growth to slow down. An increase in the index will indicate that the economy is in good shape and confidence is increasing. In this case, total expenditure on goods and services in the economy will increase. Spending on goods and services will lead to an acceleration in economic growth.

In the study, whether there is a relationship between the consumer confidence index and economic growth for the Turkish economy was analyzed by the Granger causality test. Three-month data for the period 2004:01-2024:03 were used in the analysis. In the second part of the study, previous studies on consumer confidence index and economic growth are included. The third part of the study presents the changes in the consumer confidence index over the years in the Turkish economy. The fourth section contains the datasets and methods used. The final section contains the results. The fourth section includes the datasets and methods used. The last section contains the conclusion.

2. Literature Review

The literature review for other countries and Türkiye regarding the relationship between consumer confidence index and economic growth is given in Table 1.

Table 1. Relationships between Consumer Confidence Index and Economic Growth

Author(s)/Year/Country(s)/Method/Years Covered by the Study	Results
Studies on the Economies of Foreign Countries	
Çelik et al./2010/6 developing countries/Panel data analysis/2000:01-2008:04.	It has shown that there is a long-term relationship between the Consumer Confidence Index (CCI) and industrial production.
Adrangi and Macri/2011/USA/EKK analysis/1970:01-2007:04	The TGE was a determining factor only for expenditures on durable consumer goods.
Ibrahim et al./2015/Nigeria/Granger causality test/2009Q2-2015Q2.	A causal relationship was found between TGE and real GDP growth.
Islam and Mumtaz/2016/European countries/Panel cointegration/1996(1)-2012(4).	There is a long-term relationship between TGE and economic growth.
Kilic and Cankaya/2016/USA/FAVAR/1994:01-2013:06.	TGE has been shown to have a strong relationship with production-related factors such as industrial production and inventories.
Mazurek and Mielcová/2017/USA/Granger causality test/1967-1978, 1975-1985, 1995-2005, 2005-2015.	TGE caused GDP in three of the four periods.
Borisov/2022/Eurozone/Regression analysis/2019Q2-2022Q1.	It has been determined that there is a statistically significant linear relationship between TGE and GDP growth.
Shah et al./2022/Pakistan/ Naive mean model/2012:01-2020:02.	The TGE improves the forecast of GDP growth.
Studies Conducted for the Turkish Economy	

Isik et al./2016/Turkey/Granger causality test/2004:1-2013:4.	There is a bidirectional causality relationship between TGE and economic growth.
Yaşar and Ceylan/2020/Türkiye/Toda-Yamamoto causality test/2004Q01-2019Q03.	A unidirectional causality from TGE to GDP has been found.

3. The Status of the Consumer Confidence Index in the Turkish Economy

The 10-year status of the consumer confidence index in the Turkish economy, not adjusted for seasonal effects, regarding the consumer tendency survey questions is given in Table 2.

Table 2. Consumer Confidence Index

2015	88.2
2016	91.62
2017	90.69
2018	87.76
2019	79.74
2020	80.94
2021	78.95
2022	71.40
2023	79.38
2024	79.20

Source: TCMB, 2025. https://evds2.tcmb.gov.tr/index.php?/evds/serieMarket

As seen in Table 2, the Consumer Confidence Index remained at high levels between 2015 and 2017. Especially in 2016, it reached its highest level with a rate of 91.62. However, it has entered a downward trend since 2018. It decreased to 79.74 in 2019. It is observed that the mortgage crisis experienced in the United States in 2018 had an impact on this in 2019. It increased again in 2020 and reached 80.94. It is observed that the consumer confidence index has a downward trend again in the following years following 2020.

Consumers' spending intentions on durable consumer goods (in the next 12 months compared to the previous 12 months) are given in Table 3.

Table 3. Propensity to Spend on Durable Consumer Goods

2015	96.07
2016	96.93
2017	97.40
2018	98.21
2019	96.18
2020	93.98
2021	95.18
2022	90.40
2023	93.61
2024	97.18

Source: TCMB.2025. https://evds2.tcmb.gov.tr/index.php?/evds/serieMarket/collapse_40/5968/DataGroup/turkish/bie_mbgven2

As can be seen from Table 3, the intention to spend on durable consumer goods has increased continuously from 2015 to 2018. It has decreased continuously from 2018 to 2020. In 2021, the consumption trend increased again, reaching 95.18, and it has been observed that it has been on an upward trend in recent years.

Consumer confidence in the general economic situation of the Turkish economy in the current period compared to 12 months ago is given in Table 4.

Table 4. General Economic Situation

2015	85.29
2016	90.02
2017	87.02
2018	80.81
2019	62.79
2020	69.99
2021	53.86
2022	44.40
2023	52.51
2024	47.43

Source: TCMB, 2025. https://evds2.tcmb.gov.tr/index.php?/evds/serieMarket/collapse_40/5968/DataGroup/turkish/bie_mbgven2

Looking at the values in Table 4, it is seen that consumer confidence in the general economic situation has decreased after 2020. It reached its highest value with a value of 90.02 in 2016. It decreased to 52.51 in 2023 and 47.43 in 2024.

4. Dataset and Method

In this study, the relationship between consumer confidence index (CCI) and economic growth (GDP) for the Turkish economy was investigated using VAR analysis. CCI represents the consumer confidence index, while GDP (chained volume by expenditure method) represents economic growth. CCI and GDP data were obtained from the electronic data distribution website of the Central Bank of the Republic of Türkiye (CBRT). Three-month data for the period 2004:01-2024:03 were used in the analysis. The period after the 2001 crisis, which was the most severe financial and banking crisis in Türkiye, has been taken into consideration. Since the TGE data for the periods 2004.01-2011.04 were not available on a quarterly basis on the CBRT's electronic data distribution site, the data for this period were taken from the archives of the Turkish Statistical Institute (TÜİK) on a monthly basis and converted to a quarterly basis. If the obtained data changes depending on the previous data, the geometric mean should be chosen as the method that gives the most accurate result of this change. Since both series include seasonality, the monthly TGE series for the period 2004.01-2011.04 was converted to quarterly according to the geometric mean formula given below (Kadılar, 2005: 6).

$$Z = \sqrt[3]{Z_I * Z_{II} * Z_{III}} \quad (1)$$

Logarithms of TGE and GDP series were taken. Since the variables include seasonality, the GDP series is seasonally adjusted using the Tramo/Seats method, and the TGE series is seasonally adjusted using the Moving average method.

Before starting the analyses, stationarity tests were conducted to investigate whether there was a time effect on the variables. Granger & Newbold (1974) emphasized that variables should be stationary because their long-term means are not constant and the variance of time series that show constant deviations is not finite and leads to spurious regression. Extended Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were used to determine the stationarity tests of the variables. Unit root test results are given in Table 5.

Table 5. ADF and PP Unit Root Test Results

Variables			ADF		PP	
			t-statistic	**p-value**	**t-statistic**	**p-value**
LGSYİHSA	Constant	Level	-0.586	0.867	-0.646	0.853
		1st Difference	-11.673	0.000*	-11.709	0.000*
	Trend-Constant	Level	-3.467	0.049	-3.416	0.056
		1st Difference	-11.605	0.000*	-11.639	0.000*
LTGESA	Constant	Level	-2.461	0.128	-2.461	0.128
		1st Difference	-9.781	0.000*	-9.816	0.000*
	Trend-Constant	Level	-3.258	0.081	-3.342	0.066
		1st Difference	-9.717	0.000*	-9.749	0.000*

*, **, and *** indicate that variables are significant at the 1%, 5%, and 10% significance levels, respectively. If the p value is found to be higher than the significance level in the ADF and PP test results, a unit root is present; otherwise, no unit root is present.

According to the ADF and PP unit root test results shown in Table 5, it was determined that the GDP and TGE variables were not stationary at the level, but were stationary I(1) in their first difference at the 1% significance level. According to the created VAR model, the lag length was taken as 4 since the variables were three-monthly. Test results showing the VAR lag length are given in Table 6.

Table 6. VAR Model Lag Length Test Results

Lag	LR	FPE	AIC	SC	HQ
0	NA	2.22e-06	-7.341	-7.280*	-7.316*
1	11.021*	2.13e-06*	-7.385*	-7.204	-7.312
2	1.861	2.30e-06	-7.308	-7.005	-7.187
3	4.910	2.38e-06	-7.274	-6.852	-7.105
4	4.365	2.48e-06	-7.235	-6.691	-7.017

According to the VAR lag length test results shown in Table 6, the Likelihood Ratio Test (LR), Final Prediction Error (FPE) and Akaike Information Criterion (AIC), the lag length that minimizes these criteria was determined as 1.

One of the assumptions of the VAR model is to determine whether there is heteroscedasticity among the error terms. According to the heteroscedasticity test, the chi-square (Chi-sq) statistic was found to be 27.872, and the p-value was found to be 0.265. According to these results, the null hypothesis (H_0), which states that there is no heteroscedasticity among the error terms, is accepted at the 5% significance level.

Since the variables used in the model are stationary at the same level, that is, at the I(1) level, the Granger causality test was conducted to determine whether the variables in the model are mutually interacting.

In a Granger causality test, if the history of a random variable X provides a better prediction of the future of another random variable Y, after all other possible relevant factors and non-random information are taken into account, then variable X is said to Granger cause Y (Atukeren, 2011: 137-138).

$$\Delta LGSY\dot{I}HSA_t = \sum_{i=1}^{n} \alpha_i \Delta LTGESA_{t-i} + \sum_{j=1}^{n} \beta_j \Delta LGSY\dot{I}HSA_{t-j} + u_{1t} \quad (2)$$

$$\Delta LTGESA_t = \sum_{i=1}^{m} \lambda_i \Delta LTGESA_{t-i} + \sum_{j=1}^{m} \delta_j \Delta LGSY\dot{I}HSA_{t-j} + u_{2t} \quad (3)$$

The causality test results between the consumer confidence index and economic growth are given in Table 7, based on a lag length.

Table 7. Granger Causality Test Results

Direction of Causality	F-Statistic	Probability (p)	Decision
ΔLTGESA does not Granger cause ΔLGSYIHSA	4.123	0.045**	Yes
ΔLGSYİHSA does not Granger cause ΔLTGESA	1.129	0.291	No

**Statistically significant at 5%.

According to the Granger causality test result shown in Table 7, economic growth is not the cause of the consumer confidence index, the p probability value was found to be 0.291. According to the 5% significance level, the null hypothesis that economic growth is not the cause of the consumer confidence index is accepted. According to the Granger causality test, the consumer confidence index is not the cause of economic growth, and the p probability value was found to be 0.045. According to 5% significance level, the null hypothesis that consumer confidence index is not the cause of economic growth is rejected. According to the Granger causality test results, a one-way causality relationship was found from the consumer confidence index to economic growth.

5. Conclusion

Consumer confidence index plays an important role in making some decisions and influencing economic factors in the economy today and in the future. The economic confidence index can take values between 0-200. An economic confidence index greater than 100 indicates that the general economic situation is good, while a value less than 100 indicates that the general economic situation is worsening. If confidence in the economy is increasing, that is, if the consumer confidence index is above 100, consumers will increase their consumption expenditures. As a result of increased consumption expenditures, total demand for goods and services will increase, which will contribute positively to economic growth. An increasing trend in the consumer confidence index indicates an improvement in consumers' purchasing propensity. Based on this, producers will seek to increase their production and employment. Banks will expect an increase in loan demand. When the value of the consumer confidence index remains below 100, consumers will have a reduced propensity to spend, which will reduce the aggregate demand for goods and services. Economic growth expectations will also decline.

Whether there is a relationship between consumer confidence index and economic growth in the Turkish economy was investigated using the Granger causality test by taking quarterly data for the period 2004:01-2024:03. As a result of the Granger causality test, a one-way causality relationship was found from the consumer confidence index to economic growth. In other words, it was revealed that consumers had good confidence in the Turkish economy during the period examined. Consumers have increased their consumption expenditures on goods and services. Since the aggregate demand for goods and services increased, economic growth was positively affected.

This study reveals similar results with Çelik et al., (2010), Ibrahim et al., (2015), Islam and Mumtaz (2016), Kilic and Cankaya (2016), Mazurek and Mielcová (2017), Borisov (2022), Shah et al., (2022), Yaşar and Ceylan (2020) and different results with Adrangi and Macri (2011) and Isik et al., (2016).

In order for the consumer confidence index to increase, consumers' confidence in the market and the policies implemented by the government must increase. One of the factors affecting the consumer confidence index is the consumer price index (CPI), which is announced monthly and directly concerns the consumer. The increase in CPI reduces the purchasing power of consumers. This damages consumers' confidence in the economy. It creates uncertainty about the future of

the economy. To eliminate this negative situation, the government and monetary authorities should turn to policies that ensure price stability. To ensure price stability, tight monetary policy should be implemented by the Central Bank. In the Turkish economy, the Central Bank implemented a tight monetary policy to ensure price stability and ensure consumer confidence in the economy. The policies implemented have shown their effect and a slowdown in the rate of price increase has been observed recently. This has increased consumers' confidence in the market. Volatility in exchange rates is also one of the important factors affecting consumer confidence in the economy. An increase in the exchange rate will cause the country's currency to depreciate. This situation will shake consumers' confidence in the economy. Households will evaluate their savings in foreign currency by choosing the exchange rate that is appreciating. As a result of the Central Bank's implementation of policies that reduce foreign exchange demand, the value of the Turkish Lira will be preserved and consumer confidence in the economy will be increased again.

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AI Search Engines: Understanding User Intentions Through Knowledge and Benefits: A Knowledge Management Orientation Perspective

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Abstract

Introduction: Artificial intelligence has revolutionized digital search engines, transforming them into intelligent systems that support contextual understanding, predictive insights, and personalized information retrieval. As these tools become an integral part of knowledge work, it is crucial to understand what drives their continued use.
Aim: This study investigates how users' knowledge and perceived benefits of AI-powered search engines influence their intention to keep using these tools. It adopts the Knowledge Management Orientation (KMO) perspective to frame AI search engines as strategic facilitators of knowledge acquisition and application.
Method: A quantitative research design using purposive sampling was used to survey 319 active users of AI search engines such as Google, Yandex, and Bing. Data were analyzed via multiple regression to assess the impact of user knowledge and perceived benefits on intention to keep using, with platform preference included as a control variable.
Findings: Results indicated perceived benefit is the strongest predictor of intention to keep using AI search engines. Knowledge of AI search engines significantly affected the continuance intention for Yandex users. Additionally, the study highlights a conceptual overlap between AI search engines and AI chatbots that reflects evolving user perceptions.
Conclusion: In general, AI search engines perceived benefit explained the intention to keep using AI search engines and knowledge played a limited role depending on the platform. These findings highlight the importance of aligning AI tool design and communication with user expectations and knowledge levels.
Originality and value: This research contributes to the intersection of technology adoption and knowledge management by positioning AI search engines as cognitive tools within knowledge ecosystems. It offers practical insights for marketers and managers to increase user engagement and AI search engine's role in digital knowledge behavior.

Key words: AI search engines, Knowledge management orientation, Perceived benefits, User knowledge
Jel Codes: M10, M15, M30

1. Introduction

The way people access, assess, and use information is changing fundamentally in the age of artificial intelligence (AI). Google and Yandex are two examples of AI-powered search engines that have developed into complex systems with contextual awareness, predictive insights, and personalized responses, surpassing simple query-response technologies (Alalaq, 2025). Understanding the elements that affect these technologies' continued use is becoming more and more important as they become ingrained in everyday digital interactions. This fact is not only applicable from a technological point of view but also from a strategic and knowledge-based view. According to the Knowledge Management Orientation (KMO) viewpoint, AI search engines are strategic facilitators of learning, knowledge acquisition, and well-informed decision-making in both personal and professional contexts, rather than merely being useful tools

(Joksimovic et al., 2023). The KMO framework emphasizes the strategic role of information systems in facilitating knowledge acquisition, sharing, and application. In this study, AI search engines are positioned not merely as tools for information retrieval, but as enablers of knowledge ecosystems that support cognitive processes such as learning, decision-making, and problem-solving. This theoretical lens allows us to interpret user engagement with AI search engines as a function of their contribution to knowledge work, thus aligning the study's goals with the broader objectives of knowledge management.

AI search engines and AI chatbots share underlying technologies such as natural language processing and machine learning, they serve distinct purposes. AI search engines are primarily designed to retrieve and rank information from vast databases or the web, based on user queries. In contrast, AI chatbots are conversational agents that simulate dialogue and may generate responses based on pre-trained language models rather than real-time search. This distinction is critical for understanding user expectations and evaluating the tools' effectiveness in knowledge acquisition versus interaction. This study focuses solely on how consumers' understanding and perceived benefits of AI search engine features influence their intention to continue using them. Therefore, using only AI-search engines presents a conceptual limitation. The research takes an interdisciplinary approach, bridging marketing and strategic management. From a marketing and consumer behavior standpoint, the study looks into the psychological drivers of user engagement using AI-enhanced technologies. From a management standpoint, it incorporates the Knowledge Management Orientation paradigm, stressing the strategic role AI tools play in assisting knowledge workers. This study's novelty stems from its conceptual framing: it presents AI search engines as fundamental components of the growing information ecosystem rather than simply digital products. Consequently, the population of this research is selected from individuals who actively engage with knowledge — including professionals, students, researchers, and digital workers — who are more likely to interact with AI tools in knowledge-seeking, problem-solving, or decision-making contexts. To find out these associations, the study posits that consumers who understand AI search engines and perceive larger benefits are more inclined to keep using them. A non-random purposive sampling method was employed to specifically target individuals with prior experience using AI search engines. This approach was chosen to ensure the data's relevance, as only users with informed experience can effectively evaluate the knowledge- and benefit-based components of these technologies. Additionally, this research uses controls for the most frequently used AI search engines to account for differences in platform specific findings.

2. Conceptual Framework and Hypotheses

2.1. AI Search Engine Tools and Knowledge Management

Wang et al. (2008) define knowledge management as a systematic approach to acquire, interpret and apply knowledge to improve the performance of organizations and individuals. Smith & Farquhar (2000) noted that AI and knowledge management share a common goal in which concepts emerging from AI research are particularly important in creating knowledge bases, called institutional memories, knowledge repositories, or best practice databases. According to the notions given, AI search engines become a strategic tool for this process in the knowledge management perspective. Therefore, AI search engines now serve as tools that support individual and organizational learning, knowledge integration, and problem-solving (Joksimovic et al., 2023). In this perspective, maintaining a high-quality knowledge base is vital to successful knowledge management. Towards this common goal, today's AI-based search engines address this issue with intelligent systems that understand problems, predict intent, and personalize results. AI-based search engines like Google and Yandex are now leverage machine learning, natural language processing, and predictive analytics to support more efficient information retrieval. In addition to these advantages, AI based tools also provide the ability to structure, filter and interpret complex information in the digital environment (Strzelecki, 2024). Razmerita et al (2009) predicted that tools that make the knowledge management process faster, relevant, and personalized will not only be necessary, but also desirable. Thus, users keep using AI search engines can be explained with users' comfort, satisfaction, affinity and knowledge-related goals (Jarrahi et al., 2023).

2.2. AI Search Engine Knowledge

Knowledge plays a central role in shaping how individuals interact with technology. In the context of AI search engines, AI search engine knowledge refers to a user's understanding of how these tools function, the features they offer, and how to effectively use them for retrieving and applying information (Guelailia & Bouziane, 2024). As AI tools become more complex, users need deeper knowledge to fully utilize the capabilities of AI tools (Haleem et al., 2022). Lee and Sun (2012) foresaw the need for an intelligent meta-search engine by noting the problems that search engines rarely consider the personalized needs of users, the sensitivity rate is low, and the results are taken separately. When users feel confident in their understanding of a digital tool, they are more likely to integrate it into their routines (Barnard et al., 2013). Knowledge factors are critical elements in evaluating user behavior with artificial intelligence technology. Especially in marketing, knowledge of users increases comfort of the products, strengthens brand perception, trust and loyalty (Jo & Park, 2024).

2.3. Perceived Benefits of AI Search Engines

Davis (1989) explains in his Technology Acceptance Model (TAM) that perceived usefulness is directly linked to the likelihood of a user adopting a digital product. Accordingly, in technology acceptance studies, perceived benefits are defined as the degree to which individuals believe that a technological tool offers value, enhances performance, or contributes to the user experience (Jeong et al. 2024). In addition to these benefits users who derive clear, consistent value from a platform are more likely to remain engaged, recommend it to others, and even integrate it into their decision-making routines (Akdim & Casaló, 2023).

Within the context of AI-powered search engines, it offers faster access to relevant information, more accurate results, personalized recommendations, and advanced support for complex queries (Grainger et al., 2025). In this perspective developments in AI tools are becoming increasingly capable of predicting users' needs and providing benefits in terms of efficiency of obtaining knowledge (Virvou, 2023). According to Alalaq (2025), AI-powered search engines provide various possibilities such as understanding context, personalization of results in accordance with user behavior, support voice search, intelligent suggestions.

2.4. Intention to Keep Using AI Search Engine Tools

Technology adoption studies focus on the first-time use of digital technologies, some research underlines the relevance of knowing what fosters long-term engagement after first-time use (Al-Adwan et al., 2025). The intention to keep using refers to a user's motivation to continue using a product, system, or service after the first adoption period (Rojas-Osorio & Alvarez-Risco, 2019). In contrast to simple traditional search engines, AI-powered search engines provide consumers with multifaceted benefits: they help users not only find information but also understand it, customize it to meet their needs, and even anticipate what they might look for next (Amer & Elboghdadly, 2024). As AI search engines grow more and more integrated into people's everyday information activity, whether for work, education, decision-making, or personal research, their continuous use becomes particularly important. Therefore, the choice to keep using an AI search engine depends on both cognitive (like knowing the characteristics of the tool) and experiential (like the advantages the user experiences over time) elements (Jin & Youn, 2023). Since knowledge, perceived value, trust, and contentment are all important concepts in the literature on marketing, user behavior, and information systems, continuity intention is a multifaceted result (Seridaran et al., 2024).

2.5. Conceptual Model

Based on the theoretical background and constructs discussed in the previous sections, this study proposes a conceptual model to examine the factors influencing users' intention to keep using AI search engine tools. The model is grounded in technology adoption and digital marketing literature, and it is interpreted through the Knowledge Management Orientation (KMO) perspective, which frames AI search engines as strategic tools for knowledge acquisition and application.

The model proposes two primary effects:

- Users who have greater knowledge of AI search engines are more likely to keep using them, as knowledge enhances user confidence and effective engagement with advanced features.
- Users who perceive stronger benefits from AI search engines are more likely to remain engaged over time, as perceived value is a key driver of technology continuance.

Model also includes a control variable: the user's most frequently used AI search engine (Google or Yandex). This accounts for potential differences in experience based on platforms. Following figure 1. summarizes the research model:

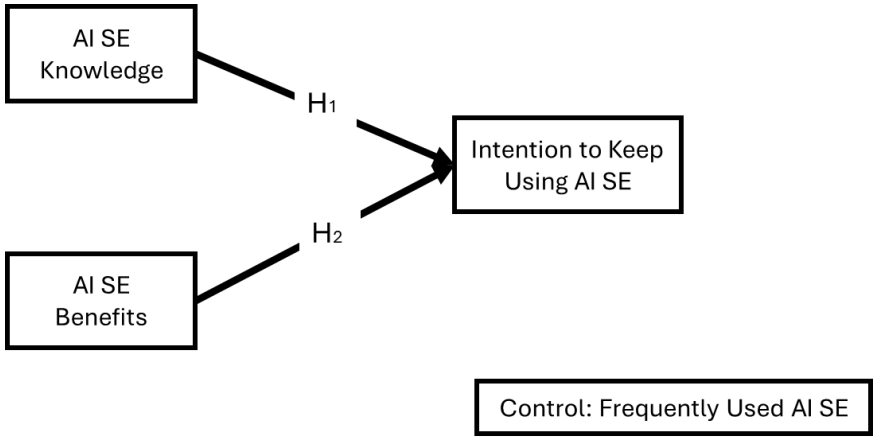


Figure 1. Research Model

3. Research Methodology and Findings

3.1. Research Design

This research is guided by the question: *What matters more for continued use of AI search engine tools — the user's knowledge of the tool or the benefits they perceive from it?* This question emerges at the intersection of digital marketing and knowledge management. As AI search engines evolve from simple utilities into intelligent systems that support complex information needs, understanding the factors that drive continued user engagement becomes increasingly important. This study adopts the Knowledge Management Orientation (KMO) perspective to frame AI search engines not only as digital tools, but as platforms that support knowledge-related processes such as acquisition, evaluation, application, and integration.

The research design is quantitative, aiming to measure and analyze the effect of users' knowledge of AI search engines and perceived benefits from using these tools on their intention to keep using them. By adopting this framework, the study emphasizes the role of AI search engines in enhancing users' capacity to manage and apply information. To explore these, a structured online survey was developed for a specifically targeted user group. Therefore, when using purposive sampling, focus was on individuals who actively use AI-powered search engines and aimed to ensure that the responses were based on real experiences and conscious perceptions.

3.2. Data Collection and Sample

In line with the research design, data was collected using an online survey aimed at individuals who actively use AI-powered search engines. Within KMO framework, users are not simply consumers of technology, but active participants in the acquisition, interpretation, and application of knowledge. Therefore, the population targeted for this study includes individuals for whom AI search engines function as essential tools in their personal, academic, or professional lives.

To ensure the relevance of the sample, purposive sampling was employed. This non-probability method allows for the deliberate selection of participants who meet a specific criterion: regular use of AI search engines such as Google or Yandex in knowledge-seeking contexts. Rather than aiming for statistical generalization, purposive sampling is used here to gain conceptual insight from a knowledge-relevant user group.

In this process, participants were invited to complete an online questionnaire that began with a brief description of the research and a request for voluntary consent (Ethics Committee Approval: 27.03.2025:898814). To meet the purposive sampling criteria, respondents were required to confirm that they use an AI search engine and specify which one they use most frequently.

In the ending of data collection process a total of 341 data were collected. After screening for consent, actual AI search engine use, and identifying outliers through data cleaning procedures, 319 valid responses were retained for analysis. This final sample consists of individuals who engage with AI tools not only for general browsing but as part of regular cognitive and decision-making tasks. In alignment with the KMO framework, these users represent a segment of the population that actively integrates AI into their knowledge workflows, making them uniquely positioned to reflect on the drivers of continued use.

3.3. Measurement Instruments

The survey instrument was designed to measure the three key constructions of this study: The questionnaire contained a total of 19 items. One item was used to obtain consent from participants. Two items screened for eligibility based on AI search engine usage. Five items gathered demographic information. The remaining 11 items were used to measure the main research variables. All measurement items were rated using a 7-point Likert scale, ranging from 1 = Completely Disagree to 7 = Completely Agree.

- AI Search Engine Knowledge was measured using 3 items adapted from Pham et al. (2024). In the KMO context, this knowledge reflects an individual's ability to leverage intelligent tools for better access to relevant and actionable information.
- Perceived Benefits of AI Search Engines were measured with 4 items, also adapted from Pham et al. (2024). From a knowledge management view, perceived benefits represent the value users experience when AI tools support their ability to locate, filter, and apply knowledge effectively.
- Intention to Keep Using AI Search Engines was measured using 4 items taken from Rojas-Osorio and Alvarez-Risco (2019). These items captured the user's future commitment to integrating AI search tools into their regular routines.

3.4. Findings

This section begins by presenting an overview of the demographic profile. Accordingly, Table 1, displays the frequency distribution of participants' demographic. Among the 319 valid respondents, the majority identify as male, are between the ages of 25 and 34, report being single, and are either employed in the private sector or currently enrolled as students. Most participants also indicated a personal monthly income ranging from 0 to 25,000 Turkish Lira.

Table 1. Participants' Demographics (Total 319 Participants)

Variable	Groups	Frequency	Percentage
Gender	Male	154	51,7
	Female	165	48,3
Age *(Range: 18-53)* *(Mean: 27,85)*	18-24	122	38,2
	25-34	139	43,6
	35-44	47	14,7
	45+	11	3,5
Marital Status	Single	215	67,4
	Married	104	32,6
Status	Student	104	32,6
	Public Sector	79	24,8
	Private Sector	104	32,6
	Unemployed	32	10,0
Personal Income	0 - 25.000 TL	150	47,0
	25.001 - 50.000 TL	70	21,9
	50.001 – 75.000 TL	64	20,1
	75.001 TL and above	35	11,0

To ensure alignment with the study's focus on active users of AI search technologies, participants were first asked whether they use AI-powered search engines and, if so, to indicate the platform they use most frequently. The distribution of participants' preferred platforms is summarized in Table 2. The response options were categorical and included predefined choices: Google, Yandex, Bing, and "Other." Participants selecting "Other" were prompted to specify the name of the platform they use.

Table 2. Chosen AI Search Engine

Chosen AI Search Engine	n
Google	164
Yandex	107
Bing	25
Other (ChatGPT, Copilot, Deep seek, Grok, Brave)	23
Total	319

The findings indicate that the most frequently used platforms, in descending order, are Google, Yandex, Bing, and those categorized under "Other." A closer examination of the responses in the "Other" category reveals that participants predominantly referred to AI chatbots rather than conventional search engines. This pattern suggests two possible interpretations: first, that some users increasingly view AI chatbots as functional substitutes for search engines; and second, that there may be conceptual ambiguity among users regarding the distinction between AI search engines and AI chatbots.

Prior to hypothesis testing, an Exploratory Factor Analysis (EFA) was conducted to improve sample efficiency. In EFA, KMO value exceeding 0.50 indicates an acceptable level of sampling adequacy, while a significance value below 0.05 on Bartlett's Test confirms sufficient correlations among variables (Field, 2013). The total variance explained (TVE) by the extracted factors should be at least 60% for an acceptable factor model (Hair Jr. et al., 2010). Durmuş et al. (2013) states that in data reduction process one item alone can't form a factor, one item can't load closely on two factors, and factor loadings should be at least 0.50. After the data reduction process factors should be tested for internal consistency. Cronbach's alpha values over 0.70 were considered acceptable reliability (Hair Jr. et al., 2010). Finally, according to Tabachnick and

Fidell (2018), skewness and kurtosis values within ±1.5 were considered as normal distribution. Additionally, Kline (2011) suggests that kurtosis values within ±3 are also considered as normal distribution range.

Table 3. Factor, Reliability and Normality

Scale	KMO / Bartlett	TVE	#	Loadings	α	Mean	Skewness	Kurtosis
SE-K	,720/,000	75,417	3	,845-,884	,837	5,429	-,978	1,150
SE-B	,832/,000	78,447	4	,864-,899	,908	5,640	-1,154	2,248
SE-INT	,831/,000	75,543	4	,812-,896	,891	5,851	-1,343	2,761
SE-K: AI-SE Knowledge, SE-B: AI-SE Benefits, SE-INT: Intention to Keep Using AI-SE								

Based on the information presented above, the interpretation of the findings in Table 3 is as follows: For each scale employed in the study, measure of sampling adequacy exceeded 0.50, and Bartlett's Test of Sphericity's p value were below 0.05. Furthermore, the total variance explained by each scale exceeded 60%. During the data reduction process, no items were eliminated, and factor analysis was successfully conducted for each scale. Following, Cronbach's alpha values for each scale were above 0.70. Finally, the normality of the computed variables was examined. While the skewness values for each variable met the criteria suggested by Tabachnick and Fidell (2018), the kurtosis values did not fall within the recommended range. However, considering Kline's (2011) guideline that kurtosis values within ±3 are acceptable in large samples, the distribution of the data was deemed approximately normal.

To test the research hypotheses, multiple linear regression analyses were performed on the overall dataset and two major user subgroups (Google and Yandex users). The analysis examined the predictive effects of users' knowledge of AI search engines (SE-K) and their perceived benefits (SE-B) on intention to keep using (SE-INT). Key results, including model fit, regression coefficients, and collinearity diagnostics, are summarized in Table 4.

Table 4. Regression Findings

	IV's	DV	Model	Anova	Coefficient			Collinearity	
			Adj. R2	F	Constant	Beta	p	Tol.	VIF
All Dataset	**SE-K**	**SE-INT**	,527	178,091	1,973	,123	,031	,459	2,177
	SE-B					,633	,001		
	IV's	**DV**	**Model**	**Anova**	**Coefficient**			**Collinearity**	
			Adj. R2	**F**	**Constant**	**Beta**	**p**	**Tol.**	**VIF**
Google	**SE-K**	**SE-INT**	,451	67,880	2,297	,085	,285	,536	1,864
	SE-B					,616	,001		
	IV's	**DV**	**Model**	**Anova**	**Coefficient**			**Collinearity**	
			Adj. R2	**F**	**Constant**	**Beta**	**p**	**Tol.**	**VIF**
Yandex	**SE-K**	**SE-INT**	,593	78,286	1,683	,179	,043	,506	1,975
	SE-B					,639	,001		

For the overall dataset, the model explained approximately 52.7% of the variance in intention to keep using AI Search engines (Adj. R^2 = .527, F = 178.091). Both independent variables were significant predictors. Search engine knowledge had a standardized beta coefficient of .123 (p = .031), while perceived benefits had a stronger effect with a beta of .633 (p = .001).

For Google Users, model explained 45.1% of the variance in intention (Adj. R^2 = .451, F = 67.880). In this group, perceived benefits remained a significant predictor (β = .616, p = .001), while knowledge of the search engine did not reach statistical significance (β = .085, p = .285).

For Yandex Users, model accounted for 59.3% of the variance (Adj. R^2 = .593, F = 78.286). Both predictors were significant: search engine knowledge (β = .179, p = .043) and perceived benefits (β = .639, p = .001).

Table 5. Additional Regression Findings

	IV's	DV	Model	Anova	Coefficient			Collinearity	
			Adj. R2	F	Constant	Beta	p	Tol.	VIF
Bing	SE-K	SE-INT	,331	6,948	2,797	-,098	,651	,605	1,652
	SE-B					,679	,004		
	IV's	DV	Model	Anova	Coefficient			Collinearity	
			Adj. R2	F	Constant	Beta	p	Tol.	VIF
Other	SE-K	SE-INT	,313	6,009	1,975	,339	,313	,291	3,436
	SE-B					,299	,372		

For Bing Users, model explained 33.1% of the variance in dependent variable (Adj. R^2 = .331, F = 6.948). The perceived benefits significantly predicted DV (β = .679, p = .004), whereas search engine knowledge did not (β = –.098, p = .651).

Users of Other AI Tools; model accounted for 31.3% of the variance in DV (Adj. R^2 = .313, F = 6.009). Search engine knowledge showed a positive but non-significant relationship with continued use (β = .339, p = .313), and perceived benefits did not significantly predict continued use (β = .299, p = .372).

However, due to the relatively small sample size of groups, these findings should be interpreted with caution and may not be generalizable to the broader population of users.

5. Conclusion

The study assessed that consumers who understand and see the benefits of AI search engines will continue to use them. A purposive sampling technique was used to target individuals who had previously used AI search engines. While purposive sampling enabled the study to target informed users, it limits the generalizability of the findings. The non-random nature of the sample introduces potential selection bias and restricts external validity. Accordingly, the findings of this study clearly indicate that perceived benefits are the dominant predictor of continued use across most user groups. Notably, for Yandex users, knowledge also plays a statistically significant role, highlighting platform-specific differences in how users engage with AI search engines. This suggests that user familiarity and cognitive understanding are particularly important for sustained engagement with certain AI platforms, potentially due to differences in interface design, features, or user base characteristics. Additionally, the observation that "Other" AI tools—often AI chatbots—are conflated with search engines underscores a shifting landscape in AI information retrieval, raising new questions about user perceptions and usage patterns.

Academic Contributions: This research advances the literature by combining knowledge management orientation and technology acceptance in the context of artificial intelligence search engines. This research specifically examined most used AI search engines (such as Google and Yandex) to offer insights into platform-specific characteristics. In addition, findings discovered some people have confusions between AI search engines and AI chatbots. According to Strzelecki (2024), search engines such as Google, have integrated AI chatbots into their search results meaning AI chatbots as alternatives to traditional search engines.

Marketing Implications: In contrast to advertising product features or user familiarity, this work indicated that with perceived benefit marketers need to develop value propositions, such as increased efficiency, accuracy, and decision support. Considering the differences between

Google and Yandex users' reliance on benefits and knowledge, message resonance and user engagement can be improved by platform-specific marketing. The comparison between Google and Yandex users revealed platform-specific differences in how knowledge and perceived benefits influence continued use. While Google users were primarily driven by perceived benefits, Yandex users showed a significant relationship between knowledge and continued use. This suggests that user familiarity and platform complexity may moderate the impact of knowledge on engagement. These findings underscore the importance of tailoring user education and feature communication strategies to platform-specific user bases. Finally, clarifying the distinctions between AI chatbots and search engines could reduce user confusion and better align expectations.

Managerial Implications: Managers should prioritize initiatives that emphasize the usefulness of search engines and encourage knowledge acquisition by providing specialized training. The findings suggest that improving user knowledge for platforms like Yandex can significantly increase continuation intention, while for Google users, strengthening perceived benefits can yield greater returns. Moreover, from a policy standpoint, the incorporation of AI-powered search engines into organizational knowledge infrastructures necessitates the development of comprehensive guidelines that emphasize transparency, user education, and equitable access. Policymakers should formulate regulatory frameworks that uphold responsible AI deployment, safeguard data privacy, and promote digital literacy. Lastly, for organizational leaders, the findings underscore the importance of enhancing perceived benefit through user-centered design and the provision of accessible knowledge resources to foster sustained user engagement.

Limitations and Directions for Future Research: Even though it is advantageous for targeting knowledgeable people, the purposive sample technique used in this study restricts generalizability, especially for smaller user groups like Bing and "Other" AI tool users. The relatively small sample sizes in these subgroups suggest caution in interpreting findings and point to the need for larger-scale studies. The cross-sectional design further limits causal inference, emphasizing the value of longitudinal research to examine how user perceptions and behaviors evolve. Future work should investigate the increasingly blurred boundaries between AI chatbots and search engines, exploring how this convergence affects user knowledge, perceived benefits, and sustained engagement.

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Digital Twins in Tourism: Doors to a New Era

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Abstract

Introduction: Introduction: The tourism sector is undergoing a fundamental transformation driven by technological innovations in our era of accelerating digital transformation. In this process, digital twin technology, which combines the physical and digital worlds, is being applied across a wide range of areas, from tourism destination management to accommodation businesses, museums, and cultural heritage sites, creating new opportunities in the sector in terms of efficiency, sustainability, and visitor experience.
Aim: This study aims to define the conceptual framework of digital twin technology in tourism, examine the application areas of this technology in the tourism sector, and reveal its potential in increasing competitiveness, sustainability, and visitor satisfaction in tourism.
Method: The study was conducted based on a systematic literature review. Current academic studies on digital twin technology in tourism were classified under thematic headings and analyzed in the contexts of destination management, accommodation businesses, cultural heritage sites, and tourist experience.
Findings: The findings show that digital twins offer significant contributions in terms of increasing operational efficiency in tourism, supporting sustainable destination management, facilitating the preservation of cultural heritage, and personalizing the tourist experience. However, limitations such as high costs, data management difficulties, security, and privacy risks were determined to restrict the use of the technology.
Conclusion: Digital twin technology stands out as a strategic innovation area in the digital transformation process of tourism; it offers significant transformation potential in the sector by supporting smart tourism, sustainability, and data-driven decision-making processes.
Originality and value: The study comprehensively reviews the literature on digital twin technology in tourism, systematically revealing its strategic importance, application areas, and challenges encountered; it provides a conceptual framework for future research and practitioners.

Keywords: Digital Twin, Smart Tourism, Destination Management, Visitor Experience
Jel Codes: L83, Z32, Q55

1. Introduction

The tourism sector is undergoing a rapid digital transformation driven by new-generation technologies that enhance operational efficiency, sustainability, and visitor engagement. The continuous development of digital technologies has led to the reshaping of processes, business models, and service concepts in many sectors, including tourism. This transformation, which gained momentum after the pandemic, has created a permanent wave of digitalization in the sector and made the adoption of innovative technologies a necessity.

At the heart of this transformation, Digital Twin (DT) technology stands out as a transformative tool that improves the management of "smart tourism destinations" in areas such as efficiency, safety, sustainability, environmental protection, and energy management (Florido-Benítez, 2024:234). DT enables the analysis of real-time data flows, the generation of scenarios, and the optimization of decision support processes by creating digital copies of physical assets or systems (Bennett & Foster, 2025:157). This structure relies on the integration of cloud computing, artificial intelligence (AI), big data, the Internet of Things (IoT), machine learning

(ML), blockchain, augmented reality (AR), and virtual reality (VR) technologies (Rahmadian et al., 2023:1; Florido-Benítez, 2024:235). Digital twin technology in the tourism sector offers innovative solutions in various areas such as accommodation businesses, destination management, cultural heritage sites, and tourist experiences (de Almeida & Boavida-Portugal, 2025:2). Hotel chains and resorts, in particular, gain advantages in areas such as personalized services, energy efficiency, maintenance management, and customer satisfaction by using digital twins in their operational processes (Singh et al., 2023:531). At the same time, digital twins have become a tool that analyzes tourist behavior to personalize the visit experience and increase the attractiveness of destinations through augmented reality-supported interactive content (Neuhofer et al., 2015; Ballina et al., 2019:656). In this regard, the use of digital twins presents a new opportunity to increase the competitiveness of the tourism sector and promote smart tourism development (Litavniece et al., 2023:540).

Today, the concept of digital twins is applied in smart agriculture (Verdouw et al., 2021), travel behavior (Aghaabbasi & Sabri, 2025), manufacturing (Cimino et al., 2019), engineering (Zhou et al., 2019; Nativi et al., 2021), automotive (Biesinger, 2019), health management (Shengli, 2021), and logistics (Yao et al., 2021). In the tourism sector, it is rapidly emerging as a research topic. According to Fortune Business Insights (2025) data, the digital twin market is projected to reach $259.32 billion by 2032 from $24.48 billion in 2025, exhibiting a compound annual growth rate of 40.1% during this period. This trend indicates that digital twin technology will also become a strategic investment area in the tourism sector. In this context, this study aims to comprehensively examine the current state of digital twin technology in tourism, its areas of application, and its future potential. The study explains the concept of digital twins and their technological infrastructure; application areas in tourism; accommodation businesses, tourist experience, destination management, cultural heritage, and museums are discussed in detail. Furthermore, the challenges and limitations faced by digital twin applications are discussed. Thus, this study offers a holistic perspective on how digital twins can create value in tourism planning, sustainable development, and digital transformation.

2. Digital Twin

A digital twin (DT) is defined as a dynamic representation of a physical object, process, or system in a digital environment, aiming to create a virtual model that is continuously updated with real-time data from the physical world (Botín-Sanabria et al., 2022:1). This technology has become increasingly important in the industrial and service sectors with its ability to monitor the current state of physical systems, simulate their future behavior, and optimize decision support processes. Digital twins have become a fundamental component of processes such as data-driven decision making, product validation, system simulation, and lifecycle management (Yao et al., 2023:2).

The origins of the digital twin concept date back to NASA's Apollo Space Program in the 1970s, where it was developed to monitor and intervene in spacecraft by matching them with ground-based virtual models (Wang, 2020:95; Lucchi, 2025:507). The concept was first formally defined in 2003 by Michael Grieves as “the virtual representation of a manufactured physical entity” and introduced to the manufacturing sector (Grieves, 2015:6).

From the 1970s to the 2000s, DT was mainly applied in the fields of aviation and astronautics, but since the early 2000s, it has been widely used in sectors such as automotive, manufacturing, energy, and construction (Lucchi, 2025:507).

Digital twin (DT) technology is also referred to in the literature as digital avatar, digital master, or digital shadow (Yao et al., 2023:1). However, there is still no consensus on the definition of this technology (Tao et al., 2019:491). In 2012, NASA addressed the concept of digital twins with a model-oriented approach, defining it as a multi-scale integrated simulation of a physical system that maps its behavior throughout its entire life cycle by integrating virtual models, real-time sensor data, and historical records (Yao et al., 2023:2). Today, digital twin technology eliminates the boundaries between the physical and digital worlds through the integration of

advanced technologies such as the Internet of Things (IoT), big data, artificial intelligence (AI), machine learning (ML), and cloud computing, offering real-time data flow, predictive analytics, and dynamic interaction capabilities (Zhu et al., 2025). This integrated structure has moved digital twins beyond being merely a modeling tool and placed them at the center of decision support systems and intelligent autonomous processes.

DT technology is recognized as a fundamental component of cyber-physical systems (CPS) and enables multidisciplinary, multi-scale, and high-accuracy modeling (Wang, 2020:97). Thanks to this technology, physical systems can analyze their past performance and simulate possible future scenarios through digital copies that are continuously updated with real-time data obtained from sensors. Thus, digital twins extend the functionality of physical assets, optimize decision support processes, and increase operational efficiency by overcoming time, cost, and security constraints (Yao et al., 2023:1). Wang (2020:97) bases the "hyper-realistic" structure of digital twins on two fundamental elements: (1) including all geometric details such as manufacturing errors and (2) reflecting all data related to the microstructure of the material. In this respect, digital twins enable the transfer of physical reality to the virtual environment with the highest level of accuracy, allowing both system behavior and performance dynamics to be modeled in real time.

Digital twin technology offers innovative solutions not only in industrial production processes but also in many other areas such as healthcare, smart cities, agriculture, energy management, and transportation systems (Botín-Sanabria et al., 2022:1). For example, in smart agriculture applications, digital twins enable the separation of physical flows from planning and control processes, reducing farmers' need for manual observation-based decision-making in the field and offering remote management based on real-time digital data (Verdouw et al., 2021). Similarly, in smart cities, digital twin applications enable comprehensive monitoring of city infrastructure, increased energy efficiency, and improved crisis management processes through the analysis of data obtained from IoT sensors using artificial intelligence-based systems (Zhu et al., 2025). In an industrial context, Mendi (2022) determined that the application of digital twins in automotive production lines resulted in a 6.01% increase in production line efficiency and an 87.56% reduction in downtime. They also revealed that digital twins not only optimize operational processes but also offer significant contributions to businesses in terms of efficiency, sustainability, and competitive advantage.

Recent advances in high-performance computing capabilities have significantly increased the level of physical and spatial detail in digital twins, enabling more realistic modeling of complex systems (Terrado et al., 2024). Thanks to the capacity offered by high-performance computing, digital twins enable the simulation of world systems with unprecedented accuracy and strengthen societies' ability to predict the future. Wang (2020:113) emphasizes that digital twin technology is not only based on existing knowledge and theories, but also utilizes simulation-based learning to explore unknown areas, generate new solutions, and encourage human creativity. These developments have moved digital twins beyond being merely a virtual modeling tool, placing them at the center of predictive analysis, risk management, innovation, and strategic planning processes

2.1.Digital Twin Applications in Tourism

The tourism sector has undergone a profound transformation with the rapid advancement of digital technologies. The continuous evolution of digital technologies enables the reshaping of processes, revenue models, and tourist behavior (Kumar et al., 2024:1554). At the heart of this transformation, digital twin (DT) technology creates virtual representations of physical tourism environments, offering innovative solutions for destination management, planning, and marketing processes. The monitoring, analysis, and prediction capabilities of DT provide in-depth insights into the complex nature of tourism systems, contributing to decision-makers' development of data-driven strategies (de Almeida & Boavida-Portugal, 2025:3). Establishing high-accuracy data connections between physical and digital environments enables the design of immersive and realistic virtual tourism experiences and increases visitor engagement (de

Almeida & Boavida-Portugal, 2025:4). The adoption of digital twins in the tourism sector has the potential to increase staff productivity and business efficiency by supporting the optimization of operational processes (Yuce, 2023:461). The successes achieved by smart tourism applications, particularly in areas such as crowd management, sustainable planning, and destination promotion, are encouraging the rapid spread of digital twins in the sector (de Almeida & Boavida-Portugal, 2025:2). Tourism-focused digital twins create a comprehensive simulation of the destination by integrating multidimensional elements such as buildings, transportation networks, environmental conditions, energy use, and cultural dynamics (Bennett & Foster, 2025:156). In this respect, digital twin technology enables not only the visualization of tourism infrastructure, but also the simulation of different scenarios and data-driven optimization for sustainable development (Bennett & Foster, 2025:155).

2.2. Digital Twin Applications in Destinations

The smart tourism ecosystem consists of three key elements: tourists, businesses, and destinations (Rahmadian et al., 2023:7). In parallel with the smart city concept, digital twin technology (DT) has emerged as an innovative tool for the planning, management, and sustainability of tourism destinations. While smart cities implement digitalization in a holistic manner in components such as transportation, environment, energy, health, security, and education (Shahat et al., 2021:1), DT increases the efficiency of city systems by creating virtual representations of these structures. City digital twins provide a data-driven foundation for the sustainable management of urban areas, the optimization of tourism infrastructure, and the planning of visitor flows by integrating different data (Litavniece et al., 2023:541).

Digital twins in tourism can be considered a thematic subcategory of smart city digital twins. This technology enables the simultaneous monitoring and analysis of tourist environments, infrastructure, and visitor behavior through Internet of Things (IoT)-based data flow (Shahat et al., 2021:2–3). Critical technologies that form the basis of digital twins include network systems, sensors, artificial intelligence, big data, and LIDAR technologies (Shirowzhan et al., 2020:2). Digital twin-based destination management enables the creation of virtual reality representations of geographic areas, allowing for multidimensional analysis of infrastructure capacity, environmental sustainability, and destination strategies (e.g., branding, competitiveness, and marketing) (Rahmadian, 2024:7; Florido-Benítez, 2024:235). Thus, variables such as urban climate, transportation, or visitor density are simulated in the digital twin environment, and the results obtained are linked to existing 3D spatial data for use in destination planning and management (Bennett & Foster, 2025:157). Figure 1 schematically illustrates the interaction cycle between physical and virtual systems in the digital twin concept (Petrova-Antonova & Ilieva, 2019:3)

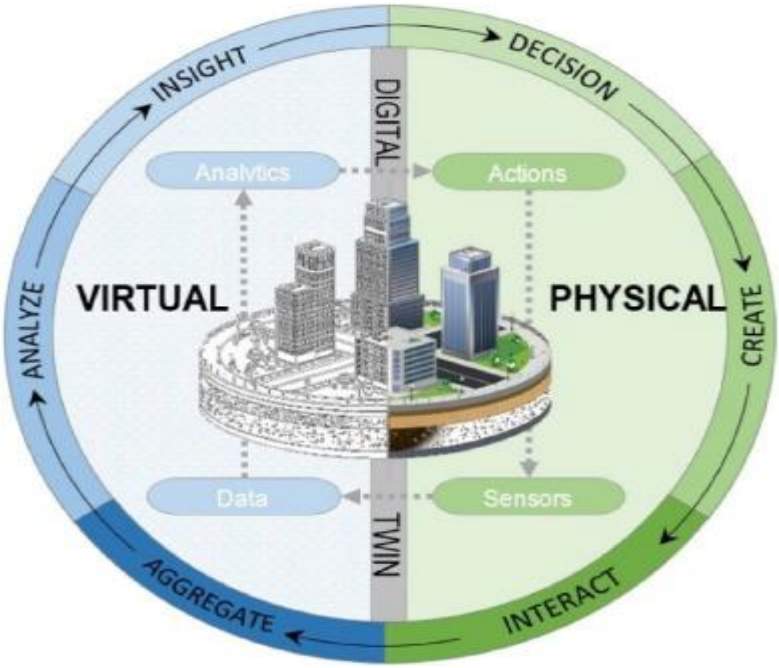


Figure 1. The Basic Operational Cycle of the Digital Twin Concept

There has been a significant increase in the number of smart digital twin cities worldwide, particularly in Europe and Asia (Botín-Sanabria et al., 2022:9). Cities such as Singapore, New York, Herrenberg, New South Wales, Vienna, Zurich, Glasgow, Cambridge, and Nottingham are implementing digital twin technology to improve urban planning, develop sustainable tourism models, and reduce environmental impacts (Florido-Benítez, 2024:242). Digital twin cities offer innovative solutions in terms of efficiency, safety, sustainability, energy management, and environmental protection in city management and tourism planning (Florido-Benítez, 2024:234). In this context, Singapore's "Virtual Singapore" project is one of the most notable examples of digital twin applications. The interactive 3D model created across the country integrates real-time data from traffic sensors, weather stations, and energy networks, enabling scenario-based simulations in urban planning and tourism strategies (Shahat et al., 2021:14; Bennett & Foster, 2025:157). Similarly, Zurich's digital twin project contributes to urban planning, environmental sustainability, and the optimization of tourism infrastructure through the integration of spatial data (Schrotter & Hürzeler, 2020:100) In addition, the digital twin platform developed in Helsinki, Finland, integrates public transportation, building performance, noise levels, and microclimate data, enabling tourism authorities to analyze visitor movements and environmental interactions (Botín-Sanabria et al., 2022:9; Bennett & Foster, 2025:157). Similarly, Dubai Municipality's Smart City Platform has integrated 3D models of key tourist areas and accommodation clusters with IoT-based sensors, enabling real-time monitoring of tourist behavior and dynamic adjustment of city navigation (Bennett & Foster, 2025:157).

The digital twin-based tourism visual analysis platform developed in Xining City, Qinghai Province, China, integrates parameters such as traffic conditions, security, environmental monitoring, weather conditions, and epidemic control, providing a comprehensive digital environment for tourism management and emergency planning (Li et al., 2024:1300). Similarly, the city digital twin developed by Gholami et al. (2022) in Imola, Italy, supported sustainable urban planning through the simulation of urban heat islands and pedestrian networks, indirectly contributing to the improvement of the tourism environment. These examples demonstrate that digital twins provide strategic contributions in destination management not only in terms of spatial efficiency but also in terms of visitor experience, sustainability, and crisis management.

In conclusion, digital twin applications in destinations are positioned at the intersection where the smart city vision converges with tourism, offering significant potential in terms of planning, infrastructure management, sustainability, and visitor experience. This technology enables destination managers to visualize complex systems, simulate possible scenarios, and improve data-driven decision-making processes, making tourism destinations more resilient, accessible, and sustainable (Bennett & Foster, 2025:157).

2.3. Digital Twin Applications in Cultural Heritage Sites and Museums

Increasing efforts to digitize cultural heritage are attracting significant international attention due to their potential impact on the preservation, management, and presentation of this field (Dang et al., 2023:228; Liu & Wang, 2024:1). In recent years, Digital Twin (DT) technology has emerged as a powerful and transformative tool for the virtual reproduction, documentation, and management of cultural heritage (Dang et al., 2023:237). The use of DT models in the field of cultural heritage enables more accurate decisions in preventive maintenance, heritage management, and restoration planning. At the same time, it ensures that real-world experiences are documented with high accuracy and transferred to the virtual environment in detail (Themistocleous et al., 2022:55; Liu & Wang, 2024:1).

Digital copies of historical sites and museums offer impressive visitor experiences through augmented and virtual reality (Hutson et al., 2023:16). Furthermore, DT is also vital in terms of accessibility and inclusivity; especially during the pandemic, when museums were physically closed, digital twin-based virtual museums ensured the continuity of cultural experiences by enabling remote participation (Menaguale, 2023:1081).

One of the most significant contributions of DT technology in the field of cultural heritage is its ability to enable multi-layered data integration. Supported by IoT (Internet of Things), artificial intelligence, and sensor systems, these models can predict the risk of deterioration of artifacts and optimize conservation measures by continuously monitoring environmental parameters such as microclimate conditions, air quality, and light levels (Lucchi, 2025:507). In this way, digital twin models provide the user with additional semantic and geometric information, adding a fourth dimension to space (Themistocleous et al., 2022:55). In addition, modern software technologies facilitate the cost-effective use of DT in areas such as the reconstruction of 3D digital assets, virtual exhibition designs, and metadata-based digital content production (Luther et al., 2023:22).

In museum management, DT infrastructure significantly improves operational reliability, maintenance efficiency, and visitor experience. For example, in smart museums, digital twins have reduced equipment failures, increased environmental comfort, and enhanced overall visitor satisfaction (Bi et al., 2025:20).

There are important cultural heritage institutions around the world that actively use Digital Twin technology. Institutions such as the Natural History Museum in London (Richardson, 2025), the Deutsches Museum (Muenchen Digital, 2025), and the Paris Opera (Glatz, 2025) are pioneering the application of this technology. One notable example of this transformation is the “Digital Twin of St. Peter's Basilica” project, developed through a collaboration between the Vatican and Microsoft. In recent years, there has been a rapid increase in interest in the use of digital twin technology in the fields of cultural heritage and museums in the literature. Liu and Wang (2024) developed a digital twin-based conservation and management model for the preservation and use of historical sites; this approach has contributed to the sustainable preservation of cultural assets in the digital environment. Gabellone (2022) developed a digital twin-based remote visit model to facilitate access for visitors with disabilities to the underground oil factory in Gallipoli, Italy, during the COVID-19 pandemic. Hutson et al. (2023), using the example of the Chiesa dei SS Apostoli e Biagio church in Florence, combined user-friendly 360° cameras and LiDAR technology to create a digital twin.

Zhang et al. (2022) combined digital twin technology with information technology methodology in the preservation of the Great Wall of China, demonstrating the simulation, inference, and

prediction capabilities of the physical heritage site. Zhao et al. (2022) applied digital twin technology with artificial intelligence and 5G integration to enhance art design in digital museums. Marra et al. (2021) used the "Historical Digital Twin (HDT)" model to analyze the stress regimes of sculptures in museum complexes, demonstrating the contribution of integrating digital scanning and structural analysis methods to conservation efforts. The study conducted by Brumana et al. (2023) aimed to develop high-resolution 3D models and multi-temporal digital twins integrated with historical documents as part of the "Appia Regina Viarum" project during the UNESCO nomination process. Finally, Bi et al. (2025) experimentally verified that the smart museum management model, which integrates digital twins, artificial intelligence, and green energy systems, significantly improves energy efficiency, carbon reduction, equipment reliability, and visitor satisfaction in their research conducted at three major museums in China.

In conclusion, digital twin technology has transformative potential for the preservation of cultural heritage, the digital transformation of museums, and the sustainable development of cultural tourism. These high-fidelity virtual replicas of physical assets are becoming one of the fundamental components of the future digital cultural ecosystem in terms of preservation, knowledge transfer, accessibility, and experience enrichment (Gabellone, 2022:2–3).

3. Digital Twin Applications in Accommodation Businesses

The digital revolution has fundamentally transformed the management and operational structure of hotel businesses; digital technologies have become key determinants of increased efficiency and competitive advantage in the hospitality sector (Iranmanesh et al., 2022:1). In this context, Digital Twin (DT) technology stands out as an innovative tool that redefines hotel operations. The implementation of DT in accommodation facilities offers significant opportunities in terms of optimizing front office processes, improving guest experience, and increasing operational efficiency (Segura-Cedres et al., 2025:1).

Supported by sensors, the Internet of Things (IoT), augmented reality (AR/VR), and data analytics, DT technology creates a virtual copy of the hotel infrastructure, enabling managers to monitor performance, energy consumption, and maintenance needs across the property in real time (Singh et al., 2023:529; Neuro, 2024). This integrated structure reduces costs while increasing efficiency through dynamic resource allocation, proactive guest services, and predictive maintenance applications. Indeed, simulation studies show that digital twin integration reduces waiting times at reception by 25–35%, increases staff productivity by 20%, and significantly improves overall guest satisfaction (Segura-Cedres et al., 2025:3).

In the hospitality industry, digital twins go beyond building or room models; they provide a comprehensive simulation of operational processes, environmental conditions, guest behavior, and equipment status (Chan et al., 2025:1). In this context, hotels can optimize performance by visualizing invisible data and contribute to sustainability goals by increasing energy efficiency. Thanks to real-time monitoring, hotels can achieve energy savings of up to 15%, while automated reporting and analytical interfaces reduce employee workload (Neuro, 2024).

According to Singh et al. (2023:531–532), digital twin technology is used in hospitality businesses in four key benefit areas: indoor space management, online concierge services, personalized marketing, and operational efficiency. In interior space management, visitors are provided with in-facility navigation and virtual tours via mobile applications; in online concierge services, guests can control lighting, temperature, and room services in a personalized manner. In terms of personalized marketing, management can create targeted campaigns based on consumer behavior; in terms of operational efficiency, digital twins optimize energy, personnel, and space usage, thereby reducing costs. Furthermore, digital twins are noted to make significant contributions to sustainability. Yuce (2023:461) emphasizes that DT technology plays a strategic role in helping hospitality businesses reduce their carbon footprint, prevent resource waste, and achieve long-term sustainability goals. In this regard, DT is considered not only a management tool but also a comprehensive innovation ecosystem that supports environmental, economic, and social sustainability (Chan et al., 2025:5).

Looking at industry applications, it is seen that Marriott and other stakeholders have integrated digital twin technology into their operational processes through smart hotel designs (Singh et al., 2023:529). Digital transformation investments undertaken by large hotel chains such as Marriott have resulted in revenue increases of up to 38%, significantly accelerated operational processes, and created notable improvements in service quality. This transformation can be taken even further with digital twin integration, as DT enables managers to pre-assess risks in decision support systems, simulate alternative scenarios, and conduct data-driven strategic planning. Similarly, KONE's digital twin applications in building management have reduced maintenance costs by optimizing user mobility, while increasing system efficiency and service quality (Simio, 2019). Such examples demonstrate that digital twins in the hospitality sector can be considered not only an operational innovation but also a strategic competitive advantage tool.

In conclusion, digital twin technology is not merely a digital innovation in the hospitality sector, but also a transformative tool in terms of competitive advantage, operational efficiency, and sustainability (Iranmanesh et al., 2022:1; Yuce, 2023:461). Thanks to real-time data analytics, artificial intelligence, and virtual simulation integration, hotel businesses are achieving significant gains in energy management, guest experience, and resource planning, thereby laying the foundations for the future of smart and sustainable hospitality.

4. Digital Twins and Visitor Experience

Today, visitor habits are undergoing a fundamental shift, increasingly moving towards consumption in the digital sphere; tourists worldwide indicate that it is easier to interact with destinations through online channels (Barrera & Shah, 2023:1). In this context, digital twin (DT) technology enables the creation of realistic, immersive, and interactive tourism experiences by establishing a high-fidelity data connection between physical and digital environments (de Almeida & Boavida-Portugal, 2025:4). Through AR-supported recommendations and interactive itineraries, DT enriches the tourist experience virtually and offers personalized activities (de Almeida & Boavida-Portugal, 2025:9). Digital twins provide insights into which experiences offer the most value by tracking the duration of tourist visits; they recommend interesting places and activities based on visitors' interests, provide detailed information about city amenities, and can develop personalized recommendations for restaurants and hotels (Karaca & Önem, 2023:161). As seen in examples such as the Great Wall of China, Longmen Grottoes, and Seattle, digital twin models integrated into metaverse tourism enable tourists to explore and experience destinations interactively in digital environments (Deng et al., 2024:1077). These systems analyze visitor data to develop route recommendations, optimize visitor flow, and provide strategic support for destination management (Karaca & Önem, 2023:161). Furthermore, panoramic digital twin models, which enable the comprehensive analysis of spatial, emotional, and behavioral data, allow for a multidimensional assessment of the tourist experience (Gong et al., 2025:15). For example, digitally redesigned city centers in Austria can be virtually explored in the metaverse environment, which increases visitor engagement and strengthens the likelihood of revisiting the destination (Gallist & Hagler, 2023:568). Finally, digital twins integrate data obtained from GPS, social media feeds, and environmental sensors to deeply analyze tourist behavior, revealing the effects of air quality or events on travel preferences, thereby contributing to data-driven strategic decision-making in destination planning (Aghaabbasi & Sabri, 2025:6).

4. Challenges and Limitations of Digital Twin Applications in Tourism

There are still numerous structural, technical, and managerial challenges that prevent the full implementation of digital twins in tourism (Shahat et al., 2021:12; Aghaabbasi & Sabri, 2025:10). One of the most significant problems is the large size, complexity, and heterogeneous nature of tourism data. Data collection and processing require high levels of computing power and interoperability between different data sets, while the lack of standard data models and design schemas complicates system integration (Shahat et al., 2021:12).

High costs are another significant barrier. Developing high-resolution 3D models, integrating IoT sensor networks, and maintaining cloud infrastructure are particularly costly for developing

destinations (Bennett & Foster, 2025:158). Furthermore, the need for specialized personnel in data science, artificial intelligence, and smart planning further increases these costs (Tzachor et al., 2023:5). For example, the development cost of Singapore's digital twin project is estimated to be approximately $73 million (Bennett & Foster, 2025:158; Botín-Sanabria et al., 2022:20).Dijital ikizlerin karmaşık yapısı, şeffaflık ve güven sorunlarını da beraberinde getirmektedir. Çok katmanlı veri girişleri ve karmaşık algoritmalar nedeniyle paydaşlar veya halk, karar alma sürecini anlamakta güçlük çekebilmekte ve bu durum yönetişim güvenini zedeleyebilmektedir (Aghaabbasi & Sabri, 2025:10). Yetersiz veya eksik veri, dijital ikizlerin tahmin ve planlama doğruluğunu azaltmakta; modelin gerçek durumu temsil etme kapasitesini sınırlamaktadır (Shahat vd., 2021:12). Yine farklı sistem ve sektörlerdeki veri formatlarının ve standartlarının çeşitliliği, birden fazla kaynaktan gelen bilgilerin tutarlı bir şekilde entegre edilmesini zorlaştırmaktadır (Turcanu vd., 2024:757). Gerçek zamanlı doğruluk gerektiren sistemlerde, çoklu kaynaklardan gelen veri belirsizliklerinin yönetimi kritik öneme sahiptir; aksi hâlde bu durum modelleme sapmalarına yol açabilir (Aghaabbasi & Sabri, 2025:11).

Another important constraint is data security and privacy issues. Real-time data collection via mobile devices, facial recognition systems, or behavior tracking applications raises ethical issues in terms of consent, transparency, and oversight (Bennett & Foster, 2025:158; Shahat et al., 2021:12). Furthermore, the integration of multiple digital twins increases security vulnerabilities and cyber threat risks (Turcanu et al., 2024:756; Botín-Sanabria et al., 2022:20). From a technological perspective, faster and more reliable communication infrastructures, such as 5G, are needed for real-time data synchronization and operational efficiency (Botín-Sanabria et al., 2022:20). However, weak internet infrastructure or fragmented digital ecosystems can reduce the effectiveness of digital twins. Furthermore, stakeholder resistance is also a factor slowing down implementation in regions where planning processes are traditionally centralized or lack transparency. Therefore, for digital twin technologies to be adopted sustainably in tourism, robust governance frameworks that comply with privacy laws, protect user rights, and regulate data management must be established (Bennett & Foster, 2025:159).

5. Conclusion

Overall, digital twin technology has become a strategic transformation tool that contributes to sustainability, efficiency, and innovation goals in many areas, from manufacturing to the service sector, by enabling the integration of the physical and virtual worlds. This study has addressed the growing importance and potential of digital twin (DT) technology in the tourism sector within a conceptual framework. The findings show that digital twins offer significant opportunities in terms of the sustainable management of tourism destinations, the personalization of visitor experiences, and the improvement of the operational efficiency of tourism businesses. Integrated with the smart tourism approach, digital twins accelerate the digital transformation of the tourism sector by supporting data-driven decision-making processes. In the accommodation sector, digital twins are not only a technological innovation but also stand out as a transformative tool in terms of competitive advantage, operational efficiency, and sustainability. Real-time data analytics, artificial intelligence, and virtual simulation integration enable hotel businesses to achieve significant gains in energy management, guest experience, and resource planning. Similarly, digital twin technology has transformative potential in terms of cultural heritage preservation, the digital transformation of museums, and the sustainable development of cultural tourism. Highly accurate virtual copies of physical assets are becoming one of the fundamental components of the future digital cultural ecosystem in terms of preservation, knowledge transfer, accessibility, and experience enrichment. Furthermore, digital twins integrate data obtained from GPS, social media feeds, and environmental sensors to analyze tourist behavior, revealing the effects of air quality or events on travel preferences, thereby strengthening data-driven decision-making processes in destination planning. At the destination level, digital twin applications intersect with the smart city vision in tourism, offering strong potential in terms of planning, infrastructure management, sustainability, and visitor experience. However, the widespread application of digital twins in tourism faces various limitations, such as high costs, data management challenges, security and privacy risks, and technical infrastructure deficiencies.

Therefore, future research should focus on developing standard data models, ethical frameworks, and sustainable investment strategies that will increase the applicability of digital twins in the context of tourism. In conclusion, digital twin technology is considered a strategic area of innovation in the digital transformation of tourism; it contributes to a smart, sustainable, and human-centered tourism vision in many areas, from destination planning to cultural heritage management, from accommodation businesses to visitor experience.

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Rhetoric-Based Reception Analysis of Public Service Announcements on Environmental Issues in Digital Public Sphere

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Abstract

Introduction: This study aims to evaluate the impact of public service announcements on environmental, social, and governance (ESG) issues in digital media.
Aim: The study examines both the rhetorical strategies and how viewers perceive these messages through user comments on social media regarding a selected public service announcement with an environmental theme. At the same time, a public service announcement with similar content is evaluated through comments on the social media accounts of civil society organizations and public institutions.
Method: Based on Stuart Hall's reception theory, interpretations are classified as dominant, negotiative, and oppositional readings; Rhetorical discourse is evaluated in the context of forensic, epidiectic and deliberative rhetoric. Analyses are conducted using content analysis methods in the MaxQda qualitative analysis program.
Findings: The findings reveal how the digital public sphere shapes ESG communication through both supportive and critical voices. User comments reveal that opposing interpretations are particularly concentrated around perceptions of distrust and inadequacy towards public institutions. In contrast, civil society-sourced posts feature more supportive and deliberative interpretations.
Conclusion : ESG communication examines not only the content of the message, but also the connection between how it is rhetoric and how it is received (reception). In measuring the impact of public service announcements, a recipient-centered analysis is proposed rather than a one-sided narrative.
Originality and value: The relationship established between the rhetorical strategies of ESG-themed public service announcements and the ways in which they are received by viewers through viewer comments constitutes the original and scientific contribution of this study.

Key words: digital public, public service announcement, environment, rhetorical analysis, reception, ESG
Jel Codes: S51, S56, S58

1. Introduction

Public communication refers to the distribution of a message to a group or audience using various tools or methods. The concept of public communication is two-dimensional. First, it has principles that guide communication practices aimed at promoting legitimacy by encouraging social participation, increasing government transparency and accountability, safeguarding rights, facilitating service delivery to citizens, and improving governance; The second is linked to institutional communication, which differs from political instrumentalization in that it prioritizes actions that support trust in institutions and the democratic system, despite its persuasive sources (Miola & Marquez, 2024: 21). In public communication, prioritizing and safeguarding the public interest is one of the fundamental characteristics of public relations work (Biber, 2007: 56). As one of the public and public relations communication tools, a public service announcement is a public communication tool prepared in line with issues related to events and developments that

concern society and whose publication is in the public interest. Public service announcements, which are short-term public communication products focused on public benefit and aimed at informing society and creating behavioral change, are used to raise social awareness. The purpose of public service announcements is the public good. Achieving the public good in concrete terms is possible through the promotion of ideas and by creating behavioral change in individuals (Bilgiç, 2016: 34).

In the digital age, public communication is undergoing a significant transformation with the adoption of participatory and interactive approaches; while traditional public communication was based on a one-way flow of information, digital tools enable citizens to become active participants rather than mere recipients (Berberoğlu & Yınal, 2024: 21). In the age of digital communication, public service announcements have become one of the most effective tools for shaping public awareness and behavioral change in many areas such as social, environmental, and ethical issues. With digital advances, public service announcements play an intermediary role between institutions and the public, transforming policy-focused or value-based messages into accessible visual and emotional narratives. In today's world, where environmental, social, and governance (ESG) frameworks are gaining importance, public service announcements serve not only as a means of informing the public but also as a tool for building corporate trust and reputation. With its interactive and participatory structure, user comments, reactions, and discussions in the digital public sphere make these processes visible. However, the impact of public service announcements cannot be fully understood by analyzing their content alone; it is also necessary to examine how they are interpreted and received by viewers in the digital environment. Aristotle believes that focusing on listeners is extremely important in communication exchanges (Johnston et al., 2016: 13). Stuart Hall's Reception Theory provides a critical framework for understanding this dynamic process. Hall argues that viewers are not passive recipients of meaning, but rather actively interpret messages within their own social, cultural, and ideological contexts. According to this model, media messages can be interpreted in three ways: dominant, negotiated, and oppositional readings. In the context of public service announcements, this means that even well-intentioned environmental messages may be met with skepticism or resistance due to a lack of trust in the sender. This diversity demonstrates that public service announcements should be regarded not only as tools of persuasion but also as interactive spaces where meaning is jointly produced by the sender and the receiver. Aristotle's rhetorical framework, which completes the theory of reception, provides a theoretical foundation for understanding persuasive communication. Rhetorical approaches, considered an art of persuasion, help to examine social and political discourse. Rhetorical discourse, divided into three main types—forensic, epideictic, and deliberative—aims to clarify its contribution by examining the unique, interpretive attention directed toward public speaking. In this context, this study aims to analyze the rhetorical structure of comments made on public service announcements and audience reception. The environmental public service announcement published on social media with similar content is being evaluated based on comments on the corporate Instagram accounts of the non-governmental organization and public institution. The study evaluated comments made on a public service announcement shared by the Ministry of Environment and Urbanization's official Instagram account in 2022 under the hashtag #ortakevimiz as part of Environment Week, and comments made on a public service announcement shared by the TEMA Foundation's official Instagram account under the hashtag #farkındamıyız. As a result, TEMA Foundation's public service announcement is seen as an example of an epidiectic/dominant reading relationship, while the ministry's public service announcement is seen as an example of a forensic/oppositional reading relationship. It is also emphasized that a relationship can be established between rhetorical structure and reception. Public service announcements should be evaluated not only in terms of content but also in terms of communication strategy, rhetorical structure, and the form of interaction with the target audience. The necessity of analyzing digital feedback for the redesign of spots is considered important. The intersection between rhetoric and reception demonstrates that the success of public service announcement communication depends not only on the content of the message but also on how it is conveyed and how it is received. At the same time, the sender's corporate

identity is interpreted as a factor that determines the viewer's meaning-making process.

2. Literature Review

The literature review consists of four sections. The first section explains the concept of public service announcements and their place and importance in public communication. This concept explains the contribution that public service broadcasting makes to sustainability. The second section addresses the rhetorical discourse that enables public service announcements to be presented effectively. Rhetorical discourse refers to powerful forms of expression used to convey a message. In the third chapter, reception theory, which emphasizes that each individual interprets the same message differently, is explained through hegemonic, deliberative, and oppositional reading forms. In the fourth chapter, the reception of public service announcements in digital public spheres is discussed in a rhetorical context.

2.1. Public service announcement (PSA's)

According to the RTÜK guidelines, a public service announcement is defined as "informative and educational films, audio recordings, and subtitles prepared or commissioned by public institutions and organizations, as well as civil society organizations such as associations and foundations, and deemed to be in the public interest by the Supreme Council for broadcasting" (RTÜK, 2011). Public service announcements are a form of advertising prepared in line with topics related to events and developments that concern society and whose publication is in the public interest (Sezer & Sert, 2014: 11). Public service announcements are seen as public relations tools used to broadcast announcements free of charge (Heath, 2005). Public service announcements are strategic communication tools developed to raise social awareness, bring about behavioral change, and support the public good. Public service announcements (PSAs) are a widely used form of communication to reach target audiences via radio and television (Peltekoğlu, 2004: 224). Public service announcements are a form of communication similar to advertisements that are published in the media without purchasing space or time (Wanda, 2010: 580); they are usually less than a minute long and aim to reach the widest possible audience in the shortest possible time (Borzakovski & Poussaint, 1999: 81). These advertisements/announcements are used in mass media and are non-commercial, targeting specific audiences and designed to inform them about specific topics or to encourage certain behaviors (Bator & Cialdini, 2000: 527).

Today, informational publications are produced by public or civil society organizations to raise social awareness on certain issues. The aim is for these organizations to draw public attention to important issues by conducting activities aimed solely at solving social problems and providing information in the public interest. These services not only increase awareness and credibility for institutions, but are also important informational activities for those who will benefit from them. On the other hand, institutions must provide more services to the public. Some of these services are aimed at providing information about all kinds of potential problems that the community may encounter. Thus, behavioral change and awareness-raising are aimed for with the participation of the public. The aim of this informational function is to explain social issues to the public, present solutions, and identify opinions and thoughts on the subject in order to mitigate the negative effects of the identified problems. In this context, this study focuses on the function of public service announcements in today's most effective communication tools. It aims to bring about positive social change only in publications intended for the target audience and for the benefit of society at large, with the goal of influencing social behavior (Mohesh, 2007: 233). These broadcasts, seen in mass media as public service announcements, aim to persuade and change attitudes through the communication established between the individual and the subject matter. All these efforts are designed to influence and support public behavior, in addition to raising awareness, changing beliefs and attitudes, or serving educational purposes (Kotler & Lee, 2013: 113). Public service announcements published with the aim of raising the level of knowledge on these issues in society are based on creating a positive impact on society rather than commercial gain, encouraging individuals to develop positive behaviors. These socially-focused educational and communication efforts aim to be effective in raising awareness and

changing attitudes among the public (Eser & Özdoğan, 2006: 3). Accordingly, in order for public service announcements to influence the target audience's attitudes and intentions as well as their level of knowledge, persuasive elements must be structured appropriately. How audiences read messages, what emotional responses they give, and how they interpret the message within the corporate context are among the key indicators that determine the success of public communication. Public service announcements are communication tools that serve the public interest in contemporary societies and are active components of social meaning production. The success of public service announcements should be measured not by what is said, but by how it is said and how it is understood by the audience. The importance of public service announcements lies beyond the messages they present, but rather in their contribution as products of social meaning production. Public service announcements serve the purpose of raising awareness by influencing individuals on both rational and emotional levels, particularly on public issues such as health, environment, security and social equality. This function aims to enable individuals to acquire knowledge and act with a sense of social responsibility. In today's digital society, the importance of public service announcements has increased even more. Public communication, which was based on one-way information transfer in the traditional media era, has now turned into an interactive and feedback-based process through social media. This transformation has enabled public service announcements to become dialogic communication platforms that produce meaning together with the audience as well as delivering messages.

2.2. Rhetorical discourse

Aristotle's Rhetoric stands as one of the most comprehensive classical sources explaining the nature of persuasive communication. Aristotle defines rhetoric as "the faculty of observing in any given case the available means of persuasion." This definition is directly related to the primary function of public service announcements (PSAs), which are communicative texts designed to influence, persuade, and mobilize individuals toward certain attitudes for the sake of public benefit. Accordingly, PSAs, in harmony with Aristotle's conception of rhetoric, integrate cognitive, emotional, and ethical forms of persuasion.

According to Aristotle, rhetoric is based on three distinct types of discourse: forensic (judicial), epideictic (praise and value-oriented), and deliberative (advisory and future-oriented). Each rhetorical type differs in its temporal orientation (past, present, future), purpose (to judge, to praise, to advise), and target audience (Aristotle, 2012, p. 44). Public service announcements can thus be considered a modern form of communication that merges these three rhetorical modes.

Forensic discourse compels individuals to act or refrain from acting. This type of rhetoric is commonly employed by speakers in assemblies, consultants, and courtroom advocates. The act of defending or attacking an individual exemplifies this form of rhetoric (Aristotle, 2012, p. 44). Also known as judicial rhetoric, this discourse is utilized in legal contexts and is oriented toward the past. It is employed in the courtroom to accuse or defend someone for actions that occurred previously (Çörekçioğlu, 2009, p. 168). This rhetorical type involves a judgmental mode of expression and primarily focuses on past events.

According to Aristotle, the purpose of this discourse is "accusation or defense" (Aristotle, 2012). The rhetorical process is grounded in an effort to prove whether an action was just or unjust. Consequently, forensic rhetoric revolves around the concepts of justice, law, and truth. Historically, this type of rhetoric has played a pivotal role in the development of the legal system, forming the foundation of modern judicial discourse. It is closely associated with reasoning (logos) and the presentation of evidence. As Garver (2009) argues, forensic discourse not only analyzes the causes of past actions within a legal framework but also delineates the boundaries of the collective understanding of justice.

Epideictic rhetoric is concerned with the present, and its discourse revolves around matters that exist or are recognized at that particular moment. This type of rhetoric is employed to praise an individual for their actions or accomplishments. Its primary aim is to highlight and affirm the qualities and attributes that make a person or an act admirable. According to Aristotle, the

purpose of epideictic rhetoric is to celebrate or condemn a person, an action, or a value. Funeral orations, award ceremonies, and national commemorative speeches are typical examples of this rhetorical mode. As Hauser (1999) notes, epideictic discourse serves to reinforce a community's shared values and strengthen collective identity. In contemporary interpretations, epideictic rhetoric is understood not merely as a ceremonial form of communication, but as a social practice that constructs public morality (Balot, 2013). Through this function, it enables communities to reaffirm ethical norms and reproduce cultural cohesion, transforming the act of praise into a means of sustaining the moral fabric of the public sphere.

Deliberative rhetoric, on the other hand, focuses on future-oriented discourse aimed at communicating support or opposition to a particular action or policy by articulating its potential consequences. Through this rhetorical mode, the public participates in making decisions concerning its own future (Çörekçioğlu, 2009, p. 168). The primary goal is to persuade or dissuade the audience from taking a specific course of action. Aristotle defines the subject matter of this rhetorical type in terms of utility and harm, which makes deliberative rhetoric central to political and public decision-making processes. In modern scholarship, deliberative rhetoric has been associated with democratic participation, deliberative politics, and ethical decision-making. Jörke (2014) particularly argues that Aristotle's conception of deliberative rhetoric provides an epistemological foundation for contemporary theories of deliberative democracy, as it balances persuasion with rational debate. This rhetorical form thus underpins the communicative practices through which citizens negotiate shared interests and construct legitimate political consensus.

It remains a foundational framework for understanding the temporal orientation (past–present–future), purpose (justice–value–utility), and context (court–ceremony–assembly) of discourse, offering critical insight into the diverse strategies of persuasion that operate across legal, ethical, and political communication domains.

2.3. Reception theory

Satuart Hall makes a significant contribution to cultural studies by reconceiving the communication process as a process of encoding and subsequent reception of media texts, rather than a simple source-message-receiver cycle. He argues that meaning is not fixed; it is encoded during production and can then be decoded by the receiver in various ways. This approach positions the viewer/reader as an active meaning-maker rather than a passive receiver.

> "Traditionally, mass-communications research has conceptualized the process of communication in terms of a circulation circuit or loop. … It is also possible (and useful) to think of this process in terms of a structure produced and sustained through the articulation of linked but distinctive moments – production, circulation, distribution/consumption, reproduction." (Hall, 1980 [1973]: 128).

Hall's theory encompasses three key stages:

Encoding: During the media production process, a message is produced within a framework of specific meanings or values. This stage is influenced by social ideologies, production relations, and media devices. Hall states that at this stage, the media text emerges as a carrier of meaning:

> "…the 'object' of these practices is meanings and messages in the form of sign-vehicles of a specific kind organized … through the operation of codes within the syntagmatic chain of a discourse." (Hall, 1980 [1973]: 128).

Distribution: The encoded text enters circulation in the media. At this stage, social and technical mechanisms come into play to ensure the meaning carrier reaches the receiver from production. Hall describes this process as "production, circulation, distribution/consumption, and reproduction."

Decoding: The receiver analyzes the text within its own social, cultural, and symbolic framework. At this stage, Hall suggests three reading positions:

Hegemonic/dominant reading: The receiver receives the encoder's preferred meaning of the message as is.

Negotiatory reading: The receiver accepts some of the encoder's preferred meaning, rejects or transforms others.

Oppositional reading: The receiver analyzes the message from a purely critical perspective; it produces a meaning outside the encoder's preferred framework.

> "The communicator encodes meanings into the messages, and the audiences may make three types of readings of encoded messages, namely preferred reading, negotiated reading, and oppositional reading." (Hall, 1980: 128-138)

The key contributions of Hall's theory are as follows: It moves media communication beyond a simple "message sent, receiver received" approach and instead portrays it as a process embedded with social and cultural codes. It positions the viewer/reader as an active, meaning-producing subject; that is, media consumption is not a one-way process but an interactive one. It establishes a connection between ideology and power relations and media meaning: hegemonic forces are active in encoding processes, but these hegemonic meanings do not necessarily guarantee them during the reception phase. The fundamental importance of Hall's model is that it demonstrates that meaning is not fixed and that communication is a field of ideological struggle.

This approach forms the theoretical basis of the "active audience model" within cultural studies (Morley, 1992, p. 85). Contemporary research emphasizes the transformative impact of Hall's reception model on understanding media audiences. For example, Liebes and Katz (1990) empirically supported Hall's model by demonstrating how the television series Dallas is analyzed differently across cultures. Fiske (2003: 234) emphasizes the potential of popular culture to challenge ideology through resistive reading practices.

2.4. Digital public sphere

It is widely accepted that digital media environments have transformed social communication (the components of messages, how they reach the audience, and how they are received). This can be analyzed not only in speech and text, but also in today's digital communication environments, especially in social media commentary. This can be developed as a communicative feature of rhetoric. For example, Jürgen Habermas's theory of the public sphere, in reconceptualizing the digital age, emphasizes that the coding of stored media messages and their reception by audiences are subject to new rhetorical dynamics (Dahlberg, 2001). Public service announcements, especially when shared on digital platforms, can be transformed not only into pieces of information but also into rhetorical tools that exhibit values, norms, and behaviors. This demonstrates that digital public service announcements are subject to the audience's cultural and social construct of meaning, as well as their ability to convey messages (Altay, 2025).

In the context of rhetorically based reception, viewers can analyze a public service announcement from the following perspectives:

The encoded form of the message: The images, narrative form, audiovisual order, values, and ideological orientations contained in the announcement.

Viewer decoding/reception: The individual viewing the announcement analyzes the message through their own social identity, media experience, and linguistic-cultural framework; at this point, three reading positions (hegemonic, deliberative, and oppositional) can come into play. This was classically proposed by Stuart Hall in his encoding/reception theory.

The new rhetorical context of the digital environment: Characteristics such as digital platform algorithms, the active-passive nature of the audience, sharing and commenting opportunities, short formats, and attention spans influence the rhetorical strategies and reception of public service announcements. For example, research shows that when social media influencers are used in digital public service announcements, the audience's reception of the message differs

(Mo and Zhou, 2024). This study reveals that the chosen message carrier in the announcement's encoding alters the rhetorical power and the audience's reception positions. Consequently, public service announcements broadcast in the digital public sphere not only convey messages at the rhetorical level; they also interact with the audience through encoding/reception processes, reproduce values, and shape meaning and behavioral orientations in the audience.

3. Materials and Method

This study aims to analyze how viewers interpret two public service announcements broadcast in the digital public sphere. The research was conducted using a qualitative research approach, drawing on Stuart Hall's theory of reception and Aristotle's classification of rhetorical discourse. The research population consists of public service announcements broadcast in Turkey on digital platforms (Instagram). The sample was limited to two public service announcements selected through purposive sampling. In this research, a total of 232 comments were first evaluated on a public service announcement shared with the hashtag #ortakevimiz (our common house) on the Ministry of Environment and Urbanization's official Instagram account as part of Environment Week 2022. Second, a total of 170 comments were evaluated on a public service announcement about environmental protection shared with the hashtag #farkındamıyız (our awareness) on the TEMA Foundation's official Instagram account. Duplicate comments were excluded from the analysis. The data were systematically examined using qualitative content analysis. The coding process was conducted using MAXQDA 2020 software. The analysis was conducted at two main levels:

Rhetorical Level Analysis: PSA's texts and visual narrative structures were coded using Aristotle's forensic, deliberative, and epideictic discourse types. Sample codes for rhetorical analysis are as follows:

Forensic rhetoric: "This campaign will be useless unless government institutions ban plastic use."

Epideictic rhetoric: "Protecting nature is our duty; how beautifully explained."

Deliberative rhetoric: "The use of glass instead of plastic should be encouraged; otherwise, the outcome will remain the same."

Reception Level Analysis: Audience comments were categorized according to dominant, deliberate, and oppositional readings, in line with Hall's triple reception model.

Dominant reading: "It's a great pleasure to be involved in such a wonderful project, thank you."

Deliberative reading: "Please protect the places we don't see, as well as the places we do see."

Opposite reading: "You left no nature, everything is a concrete jungle."

These two levels were combined to analyze which rhetorical strategies were more closely associated with which types of reception. Reliability coding was conducted independently by two researchers. User comments were collected from publicly accessible digital platforms. The identities of the sharers were concealed, and only content analysis was conducted. The research was conducted in accordance with personal data protection principles.

4. Findings

This section presents the findings from the study's qualitative data analysis. During the coding process, concepts related to the rhetorical structure of the PSA's and the semantic patterns in viewer comments were first identified, and then a code cloud was created based on the frequency and intensity levels of these concepts. The code cloud visually reveals the most frequently occurring themes in viewer comments, demonstrating the concepts through which public service announcements are perceived in the digital environment.



Figure 1. Code cloud

In Figure 1, audience responses to the environmentally themed public service announcements from two different institutions differ in the context of reception analysis, based on dominant, deliberative, and oppositional readings. The results indicate that the public institution's communication was more judged and oppositional readings were conducted, which included trust issues. The abundance of negative comments and oppositional readings suggests rejection of the message, even questioning the intentions behind it. Deliberative readings are less common. There is a critical positioning of the public institution's public service announcement. The environmentally themed public service announcement shared by the civil society organization received more approval and support. The density of dominant readings indicates direct adoption of the message. Positive comments confirm that environmental issues are presented more credibly and sincerely by civil society organizations. Oppositional readings, on the other hand, are quite limited. CSO's are positioned as more credible on environmental issues.

In the context of Aristotle's rhetorical discourse, forensic discourse is dominant in the public service announcement shared by the public institution. The theme of demanding accountability is prominent in the comments. The rhetoric is defensive. Epidemic discourse is seen at a moderate level, while deliberative discourse is weaker. In the comments on the CSO's public service announcement, forensic discourse is secondary. Epidemic discourse is at a moderate level, and deliberative discourse is dominant. Positive and dominant discourse relates to a forward-looking, solution-oriented rhetoric.

Table 1. Distribution of comments made on PSA's

	CSOs		**Public Institution**	
Analysis types	**f**	**%**	**f**	**%**
Rhetoric types				
Forensic	10	5,88	97	41,81
Epidiectic	26	15,29	19	8,18
Deliberative	8	4,70	2	0,86
Other	126	74,11	114	49,13
Receipt types	**f**	**%**	**f**	**%**
Opposite	3	1,76	191	82,32
Hegemonic	165	97,05	22	9,48
Deliberative	-	-	18	7,75
Other	2	1,17	28	12,06

Table 1 shows the numerical values of comments on public service announcements. Comments on public service announcements by public institutions largely reveal a discourse of blame and

responsibility (forensic). This rate is lower for CSO's. Epidiectic discourse is more prevalent in CSO's, but less so in public institutions. Participation in the call and discourse of deliberative discourse, albeit limited, is observed in the CSO'S; this rate is almost nonexistent in the public service announcements by public institutions. Aside from rhetorical discourse, the "other" category is quite high in the posts shared on the CSO's public service announcements. These posts lack any rhetoric or expression and consist of positive visuals that support the content. The public service announcements by public institutions, on the other hand, consist of irrelevant messages and off-topic demands and requests. In conclusion, the table shows that the CSO's generates more emotion and awareness (epidectic), while the public institution is perceived as receiving more attention through demands for accountability, responsibility, and blame (forensic).

The table shows that the CSO's message received high acceptance and a dominant reading, while messages directed at public institutions were less positively received. It appears that the message shared by the public institution was partially accepted, but its implementation was criticized. Comments on the CSO's public service announcement were highly consistent with the message and discourse, while those on the public institution were largely interpreted in opposition. In environmental communication, the transmitter's identity can be interpreted as a determining factor in how the message is received. Accordingly, public institutions receive a more politicized perception, while CSO's gain legitimacy based on sincerity and trust.



Figure 2. Code relationships map

Figure 2 explains the relationship code map in the context of reception analysis and rhetorical discourse types. This distribution demonstrates that the more forensic the rhetoric, the more

oppositional the reception, with negative comments concentrated in the lower right corner. The more deliberative the rhetoric, the more positive and dominant the reception. This discourse type is seen as closer to a neutral and deliberative reading. Epideictic discourse, on the other hand, occupies a more independent space. Comments regarding public institutions often contain disappointment, anger, and accusations ("given away," "sold out," "plundered," "cronies"). This indicates low trust in the public institution and a high demand for accountability. Epideictic (praise) is rarely seen; it is often expressed in an ironic form. In CSO's posts, comments mostly contain supportive comments, thanks, and calls for sharing; positive sentiment is expressed, emphasizing collective responsibility. This indicates that the CSO's has successfully represented trust and shared values.

Table 2. Comparison of rhetorical and reception features of PSAs

	Cso's	**Public institution**
Dominant rhetorical type	Epidiectic	Forensic
Dominant reception type	Dominant	Oppositional
Form of participation	Emotional, supportive	Critical, questioning, sarcastic
Level of trust	High	Low
Rhetorical effect	Emphasis on unity and shared values	Accountability and political criticism
Receptional feature	Shared environmental awareness	Politicized environmental discourse

Table 2 compares the reception styles and rhetorical characteristics of two public service announcements produced by a civil society organization and a public institution in the digital public sphere. The CSO's PSA's has an epideictic discourse structure. This discourse creates emotional closeness and a sense of shared values in the audience. Viewer comments also exhibited a dominant reception style, with emotional and supportive participation, but limited participation in terms of offering suggestions. This suggests that the CSO's PSA's fosters a high level of trust by highlighting shared values such as social unity and environmental awareness. In contrast, the dominant discourse in the public institution PSA's is forensic. This type of discourse was received in a contrasting way by viewers in the digital public sphere. Comments were dominated by questioning, sarcastic, and politically charged language. The engagement style was interpreted as more critical, and the level of trust was relatively low. In terms of rhetorical impact, the public service announcement evoked associations of political responsibility and accountability in viewers, reinforcing the discourse's politically critical nature. Overall, the picture suggests that while CSO's establish an emotional and value-based connection with the public, public institutions create a more political and accountability-focused forum for discussion. Therefore, in the digital public sphere, CSO's discourse generates a reception oriented toward social unity, while public institution discourse generates a reception oriented toward political inquiry.

5. Results, Limitations, and Future Directions

The primary objective of this research is to analyze the reception and rhetorical structures of environmentally themed public service announcements broadcast in the digital public sphere, revealing how the message's impact is influenced not only by the content but also by the social standing of the message-delivering actor. The findings indicate that two public service announcements featuring similar environmental themes—one produced by a non-governmental organization (CSO's), the other by a public institution—were received differently by audiences. This suggests that persuasive power in the digital public sphere depends on both the content of the environmental message and the social ethos of the message's source: the sender's credibility, intentions, and status.

The public service announcement prepared by the CSO's was constructed using an epideictic (praising and value-based) rhetoric. This discourse enabled the audience to establish an emotional unity around values aligned with environmental awareness. The predominance of

dominant (supportive) reception styles in audience comments indicates that the ethos of this announcement was perceived as trustworthy, well-intentioned, and focused on social benefit. Thus, the CSO's environmental communication strategy generated a high level of trust in the audience; the message evolved into a "we" discourse associated with environmental responsibility. This further confirms the aspect of epideictic rhetoric that strengthens the emphasis on unity, solidarity, and shared values in public participation.

In the public institution's spot, the dominant discourse is forensic (judgmental and accusatory). This discourse addressed environmental issues not as an actorless phenomenon but within the purview of a specific authority. This was received in a critical manner by viewers in the digital public sphere; political questioning, sarcastic, and distant attitudes toward the public institution became evident in the comments. This parallelism between rhetorical structure and reception demonstrates that the audience responds not only to the content but also to the message's creator's positioning. Because the public institution's discourse is interpreted as a reminder of responsibility rather than a means of raising awareness, a communication strategy that backfired in this context emerged.

Overall, the study demonstrates that a significant relationship can be established between rhetorical structure and reception. When Aristotle's rhetorical genres (epideictic, forensic, and deliberative) are considered together with Stuart Hall's reception model (dominant, deliberative, and oppositional reading), a strong interaction between the form of the message and its reception is evident. In this context, it is concluded that epideictic rhetoric is more likely to trigger dominant reading, while forensic rhetoric is more likely to trigger oppositional reading. This finding suggests that public communication in the digital public sphere should be considered a process of conveying information and negotiating meaning.

Furthermore, the study emphasizes that public service announcements should be redesigned in the future not only at the content level but also in terms of communication strategy, rhetorical structure, and interaction with the target audience. Systematic analysis of digital feedback (comments, likes, engagement rates) is an important tool for understanding the transformation of public institutions' relationships with the public. In this process, it is anticipated that collaborations between CSO's and public institutions can increase both their ethical and persuasive impact. Co-production will strengthen trust and elevate environmental communication from politicization to a shared responsibility.

Ultimately, the effectiveness of public service announcements in the digital age depends on the sender's social ethos, the rhetorical strategy employed, and the emotional connection established with the audience, as much as the content of the message itself. A dynamic process of negotiating meaning exists between the channel through which the message is delivered, the identity of the producer, and the positioning of the audience. Therefore, the success of environmentally themed public service announcements must be based on a holistic communication design that connects the ethical and aesthetic dimensions of rhetoric with reception practices.

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Determinants of Purchasing Second-Hand Products through Mobile Applications*

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Abstract

Introduction: The growth of second-hand shopping and the mobile market enabled consumers to buy and sell used products. Mobile applications not only provide consumers with a convenient way to trade second-hand items but also create opportunities for marketers to engage users.
Aim: This study examines the factors influencing second-hand product shopping via mobile applications among consumers residing in Türkiye and England.
Method: Data were collected via an online questionnaire from 399 participants, comprising 267 respondents from Türkiye and 132 from England. The data were analyzed using multiple linear regression analysis in SPSS to determine the factors affecting consumers' repurchase intentions in second-hand shopping through mobile applications.
Findings: The analysis of the Turkish data revealed that critical orientation, usefulness, trust, and assurance significantly influenced consumers' repurchase intentions in second-hand mobile shopping, while price orientation, bargaining power, ease of use, need to be unique, and nostalgia did not have a significant effect. In the English sample, critical orientation, ease of use, nostalgia, trust, and assurance significantly affected repurchase intention. In contrast, price orientation, bargaining power, usefulness, and need to be unique did not show significant effects.
Conclusion: Overall, the results indicate that while trust, assurance, and critical orientation are consistently significant factors across both countries, differences exist in the impact of usefulness, ease of use, and nostalgia between Türkiye and England. These findings highlight the varying consumer motivations in second-hand product shopping via mobile applications across different cultural contexts.
Originality and value: This study contributes to the literature on second-hand shopping behavior by examining and comparing the determinants of repurchase intention in mobile second-hand shopping applications among consumers in Türkiye and England. The findings provide valuable insights for app developers and marketers aiming to enhance user engagement and loyalty.

Key words: Mobile marketing, second-hand product shopping, repurchase intention, mobile apps
Jel Codes : M30, M31

1. Introduction

It has become inevitable for businesses to follow changing consumer preferences and strive to meet consumer needs accurately. In recent years, second-hand shopping has attracted significant consumer interest and has become a popular trend. According to ThredUp's Resale Report, the global second-hand product market reached 177 billion USD in 2022 and is projected to reach

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350 billion USD by 2027 (Kula Çakmak, 2023). This projection clearly highlights the growing importance of second-hand shopping.

As of 2023, there are 5.44 billion mobile users worldwide, corresponding to 68% of the global population (Kara, 2023). Alongside the rapid growth of the mobile market, factors such as greater speed, ease of access, reliability, protection of user privacy, and the ability to offer personalized experiences have made mobile applications increasingly preferable for consumers. According to Kizir and Bozbay (2021), six out of ten mobile shoppers use mobile applications to make purchases, while four use them to search for and compare products.

With the increasing popularity of second-hand shopping and the expansion of the mobile market, the buying and selling of second-hand products through mobile applications has also become widespread, offering potential opportunities from a marketing perspective. A recent literature review reveals that studies address the topic from different perspectives. For example, Özkaya and Kazançoğlu (2021) found that economic benefits stand out as the primary motivation for Generation Y in second-hand shopping, but concerns about personal data protection lead to cautious attitudes toward e-commerce platforms. Deniz (2020) observed that university students shop online for second-hand clothing considerably, exhibit relatively frugal consumption behaviors, engage in environmentally friendly consumption practices, and demonstrate a high tendency toward creative preferences. Bae, Choi, Gantumur, and Kim (2022) determined that perceptions of usefulness, ease of use, and enjoyment increase user satisfaction and consequently enhance the use of online second-hand resale platforms. Padmavathy, Swapana, and Paul (2019) proposed that economic, convenience, and ideological motivations are the three main motivational dimensions in online second-hand product shopping. Similarly, Altın Gümüşsoy, Kaya, and Ünal (2020), in their study on second-hand product shopping through the Letgo mobile application, found that perceived usefulness, subjective norms, compatibility, and ease of use affect the intention to use the application.

Even though there are studies on online second-hand product shopping, research focusing on mobile applications remains scarce. Furthermore, most of the existing studies include samples from a single country, and no research has been found that compares different countries. Therefore, the present study aims to contribute to this gap by identifying the motivations for second-hand product shopping via mobile applications and comparing samples from different countries. Since it was possible to collect data from England in addition to Türkiye, and given that second-hand mobile shopping applications are frequently used in both countries, this research was conducted with participants from these two contexts.

This study analyzed the identified factors using multiple linear regression with SPSS. Considering all the findings, it was determined that while there are overlapping factors between Türkiye and England, certain factors differ between the two countries. It is believed that the results of this research will not only provide theoretical contributions to the literature on second-hand product shopping and mobile marketing but also offer insights for marketers and businesses in this field trying to influence consumer behavior.

2. Literature Review

The literature review is organized into three sections, constituting the study's theoretical basis. The first section explains the concept of consumer behavior and repurchase intention. The second section covers the concept of mobile marketing and mobile shopping applications. Lastly, the third section is devoted to the second-hand product market and the factors that affect second-hand product shopping.

2.1. Consumer behavior and repurchase intention

Contemporary marketing aims to determine consumers' needs and wants, examine the reasons for their satisfaction or dissatisfaction with a product or service, and analyze their behaviors in the marketplace (Odabaşı, 1996, p.3). Consumer behavior includes not only the activities that occur prior to purchase but also the decision-making processes that follow (Martínez et al.,

2020). It is the process by which products, services, time, and ideas are decided upon, consumed, and distributed through decision-making (Dorokhova & Dorokhov, 2019). It also concerns how consumers use the products they purchase and their evaluations afterward (Schiffman & Kanuk, 1994).

Psychological, social, personal, and economic factors can influence purchasing behavior, and marketing efforts also have the power to shape such behavior (Altunışık, Özdemir, & Torlak, 2017). According to the theory of reasoned action, the intention to purchase a product or service is the most important determinant of purchasing behavior (Ajzen & Fishbein, 1977). Although purchase intention is not directly part of purchasing, it occurs just before the purchase decision step (Söylemez & Taşkın, 2015). It is used to predict consumers' actual buying behavior, making it highly significant for researchers (Yüksel, 2016).

Online purchase intention refers to consumers' intention to engage in purchasing behavior specifically in the online environment (Zarrad & Debabi, 2012). Online transactions include activities such as information retrieval, information transfer, and product purchasing, and businesses seeking to stimulate online purchasing need to explore how shopping orientations affect purchase intention (Ling, Chai, & Piew, 2010).

Repurchase intention is the dependent variable of this study. It is defined as the process in which consumers continue to purchase the same product or service based on their evaluations of a product or service they have previously experienced (Akçadağ, 2019). The research was conducted with consumers who had previously shopped for second-hand products through mobile applications, and it aims to identify the factors influencing their intention to continue purchasing using these applications.

2.2. Mobile marketing and mobile shopping applications

Human beings are inherently mobile, and therefore, the technologies and devices they use are also expected to be portable (Yamamoto, 2011). As of 2023, there are 5.44 billion mobile users worldwide (Kara, 2023). The large number of mobile users makes them attractive from a marketing perspective, making mobile marketing an unavoidable tool for reaching these consumers. Mobile marketing can be defined as practices that enable businesses to communicate and interact with their customers through any network or mobile device (Balan & Zegreanu, 2012). It uses wireless environments to provide users with time- and location-sensitive personalized information (Doleman, 2017). Thus, customers can access mobile marketing anytime and anywhere (Coelhoso, 2019).

Mobile shopping refers to an advanced mobile service that enables consumers to examine or purchase products and services at any time via a mobile device (Groß, 2015). The mobile shopping sector is rapidly developing, and consumers increasingly prefer mobile applications over web browsers (Yılmaz & Temizkan, 2018). Consumers download these applications to their phones, providing businesses a specific channel to remain connected with their customers (Seyhun & Kurtuldu, 2020). Mobile shopping applications allow consumers to examine every product in detail, compare items from different sellers, read reviews, track their orders, access rewards, and view saved coupons (Kizir & Bozbay, 2021). Given these features, mobile shopping applications are expected to influence purchase intention.

According to Medetoğlu (2020), the most widely used free mobile shopping applications in Türkiye are Hepsiburada, N11.com, Trendyol, Yemeksepeti, and AliExpress. These applications primarily focus on the sale of new products. The second-hand product market and the mobile applications that facilitate second-hand product shopping are discussed in the following section.

2.3. Second-hand product market and factors affecting second-hand shopping

A second-hand product is defined as a product that has been previously owned and used (Sihvonen & Turunen, 2016). Second-hand shopping can be described as a form of trade that enables the circulation and repeated use of products among consumers (Yamamoto, Aydın, &

Şen, 2021). The consumption of second-hand products first emerged and spread in the eighteenth and nineteenth centuries, experienced a decline in the twentieth century, and has regained popularity since the 2000s due to changing economic conditions, increased interest in sustainability, and the fashionability of second-hand clothing (Ferraro, Sands, & Brace-Govan, 2016).

Second-hand markets have a distinct appeal, offering consumers opportunities to find unusual products unavailable in new product markets (Roux & Guiot, 2008). While physical venues such as flea markets, car markets, and antique fairs traditionally served this purpose, the internet now enables selling nearly all types of second-hand products online. Online second-hand shopping allows consumers to interact with sellers and quickly meet their needs (Gezmişoğlu Şen & Telli, 2021). Websites that facilitate these transactions provide platforms where consumers can access thousands of product varieties, view detailed photos and descriptions, compare prices, and make quick purchases (Telli, Aydın, & Gezmişoğlu Şen, 2021).

Many factors influence consumers' second-hand shopping behavior. Chu and Liao (2007) found that consumers engage in second-hand shopping for reasons such as gaining profit, decluttering the house, protecting the environment, avoiding waste, socializing, feeling successful, and enjoyment. On the other hand, according to research conducted by Clausen, Blättel-Mink, Erdmann, and Henseling (2010) on eBay users, environmental concerns play only a minor role, while making the trade enjoyable, and practical and financial considerations were more prominent.

Studies focusing on students have also provided insights. Joung and Park-Poaps (2013) reported that economic and environmental concerns motivate second-hand product sales. Yan, Bae, and Xu (2015) found that students engage in second-hand shopping not only for economic reasons but also to feel unique and to create their own style.

Other studies highlight that the opportunity to find unique products at affordable prices (Cervellon, Carey, & Harms, 2012) and the possibility of bargaining (Petrescu & Bhnatli, 2013) are important factors influencing second-hand shopping. Turunen and Leipamaa-Leskinen (2015) emphasized that motivations for second-hand luxury shopping include making sustainable choices, catching good deals through bargaining, obtaining cherished items with sentimental value, investing in original products, and accessing unique pieces.

Recent studies have further expanded the literature. For example, Bae et al. (2022) showed that perceptions of usefulness, ease of use, and enjoyment increase satisfaction and enhance the use of resale platforms. Kurtuluş, Özkan, Akpınar, Gürşen, and Yaman (2021) examined the influence of second-hand shopping motivations in online platforms, finding significant effects of system opposition, economic motivation, nostalgic pleasure, and consumer cynicism on purchase intention. Telli and Gezmişoğlu Şen (2022) investigated whether unplanned buying behavior in online second-hand markets differs by demographics and found differences by marital status but not by gender, age, income, or education. Kölgelier (2022) examined second-hand clothing trading platforms in the textile/fashion sector from a sustainability perspective and found that these platforms facilitate the circulation of clothes among consumers, reduce production and consumption, and contribute to economic, ecological, and social sustainability.

Padmavathy et al. (2019) proposed three main motivational dimensions in online second-hand shopping:

- **Economic motivation** (price orientation, bargaining power, critical orientation),
- **Convenience motivation** (usefulness, ease of use), and
- **Ideological motivation** (need to be unique, nostalgia, trust, assurance).

This study adopts the variables suggested by Padmavathy et al. (2019) and tests them in the context of second-hand product shopping through mobile applications. Globally, second-hand shopping initiatives are growing even further with the spread of mobile applications (Hürriyet,

2017). Many mobile applications now support second-hand shopping. In Türkiye, popular applications include Dolap, Modacruz, Letgo, Zebramo, Gardrops, Bebecruz, Gittigidiyor, Sahibinden.com, Instagram, Sliprest, and Facebook. Since this study also included participants from England, commonly used applications there were added to the survey form, including Facebook Marketplace, Gumtree, Shpock, Freecycle, Nextdoor, Vinted, Depop, Rightmove, and Ooyyo.

3. Method

This section explains the research model, sample, data collection method, measurement instruments, and statistical analyses used in the study.

3.1. Research model and hypotheses

The aim of this study is to identify the factors influencing second-hand product shopping through mobile applications among consumers living in Türkiye and England. As mentioned in the conceptual framework, the literature includes studies on factors affecting both offline and online second-hand product shopping. However, no research has been found that explicitly addresses second-hand shopping via mobile applications and compares different countries in this context. To contribute to this gap in the literature, the research model in this study was developed based on the scale proposed by Padmavathy et al. (2019) for online second-hand product shopping (see Figure 1).

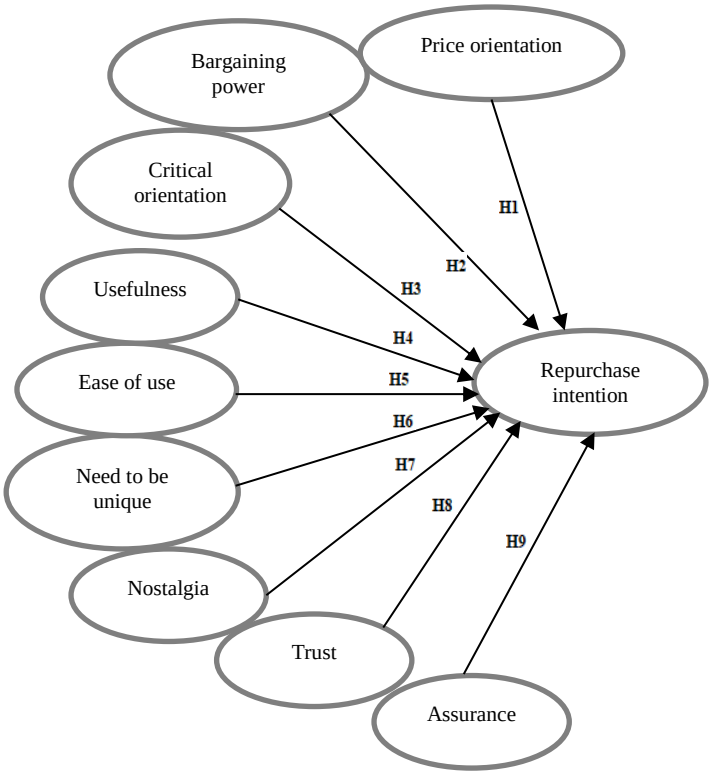


Figure 1. Research model

Based on the conceptual framework and research model, the following hypotheses were formulated:

- **H1:** Price orientation has a significant effect on consumers' repurchase intention in

second-hand product shopping through mobile applications.

- **H2:** Bargaining power has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.
- **H3:** Critical orientation has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.
- **H4:** Usefulness has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.
- **H5:** Ease of use has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.
- **H6:** Need to be unique has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.
- **H7:** Nostalgia has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.
- **H8:** Trust has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.
- **H9:** Assurance has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.

The factors included in the research model presented in Figure 1 can be defined as follows:

Price orientation refers to consumers' tendency to seek lower payments by examining price tags before making a purchase; bargaining power reflects consumers' desire to purchase a product at a lower price through negotiation; critical orientation indicates consumers' avoidance of traditional channels in order to buy branded products at cheaper prices; usefulness represents consumers' perception of using a particular system productively; ease of use refers to consumers' perception of using a specific technology effortlessly; need to be unique reflects consumers' tendency to search for rare and limited products through nontraditional second-hand platforms; nostalgia indicates consumers' inclination to acquire authentic products that remind them of past memories; trust refers to consumers' evaluation of a product or service based on its reliability and the fulfillment of promises; and assurance denotes consumers' assessment of safety in a given purchasing context in terms of security regulations, buying tips, verified sellers' contact information, and customer support.

3.2. Sample

The research population consists of consumers living in Türkiye and England who have previously engaged in second-hand product shopping through mobile applications. The reason for selecting consumers in Türkiye and England is that second-hand product shopping is common in both countries and the mobile shopping market is also well developed.

Due to the difficulty of reaching the sample randomly within the targeted timeframe, data were collected using the convenience sampling method between February 2, 2022, and May 24, 2022, through an online questionnaire distributed via Google Forms. Participants in Türkiye were reached through the WhatsApp application, while participants in England were reached through WhatsApp, specific Telegram groups, and certain active communities on Facebook.

As a result, a total of 399 valid questionnaires were obtained, 267 from Türkiye and 132 from England, and used in the analyses. Among the Turkish participants, 59.2% were female, 79.8% were single, and 56.6% held at least an undergraduate degree. Among the English participants, 78.0% were male, 60.6% were married, and 40.2% held at least an undergraduate degree.

3.3. Questionnaire design

The questions regarding the variables influencing consumers' shopping through mobile second-hand applications, namely price orientation, bargaining power, critical orientation, usefulness, ease of use, need to be unique, nostalgia, trust, assurance, and repurchase intention, were adapted from the scale developed by Padmavathy et al. (2019). The scale items were prepared using a 5-point Likert scale: 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), and 5 (Strongly Agree). Questions for collecting demographic information and the shopping habits of the participants were also included. Separate questionnaires in Turkish and English were used for participants in the two countries. Ethical approval for the questionnaires was obtained from Afyon Kocatepe University Social and Human Sciences Scientific Research and Publication Ethics Committee (Decision No. 2022/36).

4. Findings

To test the hypotheses in the research model, multiple linear regression analysis was conducted using SPSS 25.0.

Among participants in Türkiye, the most frequently used mobile application for purchasing second-hand products was Letgo, with nearly one-quarter (24.6%) of participants using it. The most commonly purchased product category was clothing and accessories (21.3%). In the English sample, the leading mobile application was Facebook Marketplace, used by 39.0% of participants, with electronics emerging as the top product category (23.0%).

Furthermore, the preferred payment method in Türkiye was credit card payment (62.5%), whereas participants in England most frequently opted for cash on delivery (49.2%). Regarding delivery preferences, the majority of participants in Türkiye preferred cargo delivery (73.4%), while the majority in England preferred to receive products in person (68.9%).

4.1. Exploratory factor analysis

Since the scale items were adapted for mobile applications and translated into Turkish for the participants in Türkiye, an exploratory factor analysis (EFA) was conducted to examine the scale structure and ensure content validity. The EFA was performed on the full dataset, including both Turkish and English participants, using 399 valid questionnaires in SPSS. According to the results of the KMO and Bartlett's tests, the data were suitable for factor analysis (KMO = 0.968; Bartlett's $\chi^2 = 18{,}651.989$, df = 703, $p < 0.000$).

Field (2009) suggested that when factors are likely to be correlated in exploratory factor analysis, an oblique rotation method such as direct oblimin may be used. In the present study, since correlations were observed among the factors (see Table 1), the direct oblimin rotation method was applied. As a result of the analysis, the scale items loaded onto ten factors, as hypothesized. These ten factors accounted for approximately 86% of the total variance. To assess scale reliability, Cronbach's alpha coefficients were calculated for all factors, following the recommendation of Nunnally and Bernstein (1994), and all coefficients were found to exceed 0.70, confirming the reliability of the scales (see Table 1).

According to Fornell and Larcker (1981), convergent validity of a scale assumes that items belonging to a factor load on a single factor, with all factor loadings greater than 0.50. Since all items loaded on their respective factors and factor loadings exceeded 0.50, convergent validity was established. To ensure discriminant validity, factors should be distinct, and correlations between factors should be below 0.70 (Gaskin, 2016). The analysis indicated that each scale item loaded highest on a single factor and that inter-factor correlations were below 0.70, demonstrating discriminant validity (see Table 1).

Table 1.Exploratory factor analysis statistics, Cronbach's alpha values, and factor corralations

Factor	Item	Mean	SD	Factor Load	α	PO	BP	CO	US	EU	NU	NO	TR	AS	RPI
PO	PO1	3.769	1.224	0.901	0.960	1.000	0.346	0.433	0.653	0.538	0.262	0.646	0.548	0.564	0.623
	PO2	3.724	1.287	0.888											
	PO3	3.889	1.268	0.902											
	PO4	3.771	1.270	0.868											
BP	BP1	3.501	1.267	0.898	0.947	0.346	1.000	0.446	0.416	0.370	0.656	0.358	0.434	0.427	0.114
	BP2	3.599	1.237	0.917											
	BP3	3.556	1.230	0.898											
CO	CO1	3.749	1.272	0.894	0.959	0.433	0.446	1.000	0.519	0.433	0.378	0.374	0.592	0.388	0.248
	CO2	3.809	1.217	0.907											
	CO3	3.584	1.278	0.889											
	CO4	3.614	1.252	0.899											
US	US1	3.403	1.192	0.810	0.926	0.653	0.416	0.519	1.000	0.511	0.337	0.550	0.637	0.492	0.427
	US2	3.671	1.264	0.864											
	US3	3.679	1.259	0.853											
	US4	3.416	1.306	0.822											
EU	EU1	3.501	1.249	0.833	0.913	0.538	0.370	0.433	0.511	1.000	0.285	0.485	0.428	0.524	0.376
	EU2	3.634	1.232	0.876											
	EU3	3.533	1.229	0.857											
	EU4	3.203	1.292	0.737											
NU	NU1	3.105	1.249	0.776	0.931	0.262	0.656	0.378	0.337	0.285	1.000	0.271	0.395	0.239	0.032
	NU2	2.761	1.303	0.888											
	NU3	2.849	1.329	0.904											
	NU4	2.711	1.354	0.882											
NO	NO1	2.802	1.275	0.838	0.928	0.646	0.358	0.374	0.550	0.485	0.271	1.000	0.458	0.548	0.497
	NO2	2.709	1.278	0.911											
	NO3	2.694	1.343	0.892											
TR	TR1	3.238	1.139	0.889	0.930	0.548	0.434	0.592	0.637	0.428	0.395	0.458	1.000	0.392	0.367
	TR2	3.388	1.119	0.894											
	TR3	3.280	1.082	0.872											
AS	AS1	3.057	1.245	0.765	0.912	0.564	0.427	0.388	0.492	0.524	0.239	0.548	0.392	1.000	0.393
	AS2	3.388	1.240	0.825											
	AS3	3.107	1.262	0.866											
	AS4	3.335	1.241	0.843											
RPI	RPI1	3.709	1.221	0.844	0.956	0.623	0.114	0.248	0.427	0.376	0.032	0.497	0.367	0.393	1.000
	RPI2	3.566	1.196	0.887											
	RPI3	3.388	1.178	0.884											
	RPI4	3.476	1.187	0.881											
	RPI5	3.594	1.190	0.843											

SD: Standard deviation, α: Cronbach's Alpha, PO: Price orientation, BP: Bargaining power, CO: Critical orientation, US: Usefulness, EU: Ease of use, NU: Need to be unique, NO: Nostalgia, TR: Trust, AS: Assurance, RPI: Repurchase intention

4.2. Multiple linear regression analysis and hypothesis testing

Multiple linear regression analyses were conducted separately for the Turkish and English datasets to identify the factors that significantly influence repurchase intention. According to the results of the Kolmogorov-Smirnov normality test, the data from both countries were not normally distributed. However, George and Mallery (2010) suggest that if skewness and kurtosis values fall between -2 and +2, the data can be considered approximately normally distributed. Examining the descriptive statistics of the variables, the data from both countries were assumed to be normally distributed, and regression analyses were subsequently performed. The results of the Kolmogorov-Smirnov normality tests, along with the descriptive statistics for the dependent and independent variables, are presented in Table 2.

Table 2. Skewness and kurtosis values, and normality test results

	Skewness and Kurtosis Values				Kolmogorov-Smirnov Test	
	TUR Skewness	**TUR Kurtosis**	**ING Skewness**	**ING Kurtosis**	**TUR Significance**	**ING Significance**
PO_{mean}	-1.175	0.386	-1.245	0.633	0.000	0.000
BP_{mean}	-0.783	-0.496	-0.756	-0.171	0.000	0.000
CO_{mean}	-0.998	-0.014	-1.035	0.174	0.000	0.000
US_{mean}	-1.029	0.079	-0.487	-0.588	0.000	0.000
EU_{mean}	-0.883	-0.131	-0.635	-0.290	0.000	0.000
NU_{mean}	0.010	-1.182	0.333	-0.636	0.000	0.000
NO_{mean}	0.188	-1.167	0.179	-0.946	0.000	0.000
TR_{mean}	-0.667	-0.667	-0.646	-0.190	0.000	0.000
AS_{mean}	-0.580	-0.594	-0.198	-0.524	0.000	0.000
RPI_{mean}	-0.924	0.155	-0.783	-0.070	0.000	0.000

PO: Price orientation, BP: Bargaining power, CO: Critical orientation, US: Usefulness, EU: Ease of use, NU: Need to be unique, NO: Nostalgia, TR: Trust, AS: Assurance, RPI: Repurchase intention

The results of the multiple linear regression analysis using the Enter method are presented in Table 3. For Türkiye, the adjusted R^2 indicates that the independent variables account for approximately 72% of the variance in repurchase intention, while for England, they explain about 70%. Furthermore, with Durbin-Watson values between 1 and 3 (Field, 2009), there is no indication of autocorrelation, and both regression models are statistically significant ($p < 0.05$) (see Table 3).

Table 3. Multiple linear regression statistics

Model	R	R^2	Adjusted R^2	Standart Error	Durbin-Watson	F	Significance
TUR 1	0.859	0.738	0.728	0.586	2.063	80.238	0.000
ING 1	0.851	0.725	0.704	0.577	1.870	35.656	0.000

According to the analysis of the Turkish data (Table 4), the factors of critical orientation ($p = 0.017$), usefulness ($p = 0.001$), trust ($p = 0.001$), and assurance ($p = 0.011$) significantly influence repurchase intention for second-hand products purchased via mobile applications. Among these, usefulness has the strongest effect on repurchase intention ($\beta = 0.276$). In contrast, price orientation, bargaining power, ease of use, need to be unique, and nostalgia do not have a significant impact on repurchase intention (see Table 4).

Table 4. Results of Türkiye data

Model	Unstandardized Coefficients		t	Significance	VIF
	β	Std. Error			
Constant	0.291	0.129	2.259	0.025	
Price orientation	-0.038	0.068	-0.558	0.577	5.243
Bargaining power	0.021	0.052	0.415	0.679	3.168
Critical orientation	0.163	0.068	2.404	0.017	5.319

Usefulness	0.276	0.081	3.409	0.001	6.981
Ease of use	0.093	0.070	1.336	0.183	5.101
Need to be unique	0.003	0.052	0.056	0.955	3.222
Nostalgia	0.054	0.047	1.163	0.246	2.807
Trust	0.213	0.062	3.430	0.001	3.559
Assurance	0.152	0.059	2.571	0.011	3.708

According to the analysis of the England data (Table 5), the factors of critical orientation (p = 0.026), ease of use (p = 0.026), nostalgia (p = 0.010), trust (p = 0.000), and assurance (p = 0.020) significantly influence repurchase intention for second-hand products purchased via mobile applications. Among these, trust has the strongest effect on repurchase intention (β = 0.387). In contrast, price orientation, bargaining power, usefulness, and need for uniqueness do not significantly affect repurchase intention (see Table 5).

Table 5. Results of England data

Model	Unstandardized Coefficients		t	Significance	VIF
	β	Std. Error			
Constant	0.148	0.212	0.697	0.487	
Price orientation	0.069	0.099	0.700	0.485	5.053
Bargaining power	0.071	0.086	0.820	0.414	3.432
Critical orientation	0.212	0.094	2.255	0.026	4.263
Usefulness	0.084	0.081	1.031	0.305	2.836
Ease of use	0.186	0.083	2.250	0.026	2.629
Need to be unique	-0.032	0.071	-0.456	0.649	2.228
Nostalgia	-0.189	0.072	-2.618	0.010	2.296
Trust	0.387	0.091	4.265	0.000	2.855
Assurance	0.188	0.080	2.359	0.020	2.258

According to Hair, Anderson, Tatham, and Black (1995), a VIF value of 10 or below indicates the absence of multicollinearity among variables. As shown in Tables 4 and 5, the VIF values suggest that there is no evidence of multicollinearity for either the Türkiye or the England data.

Based on the results of the multiple linear regression analysis, the regression equations for Türkiye and England were derived as follows:

$$\mathrm{RPI}_{\mathrm{TUR}} = 0{,}291 + 0{,}163(\mathrm{CO}) + 0{,}276(\mathrm{US}) + 0{,}213(\mathrm{TR}) + 0{,}152(\mathrm{AS})$$

$$\mathrm{RPI}_{\mathrm{ING}} = 0{,}148 + 0{,}212(\mathrm{CO}) + 0{,}186(\mathrm{EU}) - 0{,}189(\mathrm{NO}) + 0{,}387(\mathrm{TR}) + 0{,}188(\mathrm{AS})$$

Hypothesis testing revealed partial support for the proposed research model, with results summarized in Table 6.

Table 6. Hypothesis Testing Results

Hypothesis	**TUR Test Result**	**ING Test Result**
H1: Price orientation has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.	NOT SUPPORTED	NOT SUPPORTED
H2: Bargaining power has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.	NOT SUPPORTED	NOT SUPPORTED
H3: Critical orientation has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.	SUPPORTED	SUPPORTED

H4: Usefulness has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.	SUPPORTED	NOT SUPPORTED
H5: Ease of use has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.	NOT SUPPORTED	SUPPORTED
H6: Need to be unique has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.	NOT SUPPORTED	NOT SUPPORTED
H7: Nostalgia has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.	NOT SUPPORTED	SUPPORTED
H8: Trust has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.	SUPPORTED	SUPPORTED
H9: Assurance has a significant effect on consumers' repurchase intention in second-hand product shopping through mobile applications.	SUPPORTED	SUPPORTED

5. Discussion and Conclusion

According to the multiple linear regression analysis findings, price orientation does not significantly affect repurchase intention in second-hand shopping via mobile applications, either in Türkiye or England. This result is consistent with Steffen's (2017) study in Germany, which found that German consumers are not influenced by economic motivations or low prices when purchasing second-hand products. Conversely, some studies have reported that price affects second-hand shopping behavior (Padmavathy et al., 2019; Prieto & Caemmerer, 2013; Williams & Paddock, 2003). However, these studies were not conducted specifically in the context of mobile platforms. Therefore, in line with the current study's findings, price orientation does not significantly affect consumers' purchasing of second-hand products through mobile applications.

Another finding of this study indicates that bargaining power and the need to be unique do not significantly affect repurchase intention in second-hand shopping via mobile applications in either Türkiye or England. Similarly, Ssengendo (2019) found that in consumer-to-consumer (C2C) e-commerce, the ability to bargain and the availability of unique items do not influence second-hand purchasing behavior. Accordingly, it can be inferred that for consumers purchasing second-hand products through mobile applications, bargaining power and the need for uniqueness are not primary motivational factors in their decision-making.

Across both Türkiye and England, critical orientation, trust, and assurance emerged as significant positive predictors of repurchase intention. This suggests that consumers perceive mobile applications as alternative channels to traditional retail, valuing both the opportunity to avoid conventional outlets (Guiot & Roux, 2010; Padmavathy et al., 2019) and the reliability of platforms they trust (Chen, Yen, Kuo, & Capistrano, 2016). Moreover, as Anh, Diem, Cam, and Viet (2020) demonstrated, assurance reinforces consumers' confidence in their choices, strengthening their likelihood of repurchasing. These findings highlight that trust, assurance, and the appeal of nontraditional shopping channels are central drivers of second-hand purchasing behavior via mobile applications across different markets.

According to the findings of this study, while perceived usefulness has a significant positive effect on repurchase intention in mobile second-hand shopping applications in Türkiye, the analysis of English data indicates no significant effect. Gong, Stump, and Maddox (2013) also found that the usefulness factor motivated Chinese consumers to engage in online shopping. In contrast, Akın (2020) demonstrated that usefulness was not among the motivating factors for online second-hand shopping. Additionally, the results of the present study reveal that, in the Turkish sample, perceived ease of use does not significantly affect repurchase intention. In

contrast, it had a significant positive effect on the English sample. Ercan (2019) reported that ease of use did not significantly influence consumers' online shopping behavior, while Nieminen (2016) found that ease of use impacted consumers' shopping behavior within Facebook buy-and-sell exchange groups. Taken together, the literature on usefulness and ease of use, along with the findings of this study, suggest that these factors may have different effects on repurchase intention depending on sample characteristics, and that further, more comprehensive research may be needed.

Turkish data showed that nostalgia had no significant effect on repurchase intention. Similarly, Reis (2020) reported that nostalgia did not influence young adults' second-hand shopping behavior. In contrast, English data indicated that nostalgia had a significant adverse effect. In other words, the presence of nostalgic products in these applications exerts the opposite influence on consumers' purchase intentions, which constitutes one of the more intriguing results of this study.

The finding that price orientation, bargaining power, and the need to be unique do not significantly affect second-hand shopping distinguishes this study from others conducted in both physical and online contexts. Moreover, the differing results for usefulness, ease of use, and nostalgia between Türkiye and England indicate that the study also highlights cross-country differences. In addition, variations in payment method preferences (credit card in Türkiye vs. cash on delivery in England) and product delivery preferences (shipping in Türkiye vs. hand delivery in England) were identified as further results that differentiate the two countries.

5.1. Implications for marketers

The findings of this study highlight several factors that marketers should prioritize to encourage repeat purchases through mobile applications for second-hand products. One of the key results is the significance of critical orientation for consumers in both Türkiye and England, underscoring the need for businesses to differentiate their offerings from traditional retail channels. Designing applications from the customer's perspective is therefore crucial, as it enables firms to create an alternative shopping channel that meets consumers' expectations and preferences.

Perceived usefulness emerged as a critical factor for Turkish consumers, indicating that the more consumers find mobile applications practical, the more likely they are to engage in repeat purchases. This suggests that marketers should focus on designing simple, functional, and efficient applications, offering relevant products and content that facilitate the shopping process. By contrast, ease of use was found to be particularly important for consumers in England, where the relatively higher average age of the population may influence this result (T.C. Ministry of Trade, 2023). For this reason, applications should be intuitive and user-friendly, even for individuals less familiar with technology. Practical menu designs, clear text and visuals, and straightforward navigation toward purchase can enhance ease of use and, consequently, increase repurchase intentions.

Trust and assurance were also found to be significant factors for consumers in both countries. Beyond brand awareness and reputation, transparency in data processing and protection policies, as well as clear communication regarding payment, returns, and other transactional processes, are vital for building consumer confidence. Providing customers with a sense of security that the business guarantees their transactions can strengthen trust and foster repeated engagement with the platform.

Factors such as price orientation, bargaining power, and the need to be unique were not found to have significant effects in either country. While these findings suggest that such factors may be less relevant for marketers in the context of second-hand mobile applications, it is important to acknowledge the contextual limitations of this study and the potential for different outcomes in other markets. Given the cross-country differences identified in this research, marketers should carefully examine the specific characteristics of target consumers before developing strategies in new geographic contexts.

Finally, sustainability represents an increasingly critical dimension of contemporary marketing strategies. From a sustainability perspective, second-hand shopping contributes to environmental responsibility by reintroducing used products into the consumption cycle. Conducting such transactions through mobile applications further reduces costs and environmental impacts associated with physical retail. Therefore, implementing marketing practices that motivate consumers to engage in second-hand shopping via mobile platforms is commercially beneficial and aligns with sustainable marketing objectives.

5.2. Limitations and future directions

This study aimed to investigate the factors influencing consumers' mobile second-hand shopping behaviors and to identify potential differences between Türkiye and England. Given the absence of prior research addressing this issue within such a comparative scope, the study is expected to contribute to the theoretical literature. Nonetheless, several limitations should be acknowledged.

First, the study was conducted with a sample of 399 participants, which restricts the generalizability of the findings. Second, the research was limited to participants from Türkiye and England, preventing broader generalizations at a global level. Third, the analyses for Türkiye and England left 28% and 30% of the variance unexplained, respectively. This indicates that including additional variables could enhance the model's explanatory power. For instance, influencers, who play a significant role in shaping consumer preferences in contemporary online and mobile shopping contexts, could be incorporated as a factor in future research.

Considering these limitations, future studies are encouraged to adopt larger and more diverse samples, extend the analysis to different countries and cultural contexts, and incorporate additional variables that may better capture the complexity of consumer behavior in mobile second-hand shopping. By doing so, subsequent research may yield more comprehensive and generalizable results, thereby enriching the existing body of literature.

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Different concepts of health tourism in Europe and the meaning of health tourism worldwide

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Abstract

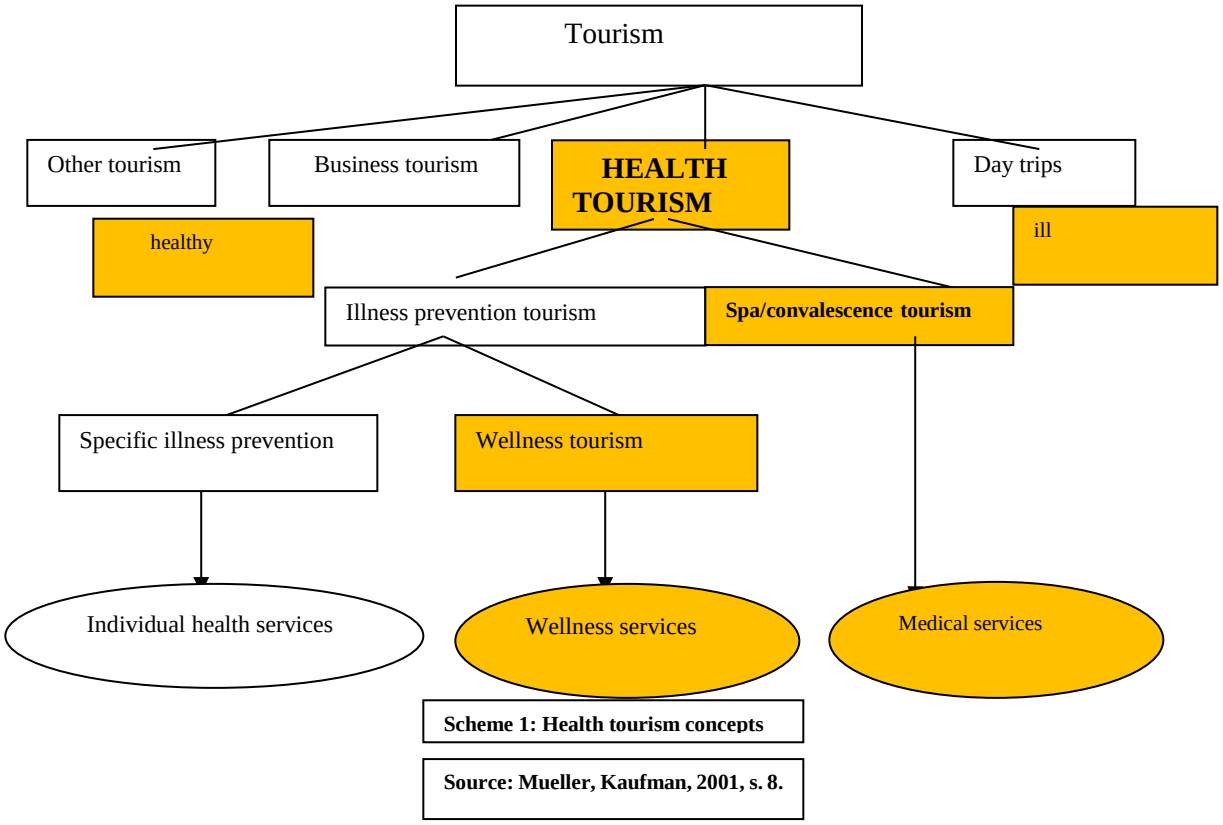
Introduction - Health tourism in Europe has a long-term tradition. The concept of health tourism is different in European, North American and Asian culture.
Aim - The article provides a framework for the distinction of different concepts of health tourism in specific countries of Europe and compares the approaches in Slovakia, Portugal and Nordic countries (Finland) in comparison to the North America (Canada) and Asia (Taiwan, Malaysia, etc.).
Methods - Methods applied in the exploratory and empirically based study were used in the framework of the secondary research. There have been used cases from different parts of the world. This study acknowledges the merits of qualitative research.
Findings - The results indicate that in Europe exist traditional spas and countries with the old fashioned models, but in Europe are common also new concepts in such countries as France, Spain, Nordic countries, mostly western European or Scandinavian countries.
Conclusion - We can assume in the end that European spas have been more traditional, especially in Central and Eastern Europe and provide more medical care and health treatments. New trends and especially economic reasons; however, force these countries to create also new product offer in a form of wellness.
Originality and value – Originality and value could be not only in the comparison of different opinion on the function of spas, but also the influence of cultural and economic forces in the world which change the perception and the use of spas.

Key words: health tourism, spa tourism, wellness, health care treatment
JEL codes: Z32, Z33

1. Introduction

Most European spas offer health care treatment and the leisure component is only secondary. However, the new trends, changes and globalization have influenced some amendments in this concept. Many countries in Europe started to approach closer the North American concept of spas that defines spas as a centre of leisure and relax. There is even a distinction between the concepts of health tourism and spa tourism, which could have different meaning in different cultures. Some European countries as Spain and France have followed this development. On the other hand, Germany, Austria and some east European countries as Slovakia, Czech Republic, Poland, and Hungary still offer in their spas traditional health care treatments based on the traditional model of spas. In many of these countries exists the combination of traditional concept of spas and the modern perception of spas as the leisure product based on the demand of market. Our goal will be to explain thoroughly the concepts, to explore distinction among different especially European countries and explain new trends. Some good examples and cases will support the existing conceptual base. Benson and Stuart (1992) mentioned the definition of Kaspar on health tourism. According to Kaspar is health tourism "the sum of all the relationships and phenomena resulting from a change of location and residence by people in order to promote, stabilize and, as appropriate, restore physical, mental and social well-being while using health services and for whom the place where they are staying is neither their principle nor permanent place of residence or work." Wellness tourism as a part of health tourism has been defined by

Mueller and Kaufman (2001) as a "sum of all the relationships and phenomena resulting from a journey of residence by people whose main motive is to preserve or promote their health." They stay in a specialized hotel which provides the appropriate professional know-how and individual care. They require a comprehensive service package comprising physical fitness/beauty care, healthy nutrition/diet, relaxation/meditation and mental activity/education. In both definitions is embedded the component of health improvement; however, there exist one important factor of distinction, which is based on motivation and the purpose of both approaches, which will enable to distinguish among several concepts. The following scheme originated by Mueller and Kaufman (2001) enables to look at this concept from several view angles.



Scheme 1: Health tourism concepts

Source: Mueller, Kaufman, 2001, s. 8.

Based on this specific distinction in motivations of health tourism users, there has to be taken also into a consideration some cultural and regional trends and differences in Europe and worldwide too. Puczkó and Smith have divided them into several clusters in the framework of European countries (Table 1).

Table 1 Regional differences and trends in Europe in the approach to health and wellness tourism

Region/countries	Typical focus	Typical products/services
Western Europe (Austria, Belgium, France, Germany, Luxembourg, Netherlands, Northern France, Switzerland, United Kingdom)	Beauty, weight loss, lifestyle improvements (e.g. mental wellbeing, stress relief), leisure and recreation private clinics specializing in certain treatments	day/beauty spas spa and wellness hotels thermal leisure spas

		holistic activities (e.g. yoga, meditation, vinotherapy, occupational wellness, alpine wellness, selfness and mindness balneotherapy
Northern Europe (Scandinavia, Baltic States)	Physical recreation Leisure and relaxation Lifestyle improvements (e.g. diet, exercise, fresh air)	Nordic wellbeing, saunas, outdoor recreation (e.g. Nordic walking), cold therapies (e.g. crypto therapy, ice swimming), hot geysers (Iceland), thermal, medical and seaside spas (Estonia, Latvia, Lithuania)
Central and Eastern Europe (Bosnia, Bulgaria, Croatia, Czech Republic, Hungary, Moldova, Poland, Romania, Russia, Serbia, Slovakia, Slovenia)	Curative rather than preventive health care therapy and rehabilitation for the body medical tourism Water-based leisure	Medical and thermal baths Spa hotels Caves Aquaparks Wellness hotels
Southern Europe (Cyprus, Greece, Italy, Malta, Portugal, Southern France, Spain, Turkey)	Physical recuperation and relaxation sea-water-based wellness lifestyle elements (e.g. climate, healthy cuisine, pace of life) MEDICAL TOURISM	Thalassotherapy Traditional thermal and medical spas Holistic retreats (often run by non-locals) Religious and spiritual tourism (e.g. Lourdes, Fatima, Santiago de Compostela)

Source: Puczkó, Smith 2009.

2. Goal, material and methods

The above delineated division of approaches might be helpful to start to explain the differences in perception and application of health tourism in specific countries and a priority will be the explanation of approaches in Central and Eastern Europe; however also some cases will be used from western and southern Europe and compared with the North American and Asian perception and approaches. The goal is to find differences in approaches and grasp the dividing line between perception of health tourism, spa tourism and wellness tourism according to the geographical, cultural or historical roots. This study might be useful for academics and practitioners in health tourism, spa tourism and wellness tourism industry as well as for students. Materials have been collected during a period of couple years especially in Slovakia and Canada, but also in Hungary in the framework of work of the international project "Regional wellbeing in the Balkans" with the co-operation of BKF University of Applied Sciences, Budapest, Hungary. Methods applied in the exploratory and empirically based study were used in the framework of the secondary research. There have been used specific cases – only the examples from different parts of the world. This study acknowledges the merits of qualitative research as it provides a pragmatic response for an in-depth understanding for this exploratory research. One of the key strengths of

case study is the flexibility of method and the potential for practical application to use varied evidence, multiple sources and techniques in the data gathering process, for instance: interviews, observations, documents, arte-facts (Yin, 2003; Vissak, 2010). In our study, we will only use the secondary existing materials from literature, studied journals and research studies and from materials existing on website. The interviews and observations as a primary research tools have not been used in this stage of research, but might be a possible tool for further in-depth research in a specific depicted region, country or a specific health tourism facility. The exploratory research might be sufficient by the application of secondary data based on the above mentioned sources and materials.

3. Results and discussion

The results of secondary research indicate that in Europe exist traditional spas and countries with the old fashioned models of spas (in former Austrian-Hungarian Empire countries as for instance Slovakia, Czech Republic, Germany, Austria, Hungary, etc.), but in Europe are common also new concepts in such countries as France, Spain, Nordic countries, mostly western European or Scandinavian countries (as stated in Table 1). To be closer to the concept of spa tourism in the traditional European countries we need to explain some concepts of health -care tourism. "We define health-care tourism as the attempt on the part of a tourist facility (e.g. hotel) or destination (e.g. Baden, Switzerland) to attract tourists by deliberately promoting its health-care services and facilities, in addition to its regular tourist amenities. These health-care services may include medical examinations by qualified doctors and nurses at the resort (spa) or hotel, special diets, acupuncture, transvital injections, vitamin-complex intakes, special medical treatments for various diseases" (Goodrich et al, 1987, p. 217). Based on this explanation, there are many countries with health-care tourism facilities – Switzerland, France, Germany, Austria, Hungary, the USA, The United Kingdom and others (Goodrich et al, 1987, p. 217). These services could be offered in the traditional health care facilities or in some hotels as part of the offered wellness program, but the most traditional form of offering are spas with the full medical service and supervision. Spas are located close to the thermal water resources and the healing influence of the mineral resources is used for the treatment of different diseases. Healing power of thermal water, sulphur mud, rehabilitation treatments, electrotherapy, mechanic therapy, oxygen-therapy, reflection massages, and acupuncture creates the interesting product of spa tourism.

4. The new concept of spa tourism versus the old concepts and their success

UNWTO defines spa tourism as a tourism that requires the existence of health care facilities and uses the natural resources of a country, especially a natural mineral springs and climatic conditions (IUOTO, 1973, p. 7). This definition is used in the explanation of some concepts of tourism in European countries. The most famous spa tourism countries in Europe are Germany, Austria, Italy, Switzerland, Czech Republic, and Slovakia. European spa tourism has two streams of development (Knop, 1999, Gucik, 2006, p. 24). It is a health care concept of spa tourism and spa tourism as wellness as has been already explained in Scheme 1. One stream of European spa tourism deals with a provision of the traditional health care and has a strong medical background. The most famous representatives of this stream are Germany, Austria, Czech Republic, Slovakia, and Poland. In these countries is typical very strict medical supervision of patients and the spa visitors are treated upon their diagnosis. The treatment requires specific medical examination and patients are under strict supervision of their physicians. The above stated countries are besides Poland the former states of the Austrian-Hungarian Empire and Germany. Health care system of these all countries is based on Bismarck model of health care with traditional approach to health care. The second stream represent Mediterranean countries, where exist the concept of spa tourism as wellness (Spain, France, Italy). This concept is more market oriented and takes place in the luxury hotels and wellness facilities. The health care concept has only secondary role. In the countries of northern Europe (Sweden, Norway, Denmark, Finland) spas are understood as means of prevention against the civilization diseases (Gucik, 2006, p. 24). The main trend of the 20th century is the concept of wellness and beauty that it based on marketing approach and the attempt to improve wellbeing. The traditional spa tourism streams had to admit

that this innovative approach to spa tourism and spas started to combine the traditional approach to spa tourism, because spas have to be more effective and profitable. Traditional approach to spa tourism did not allow create sufficient profit and spas started to implement different entrepreneurship activities based on wellness. Traditional customers of wellness tourism are well-off people as entrepreneurs seeking relax and escape from everyday stress, but recently also people seeking new way of relax, balance in their lives. Wellness became a new trend of the third millennium (Gucik, 2006, p. 28). The author (Ibid, 2006) summarizes the variety of different services offered in wellness facilities as they are defined in the table.

Table 2 Variety of treatments and services in wellness resorts

Acupressure	Physiotherapy	Steam bath
Acupuncture	Hammam	Peeling
Aromatotherapy	Homeotherapy	Skin massages
Bach Flower therapy	Music therapy	Reiki
Bio-lifting	Chirotherapy	Light therapy
Spinal exercise	Cleopatra bath	Shiatsu
Chinese medicine	Acidotherapy	Stretching
Depilation	Lymphoma drainage	Sport massage
Color therapy	Manicure, pedicure	Thalasso therapy
	Massage of ear lobs	Wraps from sea weeds

Source: Gucik, M., 2006, p. 28

Based on the research in the European Union 67% of spa visitors seek the treatment of diseases and the relief of health problems and almost 50% seek the relief from everyday stress. Most visitors require pristine and not polluted environment of the spas (Gucik, Sipkova, 2004, p. 86). European spa tourism strictly applies the standards of quality in their spas (ISO 9000). These standards of quality are implemented also in the health care facilities and hospitals. Interesting fact is that spas and the stay of patients in Europe is financed from multiple financial sources created by the coverage from the Health Care insurance companies and from own financial sources. The exception is only France and Spain which implement more independent approach and patients have to pay for spas from own financial sources. Doctors strictly decide about the necessity of every spa treatment. Typical country with this concept among above mentioned countries is Slovakia. Slovakia is well-known for 1300 mineral springs with curative water of high quality. 21 thermal spas are divided into balneological spas (Piestany, Sliac, Trencianske Teplice, Bardejov, Dudince, Rajecke Teplice, Vysne Ruzbachy, etc.) and climatic spas (Strbske Pleso, Novy Smokovec, Stos, Tatranske Matliare). Most of these spas are not only wellness places, but also places for treating of medical conditions (respiratory, digestive, cardiovascular, immunological and infertility disorders) and after surgeries conditions. Despite of the existing comparative advantage in a form of natural resources in Slovakia, a country has to apply commodification in spa tourism and the implementation of wellness, more leisure facilities with the entertainment, social and cultural functions. This is an example of the existing comparative advantage, which endowment by the application of marketing approach could be important for the growth of competitive advantage. Slovakia might be one example of traditional approach to spa tourism with a combination of wellness tourism products and marketing approaches to health tourism.

On the other hand, some mentioned regions and countries as Nordic or Scandinavian countries do not own such a richness of mineral springs and traditions as in Central and Eastern European countries and they attempt to focus on health prevention and relax, wellness concepts (new

approach to health tourism). Typical country is for instance Finland with plentiful wellness programs using sauna, Nordic walking, cold water treatment (water therapies, massages, herbal treatments and body soaks). One of good example is Haikko Wellness in Porvoo, Finland offering except traditional wellness treatments also so called cold treatments, which have a really long history and have been used for centuries to release pain, swelling, especially as a result of rheumatic problems. It might be very helpful to treat sleeping disorders, stress, skin problems (psoriasis, etc.). The treatment time is only up to 3 minutes and the temperature is – 110 °C. An important product in this facility is also so called "Wellbeing at work" program, which offers services to the employers in a community in order to improve health of their employees and especially overstressed managers. Nordic well-being is typically oriented towards nature and outdoor recreation combined with healthy gastronomy and cleanliness of air, landscape and water, for instance lakes (Tuohino et. al, 2010).

In southern European countries are spas and especially wellness centers situated in hotels along the seaside. One of the popular product is for instance thalassotherapy, which is offered

in Greece, Spain, France and Italy. Excellent wellness facility, which is popular among the western tourists from Great Britain, France, Germany, but also North America, is Algarve in Portugal, where a complex of hotels offers not only spa and wellness products, but also golfing, delicious cuisine. In other south European countries and also in Asia is a concept very similar, e.g. a combination of a pristine seaside scenery, marvelous beaches, good weather, sunshine and special wellness products, sport activities. Wellness is a good product for off-season period focused especially at seniors seeking to boost their health potential and socialize. For instance, in Turkey is very popular among seniors from Germany, Scandinavia, Great Britain and Turkish tourism resorts are fully prepared for this segment. However, many countries in Europe, especially southern Europe, but also Nordic countries are able to create interesting product offer and attract a potential marketing segments as seniors. Similar products of wellness products in winter period are for instance popular for Scandinavians and Germans also at splendid islands of Croatia, for instance at the island Hvar, Brac, etc. In Europe, for instance The Canary Islands are very well prepared for wellness tourism due to its climate and facilities. Wellness is really becoming an interesting niche product with a high potential of profit creation in the future due to the growing number of seniors in Europe and worldwide as well.

When we studied similar trends in Northern America, wellness is becoming very popular and the reason is similar as in Europe, e.g. growing number of seniors, stressing jobs and growing number of civilization illness due to pollution and stress. Spas in North American culture are fully market oriented and paid from own financial sources, but they are offering similar products as in Europe. One of such examples could be for instance spa in Canada, Toffino in British Columbia. This is a typical Canadian approach to spas and wellness, which is a combination of different healing procedures with sport activities. In Tofino, for instance is possible to enjoy almost untouched geothermal hot spring in the Maquinna Provincal Park and combine the activities with bear and bird watching, hiking, bicycling, fishing. Popular are also traditional spa products based on traditional cleansing techniques of the indigenous people. . In Canada is very popular a combination of wellness with culinary tourism, which is also suitable for segments of well-off people in this region because they belong to the group of so called baby-boomers, e.g. seniors. Wellness with a combination of healthy life style and culture is a really popular trend now in North America. Spa in North America is for this reason more leisure activity than health oriented activity and the programmes are targeted at physical, emotional and spiritual self-improvement. Australia has a similar concept as the Northern America, where is not a strong spa culture, but growing is the leisure components of wellness focused at relaxation, fitness, stress reduction and beauty (Smith and Jenner, 2000; Douglas, 2001).

Similarly in Asia, the growing number of population and stress in jobs are worsening living conditions and create a demand for wellness and spa products. One example could be used from Taiwan. Based on the research (cited in Chang et al. 2003) as stated Lee and King (2008) for

"the most desired lifestyle for Taiwanese involves the maintenance of good health (59%). Health and wellness are very important in Asian culture. The authors Lee and King (2008) mentioned that "the number of Asia destinations have tapped into this lucrative market". One example could be Japan with a plentiful hot springs and also Taiwan. An enormous growth of spa tourism has been recognized in Thailand and in Malaysia. Both countries were able to create an interesting product as the combination of cultural diversity, heritage and wellness products. An interesting tourism product in spa tourism in Taiwan, for instance, are hot springs, which were discovered by a German businessman in 1894 (Peitou hot springs). Taiwan has an enormous potential in spa and wellness tourism and the amount of 230 hot springs might be a good potential for future for the growth of spa and wellness tourism in Taiwan. In Asia is typical also in wellness treatment for instance upon Malay, Chinese and Indian traditions to offer typical Chinese medicine, ayurveda, energy healing an ramuan spa treatments.

5. Conclusion

The goal is this study was to find differences in approaches and grasp the dividing line between perception of health tourism, spa tourism and wellness tourism according to the geographical, cultural or historical roots. Three continents have been chosen for this comparison and we tried to distinguish the concepts based on motivation of segments, which might be influenced by their health state (ill or healthy) or a desire to keep their health (wellness). Some examples from Europe and its regions, from Northern America and Asia have been implemented into the study and based on it we can assume in the end that European spas have been more traditional, especially in Central and Eastern Europe or former Austrian and Hungarian Empire countries and provide more medical care and health treatments for people with health problems. New trends and especially economic reasons; however, force these countries to create also new product offer in a form of wellness. For this reason, blending of traditional health tourism products and wellness products are typical for European spas as well. The North American concept based predominantly on leisure and relax is strictly market oriented. Services offered in spas have to be fully covered from private financial sources (in comparison with dual forms of financing in some European countries). Asia is a potential product for further development of mineral springs in spa tourism and offers besides traditional wellness treatments also a range of typical East Asian medical approaches. Health and culture, heritage and a balance of life, seem to become not only a product of Asian wellness facilities, but a way of their existence and life. Health tourism is becoming more popular nowadays especially to the growing number of ageing population and their desire to live longer, healthier and happier. This concerns also younger generation and might prevent many obstacles and problems in their later period of life. The topic of health tourism offers for this reason new aspects for further research and improvements in managerial sphere.

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The Effects of Globalization on the Sustainable Tourism Economy: An Economic, Socıal And Environmental Analysıs[1]

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Abstract

Introduction: The study aims to introduce the concepts of globalization and sustainability and explain how globalization, with its economic, social, and environmental dimensions, impacts the sustainable tourism economy. It emphasizes that globalization increases the interdependence between societies, cultures, and economies, while sustainability strives to maintain the balance between the environment, economy, and society in this process.
Aim: The aim of the research is to examine the effects of globalization on sustainable tourism economy in three dimensions (economic, social, environmental) and to contribute to sustainable tourism policies by revealing its positive and negative consequences.
Method: The study is based on a qualitative literature review (compilation) method. A conceptual assessment was made by analyzing existing academic sources, theoretical frameworks, international reports (e.g., UN, WCED, UNWTO) and research.
Findings: Globalization's economic impact on sustainable tourism can be said to have fostered foreign investment, employment, increased income, and technology transfer. Its social impact, however, reveals its fostering of cultural interaction, tolerance, and awareness. From an environmental perspective, globalization's impact on sustainable tourism has been determined to encourage green tourism and ecotourism. However, negative consequences such as income inequality, cultural erosion, excessive resource use, and environmental degradation have also been observed.
Conclusion: Globalization is a process that both supports and threatens sustainable tourism. Therefore, policies that strengthen local economies, enforce environmental standards, support alternative tourism, and preserve cultural identity must be developed.
Originality and value: In the existing literature, the impacts of globalization on sustainable tourism have generally been addressed in a single-dimensional manner (economic or environmental). This study addresses this gap in the literature by analyzing the concept holistically, encompassing its economic, social, and environmental dimensions.

Key words: Globalization, Sustainability, Tourism Economy
Jel Codes : Z32, F60, S01

1. Introduction: The concept of globalization

Globalization is a multidimensional concept, emerging as globalization or globalization in the 1960s and becoming a popular term in the 1980s. While primarily used as an economic concept, globalization also encompasses technological, ecological, cultural, social, legal, and political dimensions. Therefore, globalization is a multifaceted process in which developments in all areas of life are carried across borders.

Globalization is a process of interaction that over time leads to an increasing interconnectedness of countries and societies in economic, cultural, political, social, legal, and technological terms. Consequently, this concept facilitates increased mobility of goods and services, capital and human resources, information, and technology between countries.

According to Robertson (1992), who states that people are becoming aware of the reality that they are part of a global whole, globalization is defined as the perception of the world as a single place, the loss of meaning of distances, the shrinking of the world, and societies beginning to see themselves as part of the world rather than as local, in other words, the holistic perception of the world.

Ritzer (2003), on the other hand, approaches globalization from a different perspective than Robertson, specifically within the framework of consumption, standardization, cultural homogenization, and so on. In his study, he focuses on two fundamental concepts: nothingness and somethingness. Accordingly, he refers to non-local, ordinary, mass-produced goods, services, and experiences as "nothing," while he refers to more local, unique, non-ordinary, original, and culturally possessed experiences as "something." Within the framework of these concepts, he defines globalization as the process by which the concept of "nothingness" prevails over the concept of "something." Therefore, he defines globalization as the process by which the ordinary, single-order (homogenous) cultural form, which departs from local freedom, is carried across borders.

Osterhammel & Petersson (2019) approach globalization as a multidimensional and long-term historical process in their study. According to them, the concept of globalization is defined as the strengthening of global integration trends, along with the increasing contact and interdependence between people, societies, and countries worldwide. Globalization; It intensifies relations between countries through transportation, trade, migration, and cultural exchange. This, in turn, increases the interdependence of interacting countries and societies and leads to a tendency towards the creation of a single global system.

Demir and Yakışık (2025) define globalization as a phenomenon that has profoundly impacted societies, both positively and negatively, and has made people more interdependent, from the dawn of humanity to the present day.

Scholte (2005), who examines globalization more comprehensively, defines it as the process by which societies' relations extend beyond geographical borders, becoming geographically localized. According to him, globalization is not international, but rather emerges as a form of geographical independence. Social, political, social, and economic relations are no longer confined to a specific geography, but rather are extended beyond borders.

Steger (2020), who approaches globalization more simply and multidimensionally, sees it as a multidimensional process of interaction that emerges to meet the development needs of societies and countries resulting from the increase in global social relations. Steger examines the multidimensionality of globalization within five main frameworks: economic globalization, ecological globalization, political globalization, ideological globalization, and cultural globalization. As can be seen, the concept of globalization has been periodically redefined by different researchers, emphasizing different aspects. Within the framework of all these definitions, globalization is a spatially independent, cross-border, and multidimensional development process of countries and societies.

The Concept of Sustainability

Today, the concept of sustainability is a significant topic for countries, societies, and companies. Measures and decisions taken for the future cannot be detached from the concept of

sustainability. For this concept to be effective in future plans, it is necessary to include the distribution of economic resources, environmental impacts, legal justice, and people-centered criteria. A sustainable future requires balanced decisions and preparations on each dimension of sustainability (Gedik, 2020).

The World Commission on Environment and Development (WCED) was established in 1982 to address global environmental problems. Subsequently, the concept of sustainability was first mentioned in the Brundtland Report, published jointly by the World Commission on Environment and Development and the United Nations (UN) in 1987. This report, titled "Our Common Future," defined sustainability as the process of meeting today's needs without jeopardizing the resources needed by future generations (WCED, 1987). This is the first time that the concept of sustainability has been systematically addressed in the areas of social equality, economic growth, and environmental sustainability.

Many researchers have attempted to define the concept of sustainability and how it is defined. According to Basiago (1998), the concept of sustainability is defined not only as an environmental phenomenon but also in a more holistic and multidimensional way, encompassing economic mobility, legal justice, and the welfare of societies.

Sharpley (2000) argues that the concept of sustainability can change depending on the structure of society. Sustainability has a long-term nature. Sustainability is a concept with moral values and responsibility towards nature, society, and future generations. Sustainability should be considered holistically, considering all its dimensions.

In their study on how to measure sustainability, Parris and Kates (2003) define sustainability as a holistic process of environmental systems that enhances human well-being, fosters social and economic justice, and contributes to the overall development of environmental systems. They state that this process serves three purposes: development, environmental, and equity.

Montiel and Delgado-Ceballos (2014) introduced the concept of corporate sustainability in their study. They clarified corporate sustainability as a process of establishing company goals within the framework of the three dimensions of sustainability: economic, social, and environmental, and creating long-term value rather than short-term profitability.

Holden, Linnerud, and Banister (2017) criticized the Brundtland Report (1987) for its overly broad and vague definition of sustainability. According to them, human well-being is at the core of a sustainability concept. Therefore, they defined sustainability as a concept that increases and protects human well-being to meet the needs of present and future generations.

As can be seen, the concept of sustainability and its dimensions have been addressed and explained in various ways over time. While various definitions exist, the concept of sustainability focuses on people and nature, and can be defined as a holistic and multidimensional process that utilizes resources to meet the needs of present and future generations for the purposes of increasing human well-being, observing social justice, and maintaining ecological balance.

2.Literature Study

Aktel (2001) outlined the globalization process and its impacts (the changes it creates in the economic, cultural, and political spheres). He believes it would be beneficial for developing countries to understand the nature of the globalization process. He emphasizes that globalization is a process of universalizing standards developed by Western states and that these standards should be integrated into their own nation-states.

Basiago (1998) examined sustainability in three dimensions: economic, social, and environmental. He explained the relationship between these three dimensions of sustainability

using economic development theories. He also attempted to explain the relationship between these dimensions within the framework of urban planning. Consequently, he argues that sustainability should be addressed in a more balanced and holistic manner, encompassing multiple dimensions, rather than a single-dimensional environmental perspective.

Sharpley (2000) examines how the tourism sector is misperceived within the framework of the concept of sustainability. He emphasizes that sustainability, or sustainability in tourism, is often misperceived as simply the sustainability of the tourism sector's existence. However, he asserts that the tourism sector should contribute to a sustainable economy. Parris and Kates (2003) studied the definition, characterization, and measurement of sustainability. They also presented an extensive literature review, stating that a single definition of sustainability is impossible, but that all definitions draw a common framework focused on protecting future generations and maintaining ecological balance.

Montiel and Delgado-Ceballos (2014) examined sustainability from a corporate perspective in their study. They present an extensive literature review that attempts to eliminate definitional complexity. They focused on how sustainability should be evaluated at the business level. They define corporate sustainability as a holistic approach, intertwining corporate social responsibility, which refers to the ethical and social responsibilities of businesses, with the economic, environmental, and social dimensions of sustainability.

Holden, Linnerud, and Banister (2017) criticized the concept of sustainability in the Brundtland Report and attempted to reorient the concept. They found the report's definition to be broad. According to them, the concept of sustainability should be addressed within three fundamental dimensions: environmental, economic, and social equity. Sustainability is considered as a holistic, balanced process that increases human welfare and ensures intergenerational justice.

3.Globalization and the Sustainable Tourism Economy

The United Nations World Tourism Organization (UNWTO) defines sustainable tourism as a form of tourism that addresses the needs of current and future generations across social, economic, and environmental dimensions. Within this definition, it can be considered as a process that increases tourism revenues while preventing social and environmental damage.

The movement of capital, goods, services, and technology across borders, which began with globalization, is increasing free movement worldwide. The tourism sector has become one of the sectors affected by globalization, both positively and negatively. Especially with the development of transportation and communication technologies, many questions such as what's available in a destination, how transportation is provided, and what cultural values are unique to that region can be answered with a single click.

Free trade between countries, increased business travel, and the discovery of new destinations have brought about a variety of new products and services. Increased domestic and foreign investment in the tourism sector has also contributed to the rapid growth of the tourism sector at an international level.

The economic impact of globalization on the concept of sustainable tourism can be assessed in terms of increased income or increased welfare for the tourism sector in the long term. Globalization is driving an increase in capital and tourist arrivals. To meet this growing demand, employment in the tourism sector increases. This strengthens local economies, contributing to the national economy.

Globalization is crucial for a sustainable tourism economy. Foreign investments in the tourism sector have led to developments in infrastructure, hotel chains, and various service sectors. These

investments are generating increased employment and income in the region. They contribute significantly to the local economy in terms of employment and income generation.

Technological advancements in tourism, such as online reservation systems, online hotel search engines, smart energy, and green hotel technologies, have made the tourism sector more efficient and more compatible with the ecological balance. Considering the impact of waste management, carbon footprint, and energy-saving systems on the tourism sector, it can be argued that they support green growth.

Globalization, coupled with increased travel and ease of transportation, brings many visitors from different countries to their destinations. This tourist mobility within the scope of tourism travel brings market diversity and increased demand for service tourism. It has led to the emergence of popular service offerings such as green tourism and ecotourism.

Globalization, despite the benefits it provides to a sustainable tourism economy, can also create some risks. Various businesses that emerge thanks to foreign investments may repatriate the vast majority of their profits. This can negatively impact the local economy. Furthermore, locals employed in low-income jobs face inequitable income distribution.

As a result of globalization, services designed to meet the demands of excessive tourist arrivals can lead to excessive resource consumption. If this situation spirals out of control, it can jeopardize the resources needed by future generations. The desire for excessive short-term profits poses a threat to long-term development. Furthermore, the tourism economy can become dependent on external resources, making it vulnerable to economic shocks.

When we look at the social impacts of globalization on sustainable tourism, we see that it increases cultural interaction, facilitates communication between societies, makes diverse lifestyles visible, and fosters social order and values. It allows societies to live together. Tourism has led to the discovery of many destinations, the emergence and spread of diverse cultures, and the rise of intercultural tolerance. Thanks to cultural tourism, local cultures, values, history, and arts have become more visible. Cultural diversity and its preservation have gained importance. It has become crucial for local people to preserve, maintain, and embrace their cultural identities. Displaying cultural values and heritage contributes to the local economy. Furthermore, the sharing of knowledge and mutual respect among individuals with diverse demographic characteristics (education, age, etc.) from different countries is crucial for the sustainable tourism sector.

Globalization, despite its positive social impacts on the sustainable tourism economy, also creates some negative consequences. The prevalence of branding and uniform global lifestyles can jeopardize local cultural identity. Cultural diversity is giving way to a homogenous cultural understanding. Cultural authenticity can be achieved only through the loss of local values. Uncontrolled globalization in the tourism sector risks cultural erosion, income inequality, social inequality, and the loss of cultural identity.

One of the most significant impacts of globalization on sustainability is its environmental dimension. While it raises awareness of environmental protection, it can also lead to environmental damage. With the increasing number of tourists brought about by globalization, a number of structural innovations have emerged in the tourism sector. Özendik has facilitated the emergence and development of concepts such as ecotourism, green tourism, and zero-waste tourism, developed by international organizations within the framework of sustainable tourism standards, and the widespread adoption of a new tourism sector approach. It has also encouraged the rapid adoption of renewable energy sources in the tourism sector. Various certification initiatives have been developed within the scope of sustainable tourism management. At the global level, the concept of sustainable tourism is managed through an institutional process

through international collaborations and agreements, and the environmental damage caused by the tourism sector has become a prominent topic on international platforms through global organizations.

Globalization also has environmentally depressing aspects within the context of sustainable tourism. The first of these is increased carbon emissions. The ease of transportation and communication, coupled with long-distance flights, increases emissions of carbon dioxide (CO2) and creates environmental problems. Furthermore, to meet the demands of increasing tourist numbers, it results in the overuse and depletion of natural resources. In addition, it can exacerbate environmental problems such as noise pollution, solid waste, wastewater, and plastic use. Hotels and businesses built with uncontrolled foreign investments can destroy the environment and endanger groundwater and surface water resources.

4.Conclusion and Evaluation

Globalization and sustainability became two popular concepts that emerged towards the end of the 20th century. Globalization, with its economic, social, cultural, and environmental dimensions, has spread beyond borders, intertwining with other societies. Sustainability has become a concept with similar dimensions, centered on people and nature, and considering the interests of future generations.

This study examines the social, economic, and environmental impact of globalization on the sustainable tourism economy. Therefore, from an economic, social, and environmental perspective, the positive effects of globalization on the sustainable tourism economy include encouraging foreign investment, increasing employment, implementing environmentally friendly energy use, enhancing cultural interaction, making cultural heritage visible, protecting and preserving the culture, traditions, and values of local people, and generating environmentally friendly concepts that have gained recognition on international platforms.

In addition to the positive effects of globalization on the sustainable tourism economy, its negative impacts have also been identified. When evaluated within its economic, social, and environmental dimensions, inequity in income distribution leads to income leakage due to the outflow of income abroad, cultural erosion, increased carbon footprint, destruction of nature and natural resources, excessive resource use, and a departure from cultural freedom.

To enhance the positive aspects of globalization on the sustainable tourism economy and mitigate its negative impacts, domestic value-added tourism models can be encouraged. Various tax and incentive policies can be developed to prevent foreign capital from flowing abroad. Environmental damage can be reduced by prioritizing alternative tourism over mass tourism. The local economy can be supported by ensuring fair income distribution. Tourism sector employees can be raised on the concept of sustainability through various training and seminars. Environmental and ecological standards can be made mandatory for tourism businesses. Initiatives such as environmentally friendly and green tourism, which will enhance the sustainable tourism economy, can be encouraged, and these businesses can be rewarded to raise public awareness.

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The Relationship Between Bitcoin and Traditional Financial Assets: Linkages with Gold and the Dollar

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Abstract

Introduction: Bitcoin, as one of the pioneering digital assets, has evolved beyond a mere technological innovation to emerge as a potential instrument capable of reshaping the balance of power within global economic and financial systems. In particular, the erosion of confidence in traditional currencies following the 2008 global financial crisis significantly accelerated Bitcoin's adoption. Its decentralized architecture and cryptographic security have positioned it as an appealing alternative investment vehicle. Consequently, Bitcoin's interaction with traditional safe-haven assets, such as gold and the dollar, along with its implications for portfolio allocation decisions, has become a prominent subject of academic discussions.
Aim: The aim of this study is to determine whether there is a cointegration and causality relationship between Bitcoin prices and traditional financial indicators such as the dollar exchange rate and gold prices, and to analyze the effect of the dollar exchange rate and gold prices on Bitcoin prices.
Method: The cointegration relationship among Bitcoin, the dollar exchange rate, and gold prices will be analyzed using the Johansen Cointegration Test, while the causal relationship will be examined through the Granger Causality Test. The impact of the dollar exchange rate and gold prices on Bitcoin prices will be investigated using the Fully Modified Ordinary Least Squares (FMOLS) test, which is a regression method based on cointegration.
Findings: The results of the cointegration test clearly indicate the existence of a long-term cointegration relationship between Bitcoin prices and both gold prices and the dollar exchange rate. While a bidirectional causality relationship is observed between Bitcoin and gold prices, no causality relationship is found between Bitcoin and the dollar exchange rate. According to the results of the FMOLS regression model, gold prices have a positive effect on Bitcoin prices, whereas the dollar exchange rate has a negative effect.
Conclusion : The bidirectional causality relationship between Bitcoin and gold prices indicates that changes in gold prices influence Bitcoin prices, while movements in Bitcoin prices also affect gold prices. The results obtained from the FMOLS regression analysis support these findings. The positive impact of gold prices on Bitcoin prices suggests that investors perceive both assets as alternative stores of value during periods of uncertainty and risk. In contrast, the negative effect of the dollar exchange rate on Bitcoin prices implies that, during periods of dollar appreciation, investors tend to favor the dollar as a relatively safer and more liquid asset, thereby exhibiting a tendency to exit Bitcoin positions.

Key words: Bitcoin, gold, dollar exchange rate, Johansen cointegration test, Granger causality test, FMOLS test.
Jel Codes : C32, E44

1. Introduction

Traditional financial instruments such as gold and the exchange rate of the U.S. dollar have long attracted the interest of both individuals and investors. These two fundamental instruments are frequently encountered in almost every sphere of daily life, are easily accessible, and are widely used not only in trade but also in routine transactions. In the financial literature, gold stands out

as a long-term store of value, a hedge against inflation, and a safe haven during periods of economic turmoil (Şeker, 2022). On the other hand, the U.S. dollar (USD), which serves as the primary currency of the global financial system, is the most widely used means of payment in international trade and has become one of the key indicators shaping the direction of the world economy due to its status as a reserve currency. Highly sensitive to economic and political developments, the dollar is regarded by investors not only as a medium of exchange but also as a fundamental financial instrument used for hedging and portfolio diversification (Butt, 2024).

In recent years, a noticeable transformation has emerged in individuals' financial preferences as digitalization and technological advancements have accelerated. Traditional investment habits have increasingly given way to more innovative and digitally oriented instruments due to the influence of technological developments. Within this transformation, crypto-assets and digital currencies have come to the forefront as alternatives to conventional investment instruments, leading to a fundamental paradigm shift in investor behavior. Investment decisions are now shaped not only by economic indicators but also by technological infrastructure, digital security, and global network effects (Uysal, 2019). Among cryptocurrencies, the most prominent and widely recognized is Bitcoin (Coinmarketcap, 2022). Bitcoin's decentralized structure, limited supply, and global accessibility position it both as a speculative asset and a potential digital safe haven. Bitcoin can be exchanged for euros, U.S. dollars, Turkish lira, or other currencies at any time (Antonopoulos, 2017). Owing to its low transaction costs, rapid transfer capabilities, and ease of access across international borders, Bitcoin is considered a globally usable instrument. Unlike traditional payment systems, Bitcoin transactions do not incur fees associated with EFT, wire transfers, or SWIFT operations. Moreover, no government or financial institution holds the authority to seize funds or block transfers carried out through the Bitcoin network (Sönmez, 2014).

Examining the relationships among investment instruments is crucial for understanding which assets investors should prioritize in their portfolio decisions. Gold exhibits similarities to the U.S. dollar in terms of its money-like functions, while it resembles Bitcoin in its role as an investment tool and a store of value. In this respect, gold is considered a critical element that bridges traditional and digital investment instruments. Bitcoin, meanwhile, has been increasingly utilized in international trade, digital platforms, and the exchange of goods and services. Although various currencies may be used for pricing comparisons, the fact that Bitcoin's value is predominantly tracked in U.S. dollars indicates the presence of direct competition between these two assets (Dere, 2019). Accordingly, referencing the U.S. dollar in analyses of Bitcoin's influence on financial markets constitutes a meaningful approach from both theoretical and empirical perspectives.

There are studies in the literature examining the relationship between cryptocurrencies and financial instruments. Employing causality tests and various econometric methods, these studies present diverse findings. Differences in period, country context, and methodological approach contribute to the heterogeneity in results, making it necessary to reassess these relationships using alternative perspectives. Within this framework, analyzing the relationship among gold, the U.S. dollar, and Bitcoin not only contributes to the existing literature but also enables a more comprehensive understanding of the structural dynamics of financial markets.

The aim of this study is to determine whether a relationship exists between Bitcoin—representing a new generation of digital assets—and gold and the U.S. dollar exchange rate, both of which are widely preferred traditional investment instruments in Türkiye. Additionally, the study investigates the effects of gold prices and the dollar exchange rate on Bitcoin prices. For this purpose, daily data covering the period 16 November 2017 to 30 April 2025 are employed. The Johansen cointegration test is used to identify the presence of long-run relationships among the variables. Subsequently, the Fully Modified Ordinary Least Squares (FMOLS) method is applied to estimate the effects of gold prices and the dollar exchange rate on Bitcoin prices. Furthermore, the causal relationships among the variables are examined using the Granger causality test.

The remainder of the study is structured as follows: Section 2 reviews the existing literature on

the relationships among the variables. Section 3 presents the data, while Section 4 reports the methodology and empirical results in tabular form. The study concludes with a final section that evaluates the empirical findings.

2. Literature Review

The literature includes numerous studies examining the relationships among Bitcoin, gold, and the U.S. dollar using different time periods and empirical methods. Several accessible studies are summarized below. Yıldırım (2018) investigated the relationship between daily Bitcoin and gold prices for the 2012–2013 period using the Johansen cointegration test. The results indicate a long-run cointegration relationship between Bitcoin and gold prices, suggesting that both assets share common long-term dynamics. Erdaş and Çağlar (2018) analyzed the causal relationships between Bitcoin and gold, Brent oil, the U.S. dollar, the S&P 500 Index, and the BIST 100 Index for the period 24.11.2013–08.07.2018. Their findings reveal a causal relationship running from Bitcoin prices to the S&P 500 Index, while no significant causality is detected between Bitcoin and the other variables. Telek and Şit (2020) examined the relationships among Bitcoin, gold prices, and the U.S. Dollar Index using monthly data from 2012 to 2019. Employing the ARDL bounds testing approach, they identified a long-run cointegration relationship. The results show that a 1% increase in the gold price raises Bitcoin prices by approximately 15%, whereas a one-unit rise in the USD Index increases Bitcoin prices by about 28 units. However, no short-run cointegration relationship is found among the variables.

Gürbüz and Zeren (2021) examined the relationship between Bitcoin prices and the USD and Euro using weekly data for the period 28.08.2011–15.03.2020. Their findings indicate a positive long-run relationship between Bitcoin and both currencies. Çevik et al. (2021) analyzed the causal links between Bitcoin and selected exchange rates (Euro, Pound, Yen, Yuan, and Canadian Dollar) using daily data from 2011 to 2021. The results reveal significant causality running from the Euro and Pound toward Bitcoin, while several currencies were found to influence Bitcoin's volatility. The study highlights the interaction between cryptocurrencies and traditional foreign exchange markets.

Işıldak (2022) investigated the relationships among Bitcoin, the U.S. dollar, and gold using monthly data covering 15.09.2015–21.09.2021 and employed the Toda–Yamamoto causality test. The empirical findings show unidirectional causality running from gold to both the dollar and Bitcoin, and from the dollar to Bitcoin and gold. In addition, bidirectional causality is detected between gold and the dollar, while no causal relationship is found from Bitcoin to either gold or the dollar. Similarly, Sökmen and Gürsoy (2021) explored the causal relationship between daily Bitcoin and gold prices for the period 10.01.2014–11.12.2020 using the Toda–Yamamoto causality framework. Their results indicate bidirectional causality between Bitcoin and gold prices. Shariati (2022) examined the relationship between Bitcoin and gold using data from 2014 to 2022 through Granger causality analysis and the Johansen cointegration test. The findings show no statistically significant long-run cointegration relationship between Bitcoin and gold. However, the Granger causality results reveal a unidirectional causal relationship running from gold to Bitcoin, suggesting that gold price movements may have predictive power for Bitcoin prices in the short run.

Arslan and Gür (2022) analyzed the relationships between Bitcoin and the Euro, British Pound, and gold prices for the period July 2010–December 2020 using the Johansen cointegration test and Granger causality analysis. Their results indicate no long-run relationship among Bitcoin, foreign exchange rates, and gold prices. However, they identify a unidirectional causal relationship running from the British Pound to Bitcoin.

Ezin et al. (2023) examined the relationships among Bitcoin, gold, the U.S. Dollar Index, Brent oil prices, and the S&P 500 Index using monthly data covering 2013–2022. The Johansen cointegration test reveals a long-run cointegration relationship among the series. Furthermore, the Toda–Yamamoto causality test shows bidirectional causality between Bitcoin and oil prices, between gold and oil prices, between the U.S. Dollar Index and oil prices, and between oil prices

and the S&P 500 Index.

Kıraç and Buğan (2024) investigated the relationship among Bitcoin (BTC), the U.S. Dollar Index (DXY), and the Euro (EUR) using data from 2014 to 2023. Applying the VAR Granger causality test, they found a statistically significant causal relationship running from the DXY to the EUR, while no significant causal links were detected between Bitcoin and either the DXY or the EUR. These findings suggest that Bitcoin moves independently of traditional currencies and provides a distinct dynamic in terms of portfolio diversification. Detthamrong et al. (2024) examined the causal relationships between cryptocurrencies and major global financial assets such as gold, equities, oil, and bonds. Using data from 2018 to 2022, the authors applied Granger causality and correlation analyses. The results indicate that cryptocurrencies such as Tether, USD Coin, and Binance USD exhibit Granger causality toward assets including bonds, the S&P 500 Index, and gold. These findings demonstrate the increasing role of cryptocurrency market movements in explaining fluctuations in other major economic and financial assets.

Sharma et al. (2025) examined the financial relationships among Bitcoin, gold, and the U.S. dollar. Using price data for the period 2021–2024, the authors observed weak correlations among the variables. The Johansen cointegration test indicates no evidence of a long-run cointegration relationship among Bitcoin, gold, and the dollar. Granger causality test results reveal a unidirectional causal relationship running from Bitcoin to the dollar, while no significant causality is detected between gold and either Bitcoin or the dollar. These findings suggest that Bitcoin continues to operate as a digital asset largely independent of traditional financial instruments and does not exhibit long-term comovement with gold or the U.S. dollar.

3. Data

This study aims to determine whether a relationship exists between Bitcoin and two key indicators of financial markets—gold and dollar. If such a relationship is present, a further objective is to identify the influence of gold and the exchange rate on Bitcoin prices. The data used in the analysis consist of daily observations for the period from 16 October 2017 to 30 April 2025, yielding a total of 1,889 observations. The sample period was selected based on the earliest accessible data point for bitcoin, dated 16 October 2017. Gold and dollar data were obtained from the Investing database, while daily Bitcoin price data were retrieved from the CoinMarketCap database. All analyses were conducted using the EViews 13 software package. Descriptive statistics for the Bitcoin, gold, and dollar variables included in the analysis are presented in Table 1.

Table 1. Descriptive Statistics

	Bitcoin	**Gold**	**Dollar**
Average	672512.56	998.43	14.90720
Median	347840	497.736	8.5484
Maximum	3783790	4224.525	38.4908
Minimum	17350	151.118	3.6423
Std. Dev.	929411.7	952.682	10.9174
Skewness	1.820220	1.282	0.77010
Kurtosis	5.344809	3.635	2.08862
Jarque-Bera Test	1475.85	549.581	252.09
Probability	0.000000	0.000000	0.000000
Observations	1889	1889	1889

Bitcoin, with its high mean and standard deviation values, exhibits substantial return potential alongside significant volatility risk, whereas gold and the dollar exchange rate display a comparatively more stable pattern. More importantly, the statistically significant Jarque–Bera statistics for all three series indicate deviations from normality, a finding further supported by the observed skewness and kurtosis levels.

To examine the relationship among Bitcoin, gold, and the dollar exchange rate, it is first necessary to determine whether the series are stationary. For this purpose, the Augmented Dickey–Fuller (ADF) unit root test developed by Dickey and Fuller (1979) was employed. For each price series, regression models including both constant and trend terms were estimated repeatedly based on the Akaike Information Criterion, and the unit root test results are presented in Table 2. Ensuring that the series are stationary at the same order is a critical requirement when conducting time-series analyses, as non-stationary series may lead to spurious regression results, creating the illusion of a relationship where none actually exists due to shared trends.

Table 2. Unit Root Test Results

Variables		ADF Test Intercept	ADF Test Intercept and Trend	Stationary Level
Gold	Level	4.6150462(25)	2.413630(25)	I(1)
	Difference	-5.573309 (24)***	-6.824356 (24)***	
Bitcoin	Level	1.344232 (25)	-0.470215 (25)	I(1)
	Difference	-6.475512 (25)***	-6.817336 (25)***	
Dollar	Level	2.121901 (24)	-1.1210278 (24)	I(1)
	Difference	-7.924937 (24)***	-8.396475 (23)***	

*** It indicates a significance level of 1%. The optimal lag length has been calculated according to the Akaike Information Criterion (AIC) and is shown in parentheses. MacKinnon critical values: at the 1% level -3.961369, at the 5% level -3.411436, at the 10% level -3.127572

An examination of the level values of the Bitcoin, gold, and dollar series presented in Table 2 shows that the t-statistics do not fall below the MacKinnon critical values, and the corresponding probability values are not statistically significant. These results indicate that none of the three variables are stationary at their levels. Therefore, stationarity was achieved by taking the first differences of the series.

4. Methodology and Empirical Findings

The analysis first investigates whether a long-run relationship exists among the variables using the Johansen cointegration test. Subsequently, the Fully Modified Ordinary Least Squares (FMOLS) method is employed to estimate the long-run coefficients of the identified relationships. Finally, the causality dynamics among the variables are examined using the Vector Error Correction Model (VECM)-based Granger causality test.

4.1. Cointegration Test

In time-series analyses, cointegration techniques are employed to test whether a long-run relationship exists among variables that are non-stationary at levels but become stationary after differencing to the same order. The cointegration approach developed by Johansen (1988) and Johansen and Juselius (1990) offers a major advantage in multivariate settings, as it allows for the simultaneous identification of multiple cointegrating vectors. A key requirement of the Johansen cointegration test is that all variables be integrated of the same order. In this study, each variable becomes stationary after first differencing, ensuring a common integration order.

Before conducting the cointegration test, an optimal lag length was determined through estimation of the VAR model. The optimal lag structure was selected based on the LR (Likelihood Ratio), FPE (Final Prediction Error), AIC (Akaike Information Criterion), SC (Schwarz Criterion), and HQ (Hannan–Quinn) criteria, all of which indicated eight lags as the appropriate specification.

Following the identification of the optimal lag length, the Johansen cointegration analysis was performed to assess the presence of a long-run equilibrium relationship among Bitcoin, exchange rates, and gold prices. The trace statistic and maximum eigenvalue statistic were employed to test for cointegration, and the empirical results are presented in Table 3.

Table 3. Johansen Cointegration Test Results

Hypothesis	Trace Statistic	5% Critical Value	Probability
r=0*	50.43034	29.79707	0.0001
r≤1	12.233522	15.494712	0.1460
r≤2	1.873104	3.841465	0.1711
Hypothesis	**Maximum Eigenvalue Statistic**	**5% Critical Value**	**Probability**
r=0*	38.19952	21.13161	0.0001
r≤1	10.360419	14.264600	0.1893
r≤2	1.8731035	3.8414654	0.1711

An examination of the Johansen cointegration test results presented in Table 3 indicates that, based on both the maximum eigenvalue and trace statistics, the hypothesis suggesting the existence of at least one cointegrating vector is accepted at the 5% significance level. These findings imply that, over the analysis period, a long-run equilibrium relationship exists among Bitcoin prices, gold prices, and the dollar exchange rate.

4.2. Fully Modified Ordinary Least Squares (FMOLS) Test

To estimate the long-run coefficients of the relationship among the variables, the Fully Modified Ordinary Least Squares (FMOLS) method was employed. Developed by Phillips and Hansen (1990), FMOLS provides robust estimates by accounting for issues commonly encountered in time-series analyses, such as endogeneity and autocorrelation. The FMOLS model was applied to evaluate the long-run effects of gold prices and the dollar exchange rate on bitcoin prices. The FMOLS model specification is presented below.

$$Bitcoim = a_1 + a_2 Gold + a_3 Dollar + \varepsilon \quad (1)$$

In the equation, ε represents the error term of the model. The estimation results allow for the identification of which variables significantly influence Bitcoin prices, as well as the magnitude of these effects. The empirical findings are presented in Table 4.

Table 4. FMOLS Test Results

Variable	Coefficient	Error Term	T-Statistic	Probability
Gold	1688.828	56.0841	30.112	0.0000
Dollar	-67685.801	4188.655	-16.1593	0.0000

According to the FMOLS regression results presented in Table 4, both gold and the dollar exhibit statistically significant long-run effects on bitcoin prices. A one-unit increase in gold prices is associated with an average increase of approximately 1.688 units in bitcoin prices, indicating a strong and positive long-run relationship between gold and bitcoin. Conversely, a one-unit increase in the dollar exchange rate leads to an average decrease of 67.685 units in bitcoin prices, revealing a negative long-run relationship between the dollar and bitcoin. The explanatory power of the model is notably high, with an R-squared value of 0.9358 and an adjusted R-squared value of 0.9358, suggesting that the model accounts for approximately 94% of the variation in Bitcoin prices.

4.3. Causality Test

Granger (1988) emphasized that when a long-run equilibrium relationship exists among

variables, the classical Granger causality test alone may be insufficient. In such cases, evaluating causality within the framework of an Error Correction Model (ECM) provides more accurate and reliable results. To examine the direction of the causal relationships among bitcoin prices, the dollar, and gold, the Granger causality test was conducted within the Vector Error Correction Model (VECM) framework. The test results are presented in Table 5.

Table 5. Causality Test Results

Hypothesis	Test Statistic	Probability	Causal Relationship
Gold does not Granger cause Bitcoin	43.37101	0.0000	⟷
Bitcoin does not Granger cause Gold	21.16004	0.0067	
Bitcoin does not Granger cause Dollar	9.537711	0.2990	✕
Dollar does not Granger cause Bitcoin	6.772631	0.5614	

According to the causality test results presented in Table 5, the null hypothesis of no Granger causality between Bitcoin prices and gold prices is rejected at the 1% significance level. This finding indicates the presence of a bidirectional Granger causality relationship between Bitcoin and gold prices. In contrast, the null hypothesis of no Granger causality between Bitcoin prices and the exchange rate is not rejected. Therefore, no statistically significant Granger causality relationship is observed between Bitcoin prices and the exchange rate.

5. Conclusions

The primary objective of this study is to examine the relationship between Bitcoin, a new-generation digital asset, and two traditional investment instruments that are widely preferred in Türkiye: gold prices and the exchange rate. To investigate the relationships among the variables, it is first necessary to test whether the price series are stationary. The results of the ADF unit root tests indicate that the variables become stationary after first differencing, implying that they are integrated of order I(1). Since Bitcoin, gold, and the exchange rate are integrated of the same order, the Johansen cointegration test was employed to determine the existence of a long-run relationship among them. The Johansen cointegration results reveal the presence of a long-term equilibrium relationship among the variables over the analysis period. Consistent with this finding, Telek and Şit (2020) identified a long-run relationship between Bitcoin, gold prices, and the US dollar index. Similarly, Gürbüz and Zeren (2021) reported a positive long-term association between Bitcoin prices and the US dollar. Yıldırım (2018) also emphasized the existence of a long-run cointegration relationship between Bitcoin and gold prices, highlighting that both assets are influenced by similar underlying dynamics.

Following the identification of the cointegration relationship among the variables, the effects of gold prices and the exchange rate on Bitcoin prices were analyzed using FMOLS regressions. According to the FMOLS regression results, gold prices exert a positive impact on Bitcoin prices, whereas the exchange rate affects Bitcoin prices negatively.

Finally, the study examined whether a causality relationship exists between Bitcoin prices, gold prices, and the exchange rate. Since the variables were found to be cointegrated, the causality analysis was conducted using the VECM-based Granger causality test. According to the results, a bidirectional causality relationship was identified between Bitcoin and gold. This finding is consistent with the study conducted by Gürsoy and Sökmen (2021). In contrast, Işıldak (2022) and Shariati (2022) reported a unidirectional causality running from gold prices to Bitcoin prices. Regarding the causality between Bitcoin and the exchange rate, no statistically significant relationship was detected. However, Işıldak (2021) identified a unidirectional causality from the

US dollar to Bitcoin in prior literature. In this respect, the findings of the present study differ from some of the earlier empirical evidence.

The results of the analysis indicate that Bitcoin, gold, and the exchange rate move together in the long run. The positive impact of gold prices on Bitcoin suggests that investors perceive both assets as similar stores of value. Conversely, the negative effect of the exchange rate on Bitcoin may be explained by investors' tendency to shift away from riskier assets when the US dollar strengthens. The bidirectional causality detected between Bitcoin and gold further implies mutual interactions between these two markets. The absence of significant causality between Bitcoin and the exchange rate indicates that the short-term influence of the dollar on Bitcoin is limited. Overall, the findings reveal that investors tend to evaluate Bitcoin in conjunction with gold, and that the linkage between traditional financial indicators and cryptocurrency markets has been strengthening over time. These results suggest that investors may exhibit a tendency to either move toward or away from Bitcoin by considering these two key variables in their portfolio decisions.

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Learners' and Teachers' Perception of the Use of Albanian Language in Learning English Language

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Abstract

Introduction: Debate over native-language use in foreign-language classrooms has persisted for decades, especially regarding how much first-language input helps or slows second-language acquisition. This study examines that tension within Albanian learners' English-learning context.
Aim: The study investigates how learners and teachers perceive the role of Albanian in English instruction and how that presence shapes the overall learning experience.
Method: A quantitative design using structured questionnaires with closed-ended items and Likert scales generated numerical data for statistical interpretation of attitudes and usage patterns.
Findings: Both groups leaned heavily on Albanian during English learning. Students reported clearer comprehension when drawing on their native language, while teachers showed a generally positive stance toward its strategic use. Results indicate consistent L1 use across classrooms and a shared belief in its practical value.
Conclusion: Albanian played a sustained, functional role in English learning, supporting deeper understanding and smoother acquisition rather than obstructing it.
Originality and value: The study offers evidence-based insight into an under-researched linguistic context, clarifying how intentional first-language integration can strengthen second-language learning and reflecting the lived practices of both learners and teachers.

Keywords: **teachers' perception, learners' perception, EFL learning, EFL classroom, Albanian language usage**
Jel Codes: I2, I21, I23

1. Introduction

The use of the Albanian language has been an unavoidable part of English language learning in several perspectives where both the teachers and the students have the same mother tongue. The use of a student's mother tongue (L1) in a foreign language classroom is unavoidable. This paper analyzes and discusses its use and functions in different situations. This research paper aims to see if the amount of L1 used by teachers and students varies depending on a variety of factors, including which functions they use it for, whether they are aware of the amount and functions, whether the instructors are satisfied with the amount of L1 they use, whether their students are satisfied with it, and whether their satisfaction varies depending on the amount used by their instructors.

1.1. Context and Background of the Study

The role of the native language in foreign language classrooms has been a subject of debate among educators and researchers for decades. While some advocate for an immersive approach with exclusive use of the target language (English), others acknowledge the benefits of incorporating the learners' first language (Albanian) as a supportive tool. This study focuses on

exploring the perceptions of learners and teachers regarding the use of Albanian in English language learning at "Mati Logoreci" Lower Secondary School in Prizren.

Prizren, as a linguistically and culturally diverse city in Kosovo, offers a unique setting for investigating bilingual and multilingual educational practices. "Mati Logoreci" Lower Secondary School, known for its emphasis on language education, serves as an ideal case study for understanding the interplay between L1 and L2 in classroom contexts. The school provides English as a Foreign Language (EFL) instruction to learners with varying degrees of exposure to English outside the classroom, making the strategic use of Albanian by both students and teachers particularly relevant.

This research aims to address how Albanian language usage aligns with the learning goals and expectations of both parties. Learners often view the integration of their native language as a safety net that bridges the gap between unfamiliar English concepts and their pre-existing knowledge in Albanian. Teachers, on the other hand, must strike a balance between leveraging the native language as a pedagogical tool and fostering an environment conducive to English language immersion.

By examining the practices and attitudes at "Mati Logoreci," this study contributes to a broader understanding of the advantages and limitations of using the native language in EFL classrooms. The findings have implications not only for improving language teaching strategies at this specific school but also for shaping educational policies and practices in similar contexts across Kosovo and beyond.

1.2. The Role of L1 in Language Learning

According to Larsen-Freeman (2000), the native language of the learners is used in the classroom in order to enhance the safety of the learners, to provide a bridge from the familiar to the unfamiliar, and to simplify the meanings of the target language words clear. In most of the cases that the Albanian language take place, there is a mutual point from the teachers of English language that the Albanian language provides the learners an acquainted and effective approach of instantly getting to know with the significance and content of what is demanded to be used in the English language. Actually, the use of Albanian language may contribute to the language learning process on several occasions in the learning-teaching process; however, the excessive use of it may result in too much dependence on it, which is the less preferred outcome, so the L1 needs to be perceived as a useful tool that like other tools should be used where needed but should not be over-used. In addition, according to Tang (2002), the adequate use of L1 is supportive and can facilitate the learning of the target language. However, the use of Albanian Language should not be overstated because the more the learners are exposed to the target language, the better they will learn it.

Learners base upon their previous knowledge of the Albanian language to learn the English language. Cook (2001), further asserts the significance of modeling the target language and encouraging L2 use. Moreover, Eldridge (1996), emphasizes there is no experimental proof to support the idea that limiting mother tongue use would inevitably increase learning efficiency, and that the majority of code-switching in the classroom is highly purposeful, and associated to pedagogical objectives.

Accordingly, the current study is aimed at providing a detailed view of both learners' and teachers' perception of the use of the Albanian language in the EFL classroom.

1.3. Research Aims and Objectives

The research will focus on the examination of both English teachers' and students' attitudes and ways of implementing Albanian language in EFL teaching and learning in Mati Logoreci lower secondary school in Prizren. Findings will demonstrate what pedagogical stance teachers take with regard to Albanian as the mother tongue in EFL classes. After understanding teachers' and

students' attitudes, the investigation will attempt to explore whether there are gaps between attitudes and implementation. The findings seek to illustrate more specifically the situations and topics in which teachers and students believe that using the Albanian language can help them learn and teach more effectively. Last but certainly not the least, the findings of this research paper will serve as a reference material and a guide for future researchers who wish to conduct any study related to the use of mother tongue in EFL classes.

1.4. Research Questions

The paper will attempt to answer the following research questions:
R.Q. 1 – What are teachers' and students' perceptions of the use of mother tongue (Albanian language) in EFL classes?
R.Q. 2 – To what extant is the mother tongue (Albanian language) used in EFL classes?

R.Q. 3 – What are the effects of mother tongue (Albanian language) use on students' English language proficiency and classroom engagement in EFL settings?

1.5. Research Hypotheses

R.H. 1: Teachers and students perceive the use of the mother tongue (Albanian language) as a beneficial strategy for improving comprehension and reducing learning anxiety in EFL classes.

R.H. 2: The mother tongue (Albanian language) is used selectively in EFL classes, primarily for explaining complex concepts and providing instructions.

R.H. 3: Controlled and strategic use of the mother tongue (Albanian language) positively impacts students' English language proficiency and classroom engagement.

2. Literature Review

The amount of the mother tongue used by teachers and learners in the classroom affects the way learners learn the target language. According to Tang (2002) the CA strongly recommends that L2 be taught monolingually using authentic classroom activities. It also advises teachers to avoid utilizing their students' first language, as such practices are irrelevant in second language learning. As a result, non-native English teachers who worked in an English-only setting always felt guilty when using learners' L1 to enhance learning since they believed they were violating the norms defining appropriate teaching practices at the time.

In a study conducted with students by Brooks-Levis (2009), he came up with a result that learners showed that the use of L1 decreases anxiety, lets them convey their life experiences to the classroom, and generates an effective learning environment. The usage of L1 in an English classroom is vital for comprehension and elaborating on meaning. As stated by Al-Amir (2017), "Without it, there would be no comprehension since learning new meanings is associated with linking these meanings with L1" (p. 13). Although learners agree and are always willing to use the mother tongue in an EFL, most teachers do not support this method. They claim that the target language should be used but, the target language is depended on the first language. This sparked the idea of Butzkamm (2003), to conduct a research and state in it to conclude that the aim behind teachers' principles in monolingualism is the enormous number of native speakers, who do not communicate in the language of their learners, and the production of textbooks that are only limited to English language. Butzkamm (2003), furthermore, argued that using the mother tongue is not only inevitable but also vital. Without it, there would be no comprehension since learning new meanings is related with concerning these meanings with L1.

Furthermore, Al Sharaeai (2012), carried out a research to provide an insight into why English language students use their mother tongue in their English classrooms instead of using English. The research also tried to understand foreign English students' perceptions and approaches on their usage of their mother tongue in their English language classrooms. Data was collected through an online survey and follow-up interviews based on 51 total participants.

The results of the research revealed that students used their first language for a range of aims according to participants' language backgrounds, age, and the English language proficiency level, also when teachers explain some points that students have a problem with, they use the L1 to respond, so the use of L1 in their EFL classrooms have a range of reasons.

The use of the native language (L1) in foreign language classrooms has been recognized as a helpful tool in facilitating the learning process. "According to Vygotsky (1978) language is the primary means by which children organize and understand their experiences" (as cited in Johnson, 2000, p. 65). This suggests that the native language can serve as a cognitive scaffold for learners as they acquire a new language, allowing them to build on their existing knowledge. Moreover, Cook (2001) highlights that "L1 can be used strategically in the classroom to explain difficult grammar points or new vocabulary in the target language, especially when students are at an intermediate or beginner level" (p. 85). This aligns with the view that while over-reliance on L1 can limit exposure to the target language, it can also enhance comprehension and retention when used effectively. Similarly, Ellis (2005) argues that "the use of the native language in the classroom should not be viewed as a hindrance, but rather as a resource that supports second language development" (p. 73). In the case of Albanian-speaking learners, teachers may use Albanian to clarify complex English language concepts, fostering better understanding and smoother progression in language learning.

By this we can conclude that the usage of mother tongue in an EFL should not be denied, its importance helps learners succeed in learning the target language and therefore, improve their skills in speaking.

3. Research Methodology

The research: "Learners' and teachers' perception of the use of Albanian language in learning the English language" sought to examine what the learners and teachers think about this topic, how they use the native language and the English language, which is their choice of using these two languages. The research will be conducted with the learners of sixth and seventh grades, comprising 100 learners, and 5 teachers of the English language of lower secondary school ''Mati Logoreci''in Prizren.

3.1 Research design

Questionnaire – A questionnaire will be devised to examine students' attitude toward using Albanian language in EFL classes using a five-point Likert scale, ranging from 'Strongly Disagree' to 'Strongly Agree'. Such a scale provides quantitative data that are accurate, measurable and easy to analyse. It will measure direction and intensity of attitude through inviting respondents to determine to what extent they agree or disagree to a set of statements. A questionnaire will be also created to explore teachers' perceptions toward using Albanian in English classrooms. Similar to the students' survey, this one will use a five-point Likert-scale, and consisted of two main parts. The first part will include 8 items and focus on teachers' perceptions (items 1-8), whereas the second part will include 12 items and examined the various learning occasions where teachers thought Albanian could be beneficial in learning English (items 9-20).

3.2 Research Procedure

For the purpose of this research, a quantitative approach will be utilized through the use of questionnaires which will be administered to both students and teachers. The student questionnaire aims to examine learners' attitudes toward the use of the Albanian language in English as a Foreign Language (EFL) classrooms. This questionnaire, using a five-point Likert scale, will be distributed to students in EFL courses at various levels. The participants will be provided with clear instructions on how to complete the questionnaire. Demographic information, such as gender and age, will not be requested from the students.

Similarly, a teachers' questionnaire will be distributed to English teachers involved in EFL instruction. The questionnaire will be divided into two parts: one focused on teachers' general perceptions of the use of Albanian in the classroom, and the other examined specific instances where teachers believed Albanian could be beneficial in teaching English. The teachers will be given instructions on how to complete the questionnaire, and no demographic details will be requested.

3.3 Data analysis

The data collected from the questionnaires will be analyzed using descriptive statistics to examine the students' and teachers' attitudes toward the use of Albanian in English as a Foreign Language (EFL) classrooms. The responses to the Likert scale questions will be coded and analyzed to identify trends in the participants' perceptions.

The results will be presented visually using pie charts and tables. The pie charts will illustrate the distribution of responses for each question, showing the proportion of students and teachers who agree, disagree, or hold neutral views on specific statements regarding the use of Albanian in the classroom. This will provide a clear visual representation of the data and allow for easy comparisons between different response categories.

Tables will be used to display the numerical values of the responses for each item in the questionnaire. These tables will include the frequencies and percentages of each response option for all questions.

By utilizing pie charts and tables, the data analysis will offer a clear and accessible presentation of the findings, highlighting key patterns in the responses and providing a comprehensive view of students' and teachers' perceptions of the role of Albanian in English language learning.

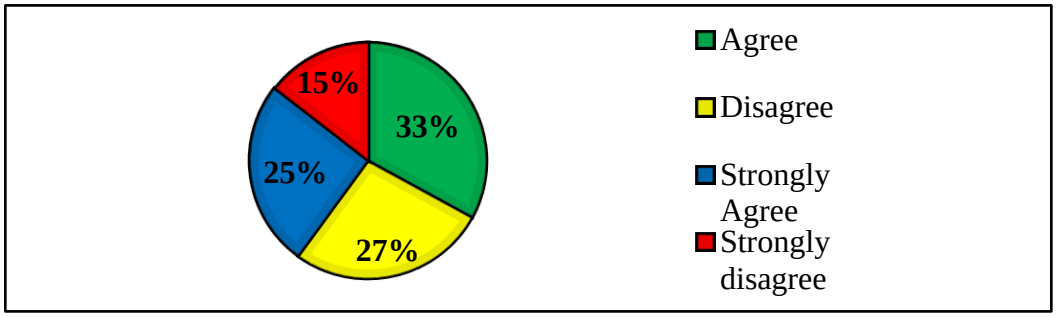
4. Data Analyses

Below are charts that present the results collected from questionnaires that were completed by learners of the sixth and seventh grades. The results below show the number of the learners' positive or negative answers to the questions related to the research problem, which is their perception of the use of Albanian language in learning the English language. The questionnaire consists of fourteen questions, seven of which are close-ended questions as well as seven open-ended questions attached.

4.1 Results from the learner's questionnaire

Question 1. **Importance of Albanian language in the classroom - Is it important to use the Albanian Language in the English language classroom?**

Figure 1. *The importance of Albanian language usage in EFL classroom*

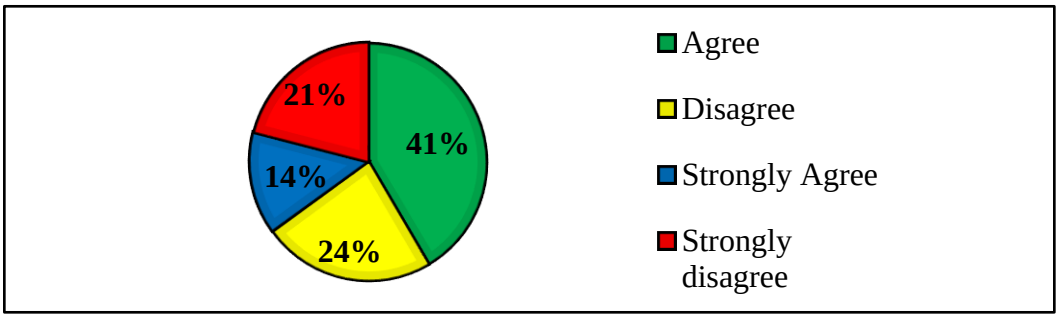


Regarding the first question as to importance of L1 in EFL class, it is proved that 33% of the learners agreed to use the Albanian language in an English language classroom because they do not have much knowledge about the course, whereas, 27% of the learners disagreed with using the Albanian language, because this number of learners understand both of languages. On the other hand, 25% of the learners strongly agreed to use the Albanian language in the English

classroom because they do not understand the second language, and is obligation of the teacher to explain lessons and tasks in their language, whereas, only 15% of the learners strongly disagreed on using the Albanian language in English class, because they wanted to use the English language only.

Question 2. **I benefit using the Albanian language in the English class - Do you benefit from the usage of Albanian in English class and what are the benefits?**

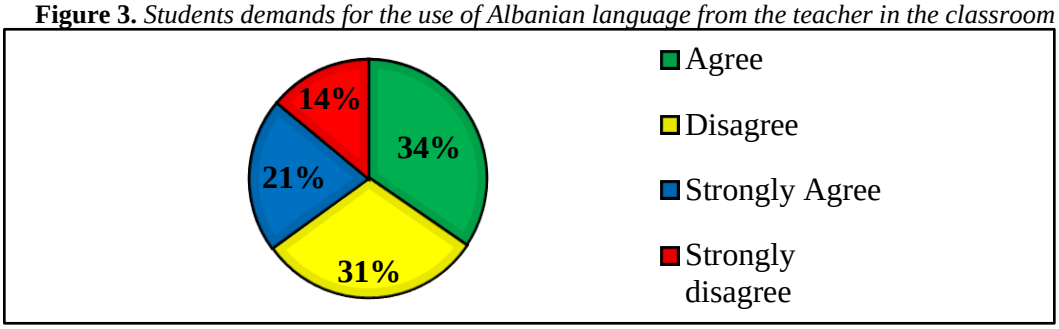
Figure 2. *The benefits of using the Albanian language in the English class*



Considering the learners' answers on benefits of using L1 in EFL class, the results revealed that 41% of the learners think that they benefit from the use of Albanian in the English class because in this way all of the learners can understand the requirements of the teacher, whereas, 24% of the learners disagreed with this question because they do not benefit, but they think that in their class they have friends that do not understand the English language, and the Albanian language should be used. On the other hand, only 14% of the learners strongly agreed with this question, and they said that the teacher must definitely translate what they have to do during the English class, otherwise they do not know what to do, whereas, 21% of the learners strongly disagreed because they do not benefit using the Albanian language in the English class, and they want to use only English.

Question 3. **I want the teacher to use the Albanian language in the classroom – Do you like your teacher to use a native language in your class?**

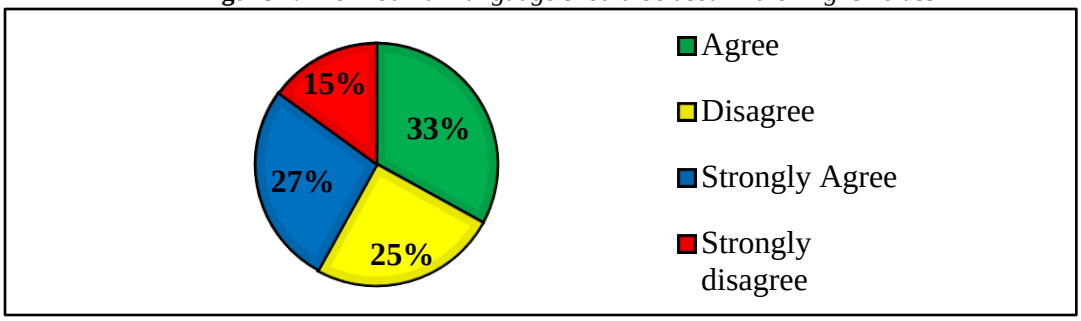
Figure 3. *Students demands for the use of Albanian language from the teacher in the classroom*



According to the answers of the learners on the use of teachers' L1 in class, it is proved that 34% of the learners want the teacher to use the Albanian language in English class, for the mere fact that they understand better in Albanian rather than English language, whereas, 31% of the learners do not like the teacher to use the Albanian language in the English class, because they understand English language. On the other hand, 21% of the learners like very much when the teacher uses the Albanian language in the English class because in this way they understand clearly, whereas, only 14% of the learners strongly disagreed, because they categorically do not like when the teacher speaks the Albanian language because this is an English language class and not an Albanian language class.

Question 4. **The Albanian language should be used in the English class – How often do you think Albanian should be used in your class?**

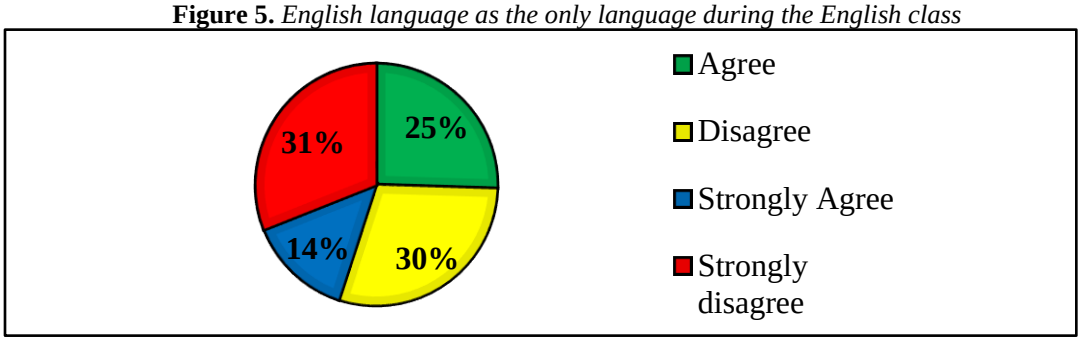
Figure 4. *The Albanian language should be used in the English class*



When asked if L1 should be used in the English class, 33% of the learners said that the Albanian language sometimes should be used in the English class, whereas, 25% of the learners think that the Albanian language rarely should be used in the English class. On the other hand, 27% of the learners always wanted the Albanian language to be used in the English class, whereas, only 15% of the learners never wanted to use the Albanian language in the English language class.

Question 5. **Only English must be used in the English classroom – If you strongly disagree – give reasons why?**

Figure 5. *English language as the only language during the English class*



Considering the learners' answers it is proved that 25% of the learners agreed on teachers' use of the English language most of the time but not always, whereas, 30% of the learners disagreed with using the English language only. On the other hand, only 14% of the learners wanted the use of the English language only, without the Albanian language, whereas, 31% of the learners strongly disagreed with this idea, because they are still young to understand English language completely, and it is much easier for them remembering the information they receive during the learning process of English language in Albanian language

Question 6. **The Albanian language helps to learn the English language – If you strongly agree or disagree why?**

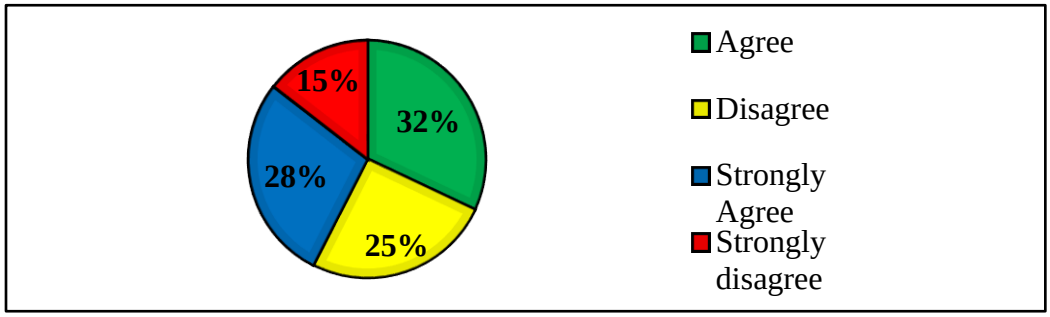
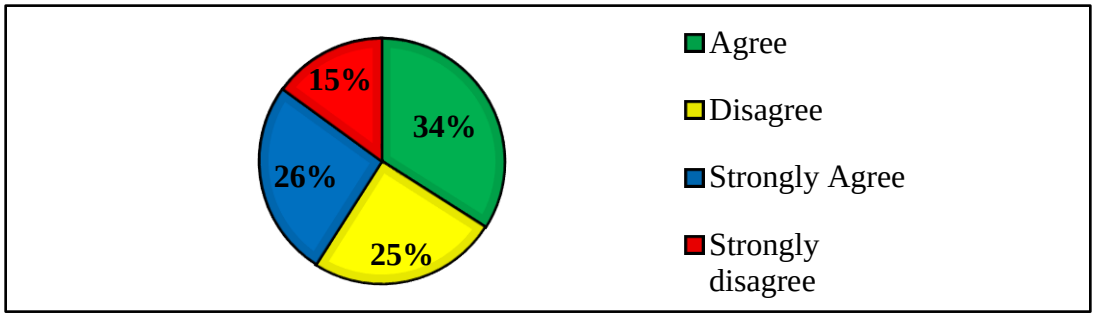


Figure 6. *The help of Albanian language in learning the English language*

Learners were asked if L1 helps them to learn the English language, and 32% of the learners agreed that the Albanian language helps them to learn the English language, whereas, 25% of the learners disagreed that the Albanian language helps them to learn the English language. On the other hand, 28% of the learners strongly agreed because when the teacher speaks in the Albanian language, it can help them understand the lesson during the English language class, whereas, only 15% of the learners wanted the use of the English language only, because it can help them much more to understand the lesson.

Question 7. **Both Albanian and English language must be used at the same time – Should both Albanian and English language used at the same time, if not why?**

Figure 7. *The usage of both Albanian and English language at the same time*



Last question was if both L1 and L2 must be used at the same time, and it is proved that 34% of the learners agreed to use both of the languages because it leads to a better understanding of the content and to a more positive attitude towards the lesson, whereas, 25% of the learners said that they do not think the Albanian language and the English language must be used at the same time, because they may mix the grammar rules with those of Albanian language. On the other hand, 26% of the learners strongly agreed that the Albanian language is necessary to use in English class, and the teacher must translate every English sentence for them if they do not understand it, whereas, only 15% of the learners strongly disagreed with using both languages because they want to use only English language.

4.2. Results from the teachers' questionnaire

The aim of this section is to analyse teachers' responses on the questionnaire in light of the research questions stated earlier. Items from one to nine focus on the teachers' perception toward using Albanian in EFL classrooms, whereas items ten to twenty explore the potential learning occasions where using Albanian during English classrooms may be beneficial.

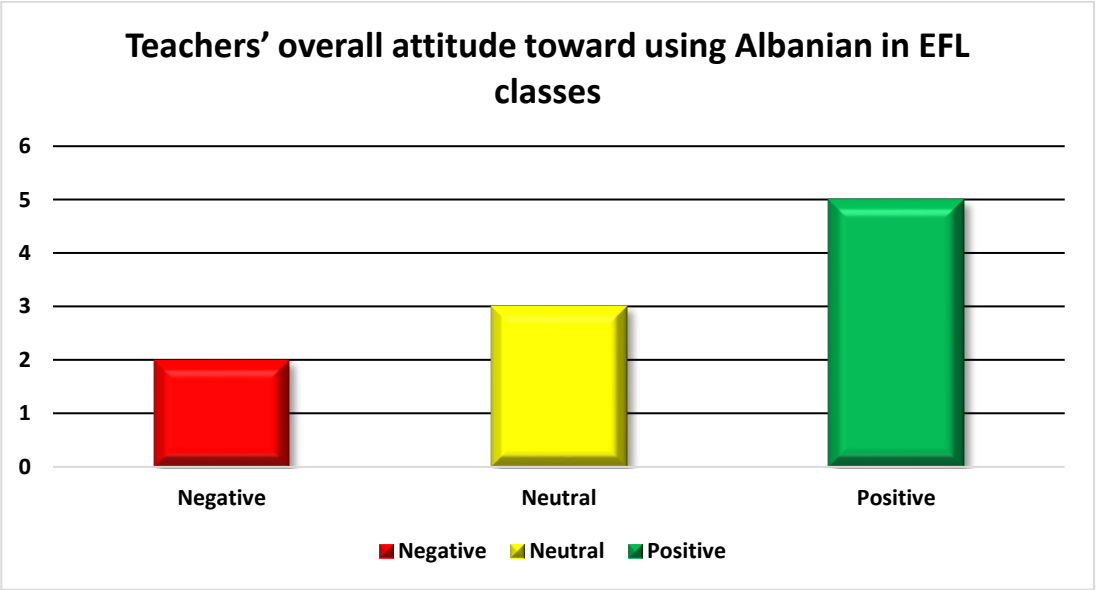


Figure 8. *Teachers' overall attitude toward using Albanian in English classrooms*

Figure 8 illustrates the teachers' overall attitude toward using Albanian language in English classrooms. As can be seen from this figure, the surveyed teachers have a slightly overall positive attitude in regard to the use of their students' L1 in English classrooms. The data is split down the middle. Five of the teachers are in favour of using Albanian when learning English, whereas the negative and neutral attitudes score the same number of the subjects' responses respectively.

Table 1. Teachers' overall attitude toward using Albanian in English classrooms per item

#	Items	Overall Attitude		
		Negative	Neutral	Positive
1	L1 should be used in English classes	15%	20%	65%
2	Teachers should know their students' first language.	20%	30%	50%
3	Teachers should not use their students' first language.	60%	20%	20%
4	Students' first language should be allowed during English lessons.	45%	20%	35%
5	Using L1 prevents students from learning English.	40%	15%	45%
6	Teachers should follow an English-only policy in the classroom.	75%	0%	25%
7	Bilingual dictionaries help students understand the new vocabulary.	20%	5%	75%
8	I do not feel comfortable when my students use their first language	60%	20%	20%

Table 1 shows the teachers' overall attitude toward using Albanian per item on the questionnaire (items 1-8). As can be seen from this table, the teachers respond positively on items one, two, five, and seven. Sixty five percent of the surveyed teachers believe that Albanian should be used in English classes. Half of the teachers (50%) agree that their teacher should know the students' MT. Also, forty five percent do not agree that Albanian prevents students from learning English, in comparison to forty percent who believe so. In addition, the majority of the teachers (75%) indicate that bilingual dictionaries help students understand the new vocabulary. On the other hand, items three, four, six, and eight show a negative attitude toward the use of Albanian in English classrooms. The majority of the teachers (60%) think that teachers should not use their students' mother tongue. Similarly, seventy five percent indicate that teachers should follow an English-only policy in the classroom. About forty five percent of the teachers respond negatively when asked whether the students should be allowed to use their L1 during the English class. Moreover, sixty percent do not feel comfortable when their students use Albanian.

Table 2. Teachers' view regarding the frequency of using Albanian in English classrooms

#	Item	Never	Rarely	Sometimes	Often	Always
9	9 I think L1 should _____ be used in the English classroom.	0%	40%	40%	10%	10%

Table 2 shows the teachers' overall view regarding the frequency of using Albanian in English classrooms. As is evident from the table, forty percent of the teachers indicate that Albanian should 'sometimes' be used in English classrooms. The same percentage (40%) thinks that it should 'rarely' be used.

Table 3. Teachers' overall view regarding the learning occasions where using Albanian during English classes may be appropriate

#	**Items**	**Overall attitude**		
		Negative	Neutral	Positive
It's appropriate to use Albanian to …				
10	explain difficult concepts.	20%	10%	70%
11	facilitate complicated English classroom tasks.	20%	20%	60%
12	introduce new grammatical rules.	60%	20%	20%
13	raise students' awareness of the differences and similarities among Albanian and English.	25%	15%	60%
14	explain new vocabulary especially abstract items.	15%	10%	75%
15	help students feel more comfortable/confident.	30%	25%	45%
16	give instructions.	75%	5%	20%
17	build up a good rapport with students.	40%	20%	40%

18	express students' feelings and ideas when they fail to do that in English.	20%	20%	60%
19	explain the English idioms and expressions.	25%	25%	50%
20	complete pair/ small-group work activities.	65%	10%	25%

Table 3 presents the teachers' overall view regarding the possible learning occasions where it is appropriate to use Albanian in English classrooms. The teachers show a positive attitude on all the listed items, except for three: twelve, sixteen, and twenty. As indicated in the table above, the teachers' positiveness ranges from forty-five to seventy five percent. The majority of the teachers believe that it is appropriate to use Albanian to explain difficult concepts (70%). Also, sixty percent think that using Albanian might facilitate complicated English classroom tasks. The same percentage (60%) agrees that it helps to raise students' awareness of the differences and similarities between Albanian and English. The majority of the teachers (75%) believe that it is suitable to explain new vocabulary especially abstract items. They also indicate that students might use Albanian to express their feelings and ideas when they fail to do that in English (60%). Finally, half of the teachers indicate that Albanian is convenient to explain English idioms and expressions. On the other hand, items twelve, sixteen, and twenty show teachers' concerns regarding using Albanian in particular learning situations. As can be seen in Table 3, sixty percent do not agree that Albanian is useful when introducing new grammatical rules. The majority of the teachers do not see the value of using students' L1 to give instructions (75%). About sixty five percent do not agree that using Albanian is convenient to complete pair and small-group work activities. As mentioned, teachers' qualitative comments on the questionnaire items are combined and summarized in order to obtain a more in-depth understanding, and enrich the study. These comments confirm the quantitative findings of the teachers' questionnaire. As can be noted, these comments indicate that the teachers have a slightly positive attitude toward the use of Albanian during English classes. A lot of comments indicate that Albanian is beneficial and should be used in English classrooms, especially with lower-level students. Its use can reduce anxiety and create less intimidating learning environment for beginners. If full immersion occurs before basic skills are gained, students will lose desire to learn the target language. However, there are other comments that stress the importance of maintaining an English-only environment, as the students have a limited opportunity to use the target language outside the classroom. L1 should be used as rarely as possible and kept to the minimum, as it should be used in a scaffolded way where the L1 is phased out as the students' level increases. As has been seen, the previous section reports the findings of the collected data from the teachers' questionnaire in light of the research questions listed in the introduction. The following section reports the findings of the data collected from the semi-structured interviews conducted with four of the teachers, who showed interest in being interviewed.

5. Interpretation of Results

While inspecting the process of learning the English language, we perceived the influence of Albanian language interference, which could occur in different situations while learning the English language.

Based on the findings, there is an undeniable and significant relationship between learners and teachers use of Albanian language in EFL classes. Therefore, the use of the Albanian language is an essential issue that can help the learners to achieve their ultimate goal in learning the English language. In learning the English language, it is frequently found that L1 is used by both the teachers and learners. On the other side, the Albanian language is considered to not use at all as a part of the English language classroom, because it can intrude the way towards learning the L2.

Research findings on students' and teachers' views on the use of Albanian in EFL classes are strikingly comparable to those of earlier studies in the literature. The findings of these research show that teachers and students agree on the necessity of L1 use in TL programs. Despite the various circumstances in which these studies were conducted, the findings suggest that learners and teachers have good attitudes regarding employing learners' MT in foreign language learning. Both learners and teachers should be allowed to utilize learners' L1 in FL classrooms, according to the involved subjects, because using L1 helps students learn English. In this context, it is emphasized the need of integrating learners' native languages back into EFL classrooms in order to foster positive attitudes toward learning the target language. Because of its educational and affective benefits, limited and appropriate use of L1 may be accepted. It was highlighted the importance of including the L1 in L2 sessions on occasion to address learners' psychological demands of not displaying their MT as inferior to the TL. Limited and appropriate use of the mother tongue in the English classroom does not lessen students' exposure to English, but rather can aid in the teaching and learning processes.
Excessive use of Albanian, on the other hand, would have a negative impact on and impair learning English. Based on the findings, there is an undeniable and significant relationship between teachers and students use of Albanian language in EFL classes. Therefore, the use of the Albanian language is an essential issue that can help the students to achieve their ultimate goal in learning the English language. In learning the English language, it is frequently found that the mother tongue (Albanian language) is used by both the teachers and students. On the other side, the Albanian language is considered to not use at all as a part of the English language classroom, because it can intrude the way towards learning the English language.

The current study findings suggest that low-level students had a more favorable attitude toward using Albanian than intermediate and advanced students, which is consistent with previous discussed findings. Low-level students are more linguistically challenged than other students due to their inadequate English experience, as they are unable to cope with the intensity of the language they are exposed to. As a result, permitting Albanian in English lessons reduces their 'affective filter,' resulting in a more relaxed and less threatening learning atmosphere. They gain from the use of Albanian on occasion, which helps them stay up with the lesson's progression. The study's findings, on the other hand, reveal that advanced and intermediate students have a negative attitude regarding the usage of Albanian in English language classes. These students regard Albanian as a barrier to acquiring the TL since it stops them from doing so. As a result, they believe it should be prohibited in EFL lessons. Furthermore, allowing students and teachers to communicate in Albanian reduces students' exposure to English while increasing their reliance on their MT.

6. Conclusions

The study aimed to examine learners’ and teachers' perceptions of the topic. Collected data revealed that Albanian learners who learn EFL are very positive towards the use of L1 in EFL learning. Evidence gathered from the research shows that Albanian EFL teachers share a positive attitude towards the use of Albanian language for instruction in EFL learning. They consider the usage of Albanian language as an essential component of language learning and think that learners who possess good knowledge of the English language learn the target language better in comparison with those who know less English, and the usage of Albanian language is necessary to learn the target language.

Altogether, bringing L1 into the English language classes, learners will be more courageous and willing to learn the English language since their preferences are taken into account and are esteemed properly. Moreover, this research proved that if we effectuate the use of both the Albanian language and the English language in EFL classes it will be very useful to the learners to learn the content of the lesson.

To summarize, this research paper examined learners’ and teachers' views about the use of learners' L1 in EFL classrooms in an attempt to add to the long discussion between monolingual

and bilingual approaches. It is hoped that the outcomes of this investigation will encourage educational policymakers to reassess the importance of a learner's mother tongue in foreign language learning and to seek teachers' and students' feedback when making such decisions. Altogether, bringing L1 into the English language classes, students will be more courageous and willing to learn the English language since their preferences are taken into account and are esteemed properly. Moreover, this research proved that if we effectuate the use of both the Albanian language and the English language in EFL classes it will be very useful to the learners to learn the content of the lesson.

7.Limitations

The current research has its own limitations. Among these limitations is that it was conducted on a small scale: only one hundred Grade 6 and 7 students and five teachers participated in the questionnaires. Moreover, the context of the study did not represent all government public lower secondary schools, as this investigation was carried out in one lower secondary school in Prizren, Kosovo. Such limitations are important to consider before replicating the current study in other contexts, as this may affect the obtained data and also make it difficult to generalize its findings. Future research design may attempt to find out to what extent these factors may impact the results.

8. Recommendations

Certain recommendations for instructors have been/can be drawn from the current research paper:

- The research conducted the perception of both teachers' and students' perception of the use of Albanian language; therefore, teachers should make students talk a lot whether in Albanian language or English language during the lesson and participate during the communicative activities and always motivate them towards success.
- It is recommended that teachers should be more tolerated towards students' choice of language, and value their fluency of English and use of Albanian language during English classes.
- It is suggested that the teacher emphasize the similarities and differences between the two languages, allowing the students to get more familiar with the grammatical components of L1 and L2. In their language learning process, it would be beneficial for learners to understand, comprehend, and master many language things. As a result, students are able to swiftly identify and correct their mistakes, whether they are deliberate or unintentional. As a result, the curriculum must be designed in such a way that teachers can properly implement such ideas.
- Another suggestion is to make language learning more purposeful and meaningful. Language-learning experience, in contrast to language analysis, is the use of target language for real-world communicative purposes. Those learners who are accustomed being taught purely in their mother tongue may be uneasy at first if their lecturers speak to them in English only, expecting them to not only understand but possibly reply. As a result, additional early-stage supplementation is required.
- Finally, in classes where everyone speaks the same L1, teachers must employ a variety of strategies to encourage students to use L2 as often as feasible.

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Post-Pandemic Fiscal Sustainability: Public Debt and Budget Reforms in Emerging Economies

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Abstract

Introduction: Even though the COVID-19 pandemic primarily emerged as a health crisis, it rapidly turned into a multidimensional crisis that significantly affected the functioning of economic structures on a global scale. Many countries attempted to address the economic problems arising during the pandemic by intervening in their economies through expansive fiscal policies and comprehensive stimulus packages. These interventions caused notable deviations in macroeconomic indicators, especially in developing countries, and left permanent effects on public finance balances. Thus, these disruptions emerging in public debt dynamics and fiscal policies, have directly affected economic stability and sustainable development goals (SDG's). These effects continue to prevail as structural economic problems that still anticipate solutions today.
Aim: Primary objective of this study is to comparatively analyze the fiscal policies adopted by Turkey, Brazil and India in the post-pandemic period to achieve economic stability, from a fiscal sustainability perspective.
Method: This study adopts a literature review and analytical approach based on secondary data sets, and macroeconomic data from the period 2015-2024 were used to enable a comparative evaluation
Findings: The key indicators included in the analysis are the public debt/GDP ratio, inflation rate, budget deficit, and growth rate. These indicators are used to highlight how the pandemic has affected the public finances of developing countries, to evaluate the challenges related to debt sustainability, and to offer policy suggestions for the budget reforms needed to achieve fiscal discipline.
Conclusion: Post-pandemic fiscal policies have left structural effects on developing economies. Addressing these effects requires long-term budgetary reforms and targeted fiscal strategies.
Originality and value: The study contributes to the literature by presenting a comparative evaluation of three developing economies and highlighting key fiscal policy challenges and reform needs in the post-pandemic era.

Key words: fiscal policy, public debt, pandemic, developing countries
Jel Codes : E62, H63, H12

1. Introduction

Initially, the COVID-19 pandemic emerged as a public health crisis; however, over time, it evolved into a multidimensional crisis that profoundly impacted economic structures worldwide. Developing countries, in particular, faced significant pressure on public finances, prompting governments to implement expansionary fiscal measures and comprehensive stimulus packages to support their economies. The design and effectiveness of these interventions varied across countries, influenced by factors such as economic structure, debt capacity, and institutional strength. In response, Turkey, Brazil, and India adopted a range of policies aimed at safeguarding economic stability and managing public debt. This study seeks to comparatively evaluate these policy measures, examining their implications for post-pandemic public debt dynamics and overall economic resilience. A comparative analysis

of Türkiye, Brazil, and India demonstrates how divergent institutional capacities and political priorities mediate fiscal outcomes. This comparison illustrates that ostensibly similar policy instruments, such as fiscal stimulus, can yield markedly different results across national contexts. The post-pandemic era has been characterized by the widespread implementation of large-scale fiscal support packages. While these measures provided crucial short-term macroeconomic stabilization, they have introduced significant long-term uncertainties regarding fiscal sustainability, a concern prominently highlighted by the (World Bank Group [WBG], 2022). This study, therefore, investigates the following central research question: To what extent have the post-pandemic fiscal policies of Türkiye, Brazil, and India been effective in ensuring economic stability and maintaining debt sustainability? Accordingly, the following sub-questions will be addressed:

How did fiscal policies implemented during the pandemic affect macro indicators such as the public debt-to-GDP ratio, budget balance, and inflation?

In what ways did the different economic and institutional structures of countries influence fiscal policy outcomes?

What policy recommendations could be proposed to restore fiscal discipline in the long term?

2. Literature Review

The fiscal challenges faced by emerging economies in the post-pandemic era require grounding in two core areas of economic literature: the theoretical framework of debt sustainability and policy interactions and the empirical evidence of crisis responses in developing countries.

2.1 Theoretical Framework

A foundational understanding of public debt dynamics is provided by Reinhart and Rogoff (2009). Their historical analysis, documented in *This Time is Different*, establishes that governments facing persistently high public debt often resort to mechanisms of financial repression (Reinhart & Rogoff; 2009).

As Acemoglu and Robinson (2012) emphasize, economic outcomes are not simply a product of implemented policies but a reflection of the institutional framework within which these policies are implemented (Acemoğlu & Robinson, 2012).

The European Central Bank (ECB) (2022) report highlights how the required policy mix has shifted dramatically since the pandemic. Initially, highly expansionary fiscal and monetary policies were aligned to support recovery. However, the subsequent environment of high inflation and geopolitical tensions created a significant risk of policies "pulling in opposite directions." The ECB report stresses that when an independent central bank works to control inflation, fiscal policies can counteract this effort. The key theoretical recommendation is that fiscal interventions must be temporary, targeted, and focused on structural reforms and public investment to increase long-term supply and prevent fueling inflation (ECB, 2022)

2.2 Empirical Literature

The COVID-19 pandemic led governments worldwide to adopt fiscal support packages of unprecedented scale. As documented in the IMF's *Fiscal Monitor* reports (October 2020), these measures combined direct transfers, tax relief, and credit guarantees, though their composition varied sharply between advanced and emerging economies. Advanced economies relied heavily on direct spending, whereas many emerging markets implemented more limited packages that leaned on credit provision and liquidity support. Against this global backdrop, this study situates the fiscal responses of Turkey, Brazil, and India within the broader trend of emerging economies, with particular attention to the implications of their differing policy choices for debt sustainability (IMF,2020).

Van der Hoeven and Vos (2022) argue that developing countries were far more affected because they lacked the fiscal space to implement the massive financial support packages deployed by

advanced economies. Their findings confirm that this lack of capacity led to sharp increases in poverty, food insecurity, and inequality in the developing world. The study further criticizes the International Financial and Fiscal System (IFFS) for failing to provide adequate multilateral contingency financing, thereby amplifying the domestic fiscal challenges. This empirical evidence supports the study's focus on the domestic policy choices of emerging markets (Hoeven & Vos, 2022)

Delving deeper into challenges specific to emerging markets, Rao (2022) offers a critical examination of India's persistent fiscal deficit and debt issues in *Sustainable Fiscal Policy in India: Post-Pandemic Challenges*. Rao highlights that India's debt levels were already notably higher than those in many peer emerging economies, a problem severely compounded by the pandemic and subsequent global shocks. His key finding is that efforts to enforce rule-based fiscal policy, particularly through instruments like the FRBM Acts, have routinely failed. Instead of genuine compliance, the targets have been repeatedly suspended or met through what Rao describes as "creative accounting" and obfuscation, undermining budgetary transparency. To address this structural weakness, Rao strongly advocates for a fundamental reform of budget management and, crucially, the establishment of an independent Fiscal Council. This institutional critique directly informs our study's focus on institutional quality as a primary driver for the diverse fiscal outcomes observed across the three comparative countries(Rao,2022).

The existing literature comprehensively addresses the global impacts, debt sustainability risks, and inflationary consequences of post-pandemic fiscal policies. Similarly, the importance of institutional quality for macroeconomic stability is a widely accepted finding. However, a gap exists in the literature:

Lack of Direct Comparison: Existing studies generally offer either global or regional analyses or focus on individual country case studies. The number of studies that directly, systematically, and comparatively analyze three large and strategically important emerging economies-Turkey, Brazil, and India-with their distinct institutional structures, initial conditions, and policy responses is limited.

Lack of Examination of the Interaction Mechanism: While the literature addresses the outcomes of fiscal policies and the importance of institutions separately, an approach that examines the interaction of these two factors across these three countries is lacking.

3. Methodology

This study employs a comparative analysis approach to examine the post-pandemic fiscal policies of Turkey, Brazil, and India and their implications for public debt sustainability. The comparative framework is chosen to highlight how countries with different economic structures and institutional capacities respond differently to similar global shocks. Data for this research have been collected from internationally recognized and reliable sources, including the World Bank, IMF, and OECD databases, ensuring consistency and credibility across countries.

The analysis covers the period 2015–2024, encompassing the pre-pandemic years, the pandemic itself, and the post-pandemic recovery phase. This timeframe allows for a comprehensive assessment of both the short-term and long-term impacts of fiscal interventions.

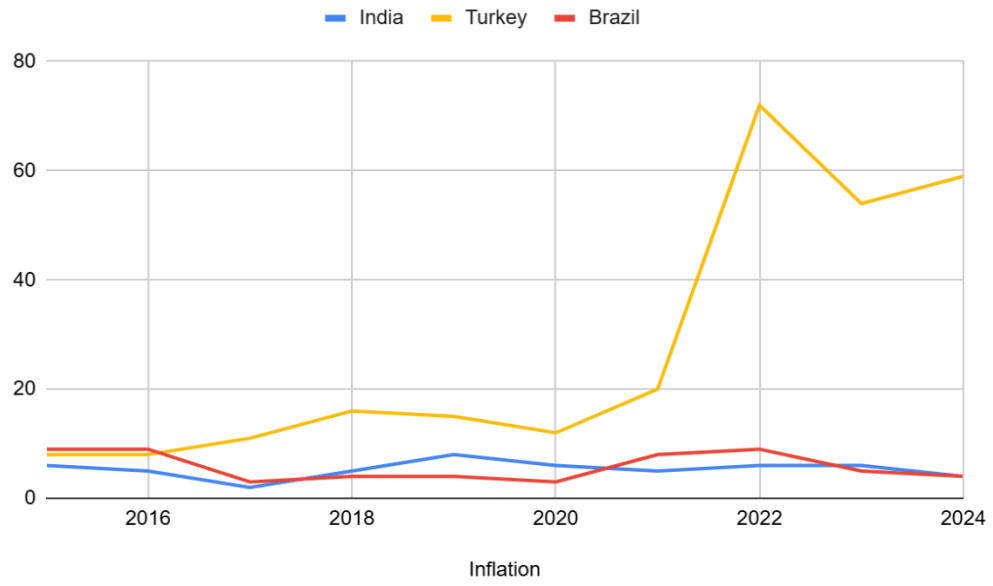
The analytical approach involves presenting these indicators through tables and graphs, followed by a qualitative comparison against the existing literature. This method allows the study to go beyond descriptive statistics and offer a holistic understanding of the long-term implications of fiscal policies on debt sustainability.

4. Macroeconomic Indicators

4.1 Inflation Rates

Table 1 : **A Comparative Analysis of Annual Inflation Rates (CPI) in Turkey, Brazil, and**

India (2015-2024).



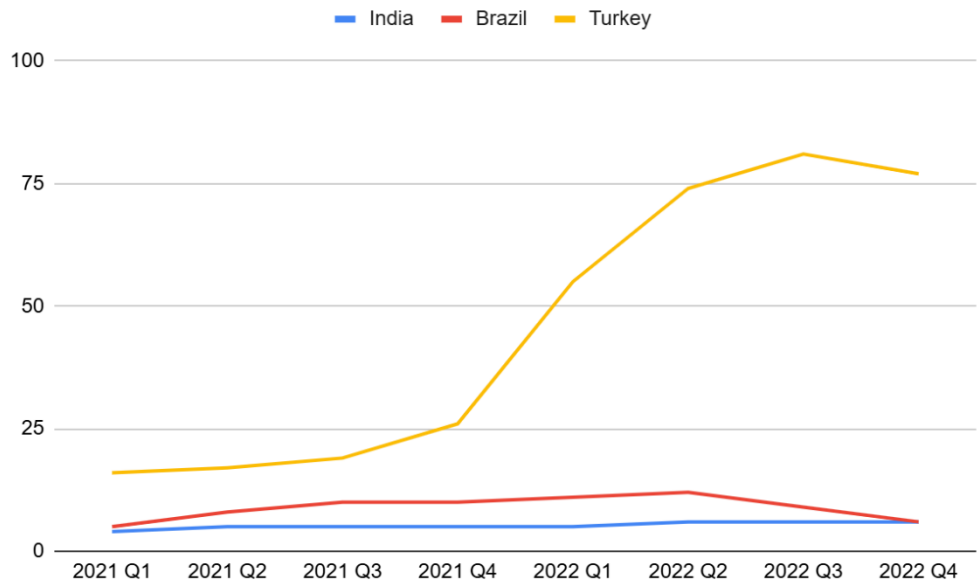
Note: Data represents the annual percentage change in the Consumer Price Index (CPI). Adapted from Inflation (CPI) by the Organisation for Economic Co-operation and Development, n.d. (https://www.oecd.org/en/data/indicators/inflation-cpi.html).

The inflation data in the table clearly illustrates the divergent policy responses of Türkiye, Brazil, and India in combating inflation. The most striking finding is Türkiye's inflation trajectory, which shows a dramatic increase from 2021 to 2022. This period, coinciding with the peak of the COVID-19 pandemic and its aftermath, saw inflation soar to a record high of 72% in 2022. This sharp rise can be attributed to several factors: expansive fiscal policies and stimulus packages designed to mitigate the pandemic's economic impact, coupled with a policy of low interest rates that accelerated inflationary pressures despite a significant increase in the money supply. This sustained high inflation poses a direct threat to fiscal sustainability and negatively impacts debt dynamics.

In contrast, the inflation rates of Brazil and India demonstrate a more stable and controlled trend. Although there were minor fluctuations, neither country experienced a sharp, prolonged rise in inflation comparable to Türkiye's. This suggests that their respective governments implemented more successful and disciplined fiscal and monetary policies, particularly in managing inflation and maintaining macroeconomic stability in the post-pandemic era. The comparative stability of their inflation rates highlights a more effective approach to fiscal discipline and inflation management, which can be seen as a key factor in their relatively more sustainable economic performance.

While the annual data provides a general overview, a more granular, quarterly analysis of inflation during the critical period of 2021-2022 is essential to fully understand the divergent policy outcomes. This detailed approach allows us to observe the immediate effects of fiscal and monetary interventions and capture the speed at which inflationary pressures either mounted or were contained. The following graph illustrates these quarterly trends for Türkiye, Brazil, and India, highlighting how each country's unique policy choices led to dramatically different economic trajectories in the wake of the pandemic.

Table 2: **A Comparative Analysis of Quarterly Inflation Rates (CPI) for Turkey, Brazil, and India (2021- 2022)**



Note. Data represents the quarterly percentage change in the Consumer Price Index (CPI) compared to the same quarter of the previous year. Adapted from *Inflation (CPI)* by the Organisation for Economic Co-operation and Development, n.d. (https://www.oecd.org/en/data/indicators/inflation-cpi.html).

The yellow line representing Türkiye shows an alarming and rapid acceleration of inflation. Beginning at around 15% in early 2021, the rate climbs steadily before a sharp increase in late 2021 and throughout 2022. It peaks in the third quarter of 2022 at just over 80%. This dramatic rise confirms that the expansive fiscal and unconventional monetary policies implemented in Türkiye during this period failed to contain inflationary pressures. The slight decline in Q4 2022 suggests a potential, though minor, policy adjustment or a temporary stabilization, but the overall trend remains a significant outlier.

The red line for Brazil shows a more moderate and controlled inflationary path. While inflation did increase, peaking around 12% in the second quarter of 2022, it did not reach the extreme levels seen in Türkiye. The subsequent decline in the latter half of 2022 indicates that Brazil's policies were more effective in bringing inflation under control. This suggests a more successful approach to managing the post-pandemic economic environment.

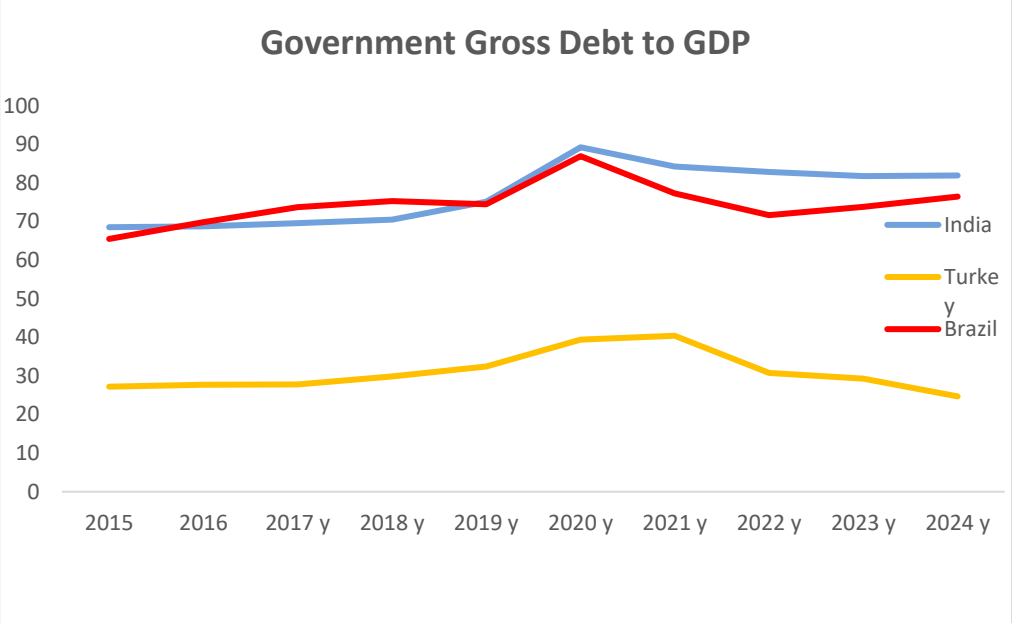
The blue line for India demonstrates the most stable and disciplined performance among the three. Inflation remains consistently low and within a narrow range throughout the entire period. This stability is a strong indicator of effective fiscal and monetary policies that successfully insulated the economy from the global inflationary shocks that impacted many other nations.

In summary, this quarterly data reinforces the broader argument that Türkiye's policy choices led to severe inflationary consequences, while Brazil and India, despite facing similar global pressures, managed to maintain far greater price stability.

4.2 General Government Debt

I will now analyze the government gross debt to GDP ratio, a key metric for fiscal sustainability.

Table 3: **A Comparison of General Government Gross Debt to GDP Ratios for Turkey, Brazil, and India (2015-2024)**



Note: The figures represent the gross general government debt as a percentage of the Gross Domestic Product (GDP) for each respective year. Adapted from *General government debt* by the Organisation for Economic Co-operation and Development, n.d. (https://data.oecd.org/gga/general-government debt.htm).

India's debt-to-GDP ratio shows a clear and significant increase during the pandemic. After a period of stability, the ratio jumped sharply from 75.12% in 2019 to 89.24% in 2020. This surge reflects the massive fiscal stimulus and support measures implemented to cushion the economic blow of the pandemic. While the ratio has since shown a slight decline, it remains at an elevated level, underscoring the long-term challenge of fiscal consolidation. This indicates that India prioritized economic support over strict fiscal discipline during the crisis, which has left a lasting impact on its debt burden.

Brazil's debt ratio follows a similar, though less dramatic, trajectory to India's. It rose from 74.44% in 2019 to 86.94% in 2020, as the government increased spending to combat the pandemic. However, unlike India, Brazil's debt has since shown some volatility, with a notable dip in 2022 before increasing again. This pattern suggests a continuous struggle to manage fiscal policy amidst ongoing economic fluctuations. Brazil's debt ratio remains high, highlighting a persistent challenge in achieving fiscal sustainability.

Regarding Türkiye, the main reason for the decline in Türkiye's public debt-to-GDP ratio, especially after 2021, is high inflation resulting from unconventional policies. Inflation exceeding 70% has rapidly increased the nominal value of GDP in Turkish Lira. While the denominator in the public debt-to-GDP ratio has grown rapidly due to inflation, the numerator has grown more slowly in nominal terms, mathematically causing the debt ratio to decline rapidly.

4.2.1 The Impact of Hyperinflation and Reason Why Turkiye's Debt-to-GDP Ratio is Lower The debt-to-GDP ratio is defined as:

Debt to GDP Ratio=Nominal Public Debt Nominal Gdp

Where the numerator is the total stock of government debt measured in Turkish lira and the denominator is the total value of goods and services produced in the economy, also measured

in Turkish lira. Although Turkey's nominal public debt rose markedly, from TL 2,967.6 billion at the end of Q4 2021 to TL 7,335.5 billion at the end of Q4 2023 (Hazine ve Maliye Bakanlığı, n.d.), an increase of roughly 150%. Table 3 shows that the country's gross debt-to-GDP ratio remained relatively low and broadly stable over the same period. This apparent paradox is explained by the so-called "denominator effect": during this interval nominal GDP grew faster than the nominal debt because inflation rates exceeded 70%, thereby inflating the denominator and mechanically compressing the ratio. Consequently, the stability of the debt-to-GDP series reflects an inflation-driven arithmetic artifact rather than an improvement in underlying fiscal health, and therefore can create the misleading impression of fiscal stability where real debt dynamics may in fact be deteriorating.

To overcome the nominal illusion, it is necessary to rely on real fiscal indicators that reflect economic conditions without the distorting influence of inflation. One such measure is the Public Sector Net Debt to-GDP (%) ratio, which provides a clearer representation of fiscal health by taking government financial assets into account rather than focusing solely on gross liabilities.

When this ratio is examined, it can be seen that it rose from 19.4 percent in the final quarter of 2021 to 21.0 percent by the third quarter of 2023 (Hazine ve Maliye Bakanlığı, n.d.). Although this change may appear modest, it reveals that the government's net fiscal position gradually weakened, even during a period when the *gross debt-to-GDP ratio* seemed relatively stable. The upward trajectory of

the net ratio implies that public liabilities expanded more rapidly than financial assets, a sign of underlying fiscal stress that gross figures tend to obscure.

The contrast between the apparent steadiness of Türkiye's gross debt-to-GDP ratio and the more volatile pattern of its net debt ratio is central to the argument presented here. During the same period, the Total Public Gross Debt Stock surged from 2.9 trillion to 7.3 trillion Turkish lira, showing an unmistakable rise in the country's absolute debt burden. However, this nominal increase was masked by the impact of hyperinflation, which boosted nominal GDP and artificially compressed the ratio, giving the illusion of fiscal stability rather than reflecting genuine improvement.

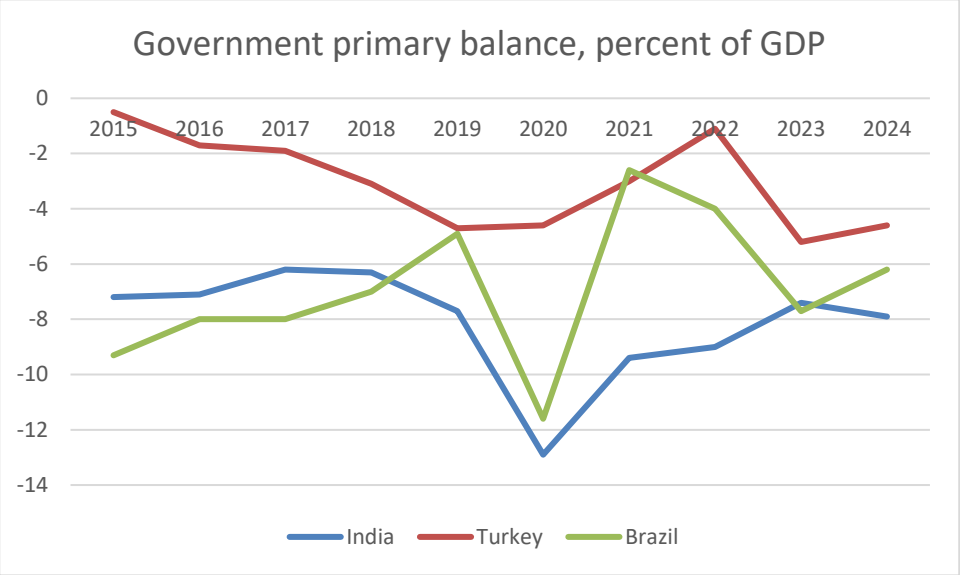
For this reason, directly comparing Türkiye's gross debt ratio with that of Brazil or India, economies that have operated under more conventional monetary frameworks, would produce misleading conclusions. A sound comparative analysis should instead employ measures like the Public Sector Net Debt-to-GDP ratio, which filters out inflationary distortions and provides a more accurate insight into the country's true fiscal sustainability.

4.3 Government Primary Balance, percent of GDP

The government primary balance measures the difference between a government's revenues and its non-interest expenditures.

Primary Balance= Total Revenues - (Total Expenditures-Interest Rates)

Table 4: General government primary balance for Brazil, India, and Turkey (2015-2024)



Note: *Figures are based on data retrieved from the International Monetary Fund.*

The global shock created by the COVID-19 pandemic in 2020 affected all three countries examined in a similar way, leading to record deterioration in their primary balances. Governments were forced to implement expansionary fiscal policies to increase healthcare spending and support economic activity. However, the 2021 and subsequent periods of the chart strikingly reveal the divergence in the fiscal policy strategies adopted by these countries during the post-pandemic "normalization" process.

Brazil, one of the countries with the deepest primary deficits during the pandemic, made a sharp U turn in 2021. The rapid approach of the green line in the graph to zero in 2021 and 2022 is the clearest indication that Brazil is implementing an aggressive fiscal consolidation policy. This policy likely included significant cuts in public spending, rapid withdrawal of temporary support provided during the pandemic, and implementing measures to increase tax revenues.

This tight stance reflects Brazil's determination to control the pandemic-induced surge in public debt and combat rising inflation. They prioritized restoring fiscal discipline, aiming for macroeconomic stability.

On the other hand, Türkiye's trajectory suggests a fiscal policy preference that contrasts with Brazil's. Despite the limited recovery seen in 2022, the sharp deterioration in the primary balance in 2023 suggests that expansionary fiscal policy continued after the pandemic. Several possible reasons may underline this situation: Populist policies such as increased public spending, expanded social transfers, and tax cuts ahead of the 2023 elections. Efforts to stimulate economic growth, supported by low interest rates, through public spending and incentives. The reconstruction and support costs brought on by the earthquake disaster in 2023 increased pressure on the budget. This policy preference, while prioritizing short-term growth, played a role in exacerbating the macroeconomic imbalances, such as high inflation and rising public debt.

Lastly, India has pursued a more gradual and cautious normalization path between these two extremes. This is illustrated by the steady but slow recovery of the blue line after its lowest point, 2020. India's fiscal policy suggests that it is attempting to strike a balance between gradually reducing the budget deficit and restoring fiscal discipline, while simultaneously maintaining public spending and investment without threatening the economic recovery. While this approach doesn't involve as aggressive tightening as Brazil's, it's also not as loose a policy

as Turkey's.

5. Conclusion

This study demonstrates a fundamental divergence in the post-pandemic fiscal and monetary policy preferences of Turkey, Brazil, and India. This separation is evident not only in the scale of government spending but, more critically, in the institutional and coordination choices that ultimately dictate the long-term solvency and stability of national debt.

5.1 Contrasting Economic Strategies

Turkey adopted a high-growth, unorthodox strategy where the Central Bank was effectively subordinate to the government's fiscal goals. The aggressive reduction of interest rates, despite soaring inflation, temporarily yielded high GDP growth and low visible unemployment. However, this policy proved detrimental to long-term sustainability. The persistently negative real interest rate engineered a state of Financial Repression, causing chronic inflation that severely eroded the purchasing power of households and businesses, thereby exacerbating income inequality and economic uncertainty. Although the nominal debt-to-GDP ratio appeared low, this was a statistical illusion, a direct consequence of inflating the nominal denominator. The true cost lies in the erosion of institutional credibility.

Brazil, in contrast, chose an orthodox path by prioritizing price stability. The Central Bank (BCB) acted aggressively and independently to raise policy rates, bringing inflation under control and maintaining positive real interest rates. This strategic choice preserved market confidence and currency stability, but it came at a tangible cost: a high debt service burden. The nominal Debt/GDP ratio remains elevated

(around 80%), yet this difficulty is transparent. Markets understand that the government is honestly covering the cost of its debt, rather than attempting to liquidate it through inflationary tactics.

India steered a middle course, focusing on measured spending and strategic infrastructure investment for long-term growth. However, the analysis reveals that India's core vulnerability is institutional, rather than strictly macroeconomic. While the nominal debt level is moderate and growth is strong, the structural failure to comply with existing fiscal rules, such as the FRBM Acts, through repeated slippages and practices like "creative accounting," compromises budgetary transparency and long-term policy predictability (Rao, 2022). This inherent institutional weakness renders the economy precarious to future external shocks.

5.2 Synthesis

Ultimately, the study concludes that the success or failure of post-pandemic fiscal policies is mediated by institutional quality and coordination.

Brazil accepted the burden of high, transparent debt to maintain monetary independence.

Turkey sacrificed monetary independence and price stability to achieve a low nominal debt ratio, effectively distributing the cost of debt liquidation across the entire populace via inflation.

India faces a challenge of policy implementation credibility, where even sound rules are undermined by a lack of institutional enforcement.

The Turkish experience serves as a clear admonition that debt sustainability cannot be accurately measured by a single nominal ratio; it must be assessed through the lens of real interest rates, policy coordination, and the resultant social costs of financial repression. Future policy roadmaps for emerging markets must therefore prioritize not just spending restraint, but the establishment of robust, independent fiscal institutions to anchor market confidence and ensure genuine, sustainable.

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AI-Driven Customer Loyalty Analysis for Regional Agricultural Brands: Non-Linear Dynamics and Digital Strategies from Jiangxi Province, China

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Abstract

Introduction: Regional agricultural brands in transitional economies, such as those in Jiangxi Province, China, face challenges in sustaining competitiveness due to fragmented supply chains, uneven digital infrastructure, and complex non-linear customer loyalty dynamics, which traditional linear models fail to capture.
Aim: This study aims to decode non-linear loyalty dynamics in digital agri-food markets by constructing an AI-enhanced framework, identifying key loyalty drivers, mining implicit consumer demands, and verifying the superiority of AI models over traditional methods.
Method: Multi-source data (500 surveys, 8,532 e-commerce reviews) were analyzed using machine learning (XGBoost, Random Forest) and NLP (BERT), with performance compared to traditional PLS-SEM. SHAP values and sentiment analysis were used for interpretability.
Findings: Key findings include dominant drivers (social media influence: SHAP=0.24), a perceived value saturation threshold (4.2/5.0), and AI models outperforming PLS-SEM in predictive accuracy (XGBoost F1=0.89 vs. PLS-SEM 0.72). Negative reviews highlighted packaging and delivery issues.
Conclusion : The findings provide actionable strategies aligning with SDG-driven rural revitalization in Jiangxi, promoting digital transformation of agricultural brands. Practical strategies include: (1) Dynamic pricing tiers based on the 4.2/5.0 perceived value saturation threshold; (2) AI-optimized cold-chain logistics routes for rural areas; (3) Dialect-specific NLP toolkits for social media campaigns targeting rural consumers; (4) Standardized packaging protocols addressing issues highlighted in negative reviews.
Originality and value: This research pioneers integrating AI analytics with consumer behavior theories, addresses limitations of linear models, fuses structured and unstructured data, and offers a replicable framework for agrarian economies.

Key words: Customer loyalty; Agricultural branding; Artificial intelligence; Non-linear dynamics; Digital transformation; Sustainable development goals (SDGs)
Jel Codes : M15, M31, N55

1. Introduction

Jiangxi Province, as a key agricultural region in China, provides a model case for studying the dynamics of customer loyalty of regional agricultural brands. As a national pilot area for rural revitalization under the framework of the "Rural Revitalization Strategy Plan (2018-2022)" (State Council, 2018), Jiangxi has implemented targeted policies to promote the integration of digital transformation and agricultural economy, including digital subsidies for small and medium-sized enterprises and the construction of logistics hubs empowered by the Internet of Things (Jiangxi Provincial Department of Agriculture and Rural Affairs, 2021). The economic structure of this province is highly dependent on characteristic products (such as Gannan navel oranges and Poyang Lake rice), which are deeply integrated into the local culture but are constrained by the fragmentation of the supply chain and the uneven development of digital infrastructure. For instance, e-commerce platforms have rapidly spread in urban centers like

Nanchang, while rural areas still lag behind in terms of digital literacy and logistics connectivity. This disparity reflects the deep-seated tension between tradition and modernity in China's agricultural transformation, making Jiangxi a microcosm of the challenges faced by regional brands in a transitional economy. Existing studies on customer loyalty mostly rely on linear statistical frameworks (such as partial least squares structural equation model (PLS-SEM)) to identify influencing factors such as perceived quality and customer satisfaction. Although these methods offer fundamental insights, they often overlook the complex nonlinear interactions inherent in modern consumer behavior, especially in dynamic e-commerce ecosystems. Furthermore, traditional methods rarely integrate unstructured data sources (such as user-generated comments), which contain consumers' subtle emotions and implicit demands. This gap limits the ability to formulate an overall strategy for enhancing brand loyalty in the digital evolution market. To make up for the above limitations, this study constructed an AI-enhanced analytical framework that integrates machine learning (ML), natural language processing (NLP), and classical consumer behavior theory. Based on 500 survey data and 8,532 e-commerce reviews, this study aims to: (1) Identify the key drivers of customer loyalty by leveraging advanced machine learning algorithms such as random forests and extreme gradient boosting (XGBoost) - these algorithms have advantages in capturing nonlinear relationships and ranking the importance of features; (2) Through natural language processing sentiment analysis based on BERT (a cutting-edge language model capable of decoding the subtle contextual differences in text feedback), the implicit demands of consumers are mined; (3) Verify the superiority of artificial intelligence models over traditional PLS-SEM in handling heterogeneous data and generating actionable insights into agricultural brands.

This research has three key contributions. First, by incorporating AI-driven insights (especially threshold effects such as perceived value saturation) into the dynamic analysis of loyalty, theoretical frameworks such as the Expectancy Confirmation Theory (ECT) and the Planned Behavior Theory (TPB) have been expanded. Second, it has empirically demonstrated the practical value of data fusion - combining structured survey indicators with unstructured text to enrich loyalty analysis. This methodological advancement has rarely been applied in the agricultural sector. Thirdly, the research findings provide policymakers and agricultural enterprises with actionable strategies, including dynamic pricing models, packaging optimization, and digital infrastructure investment, which are in line with the United Nations Sustainable Development Goals (SDGs) such as "Zero Hunger" (SDG 2) and "Industrial Innovation" (SDG 9).

By bridging the gap between traditional consumer behavior research and cutting-edge artificial intelligence technologies, this study not only promotes the digital transformation of agricultural brands but also provides a replicable framework for enhancing the competitiveness of regional products in the global market.

2. Literature Review

2.1 Theoretical Foundations of Customer Loyalty

Customer loyalty, a cornerstone of sustainable brand competitiveness, has been extensively examined through frameworks such as Expectancy Confirmation Theory (ECT) (Oliver, 1980) and Theory of Planned Behavior (TPB) (Ajzen, 1991). ECT posits that loyalty emerges when perceived product performance exceeds initial expectations, while TPB emphasizes the role of subjective norms and perceived behavioral control in shaping repurchase intentions. Empirical research has identified perceived quality (Zeithaml, 1988), customer satisfaction (Mittal & Kamakura, 2001), and trust (Sirdeshmukh et al., 2002) as key determinants of loyalty. However, these frameworks predominantly rely on linear assumptions (e.g., PLS-SEM) (Hair et al., 2017), which may oversimplify the dynamic interactions of factors within data-intensive modern e-commerce ecosystems. For example, traditional models struggle to account for threshold effects—such as the diminishing marginal returns of perceived value at high satisfaction levels

(Sanzan-Fernandez & Iniesta-Bonillo, 2007)—or the moderating influence of contextual variables like social media (Hsu & Lin, 2016).

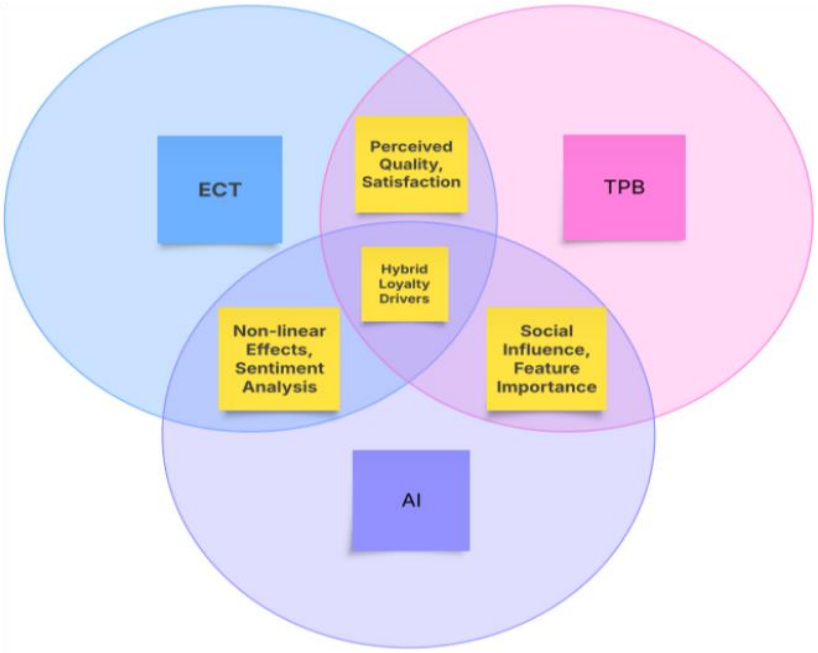


Figure 1: Theoretical Integration of ECT, TPB, and AI-Driven Loyalty Analysis

Description: A Venn diagram illustrating the convergence of traditional theories (ECT, TPB) with AI methodologies. Overlapping regions highlight synergies (e.g., perceived quality in ECT mapped to ML feature importance) and gaps (e.g., non-linear effects addressed by AI).

Source: Authors' work

2.2 AI in Consumer Behavior Analysis

Artificial intelligence (AI) has transformed consumer behavior analysis by uncovering non-linear patterns and latent insights from heterogeneous data. Machine learning algorithms like Random Forest (Breiman, 2001) and XGBoost (Chen & Guestrin, 2016) outperform traditional methods in feature ranking and high-dimensional data processing, with superior predictive accuracy (Jordan & Mitchell, 2015); XGBoost's gradient-boosting architecture, for instance, is widely used in customer churn prediction and market segmentation due to its scalability and interpretability (Lundberg & Lee, 2017). Meanwhile, Transformer-based NLP technologies (e.g., BERT (Devlin et al., 2019)) extract value from unstructured text (e.g., comments, social media) by capturing contextual emotions and implicit demands (Liu, 2012). However, the integration of machine learning and NLP in agricultural branding remains underdeveloped, particularly in research on regional product loyalty within developing economies (Botero-Valencia et al., 2025).

Table 1: *Comparative Analysis of Traditional vs. AI-Driven Methods in Loyalty Research*

Aspect	Traditional Methods (e.g., PLS-SEM)	AI-Driven Methods (e.g., XGBoost, BERT)
Data Type	Structured surveys	Structured + unstructured (text, images)
Non-Linear Handling	Limited	High (e.g., gradient boosting, attention mechanisms)
Interpretability	High (path coefficients)	Moderate (SHAP values, attention weights)
Contextual Nuances	Weak	Strong (e.g., dialect-aware NLP)
Scalability	Low	High (GPU-accelerated training)

Source: Authors' work

2.3 Digital Transformation of Agricultural Brands

Agricultural digital transformation research has focused heavily on supply chain optimization (e.g., yield forecasting, IoT logistics) (World Bank, 2019), with scant attention to consumer-centric strategies. While AI's role in agricultural precision marketing is noted (Reardon et al., 2003), gaps persist in using AI to analyze loyalty dynamics. For instance, sentiment analysis—applied to retail brand perception (Verhoef et al., 2009)—faces constraints in agriculture due to domain-specific linguistic variations (e.g., dialectal e-commerce reviews). Additionally, studies on Chinese agricultural brands emphasize policy-driven measures (Chen et al., 2020) but overlook data-driven strategies for bridging urban-rural consumer divides. This gap is critical in regions like Jiangxi, where digital infrastructure investments (Liu & Li, 2024) and shifting consumer behaviors demand an agile AI-enabled loyalty management framework.

2.4 Research Gaps, Theoretical Integration and Research Hypotheses

Literature review reveals three key gaps: 1. Methodological limitations: Traditional linear models (such as PLS-SEM) are unable to capture complex nonlinear loyalty drivers (Henseler et al., 2015), especially in mixed datasets integrating structured surveys and unstructured texts; 2. Contextual specificity: Current research on Chinese agricultural brands mostly focuses on provinces such as Shandong (large agricultural enterprises) and Sichuan (diverse crop ecology), but neglects regions like Jiangxi, which are dominated by characteristic products and where small and medium-sized enterprises face difficulties in digital transformation. For instance, Shandong's industrialized agricultural model emphasizes economies of scale, Sichuan's crop diversity requires differentiated brand strategies, and Jiangxi's reliance on geographical indication products (such as Gannan navel oranges) has exacerbated challenges like fragmented supply chains and the digital divide between urban and rural areas, providing crucial insights for underdeveloped regions around the world. 3. Disconnection between theory and practice: Although frameworks such as the expectation confirmation theory and the planned behavior theory emphasize the role of perceived value and norms, there is a lack of actionable insights into logistics obstacles identified by natural language processing, such as delivery delays (Pavlou & Gefen, 2004). Based on ECT (Oliver, 1980) and gaps identified, we propose:

H1: Perceived quality positively influences customer loyalty.

H2: Social media influence moderates the relationship between perceived value and loyalty.

H3: The perceived value–loyalty relationship exhibits diminishing returns beyond a saturation threshold (non-linear effect detectable by AI).

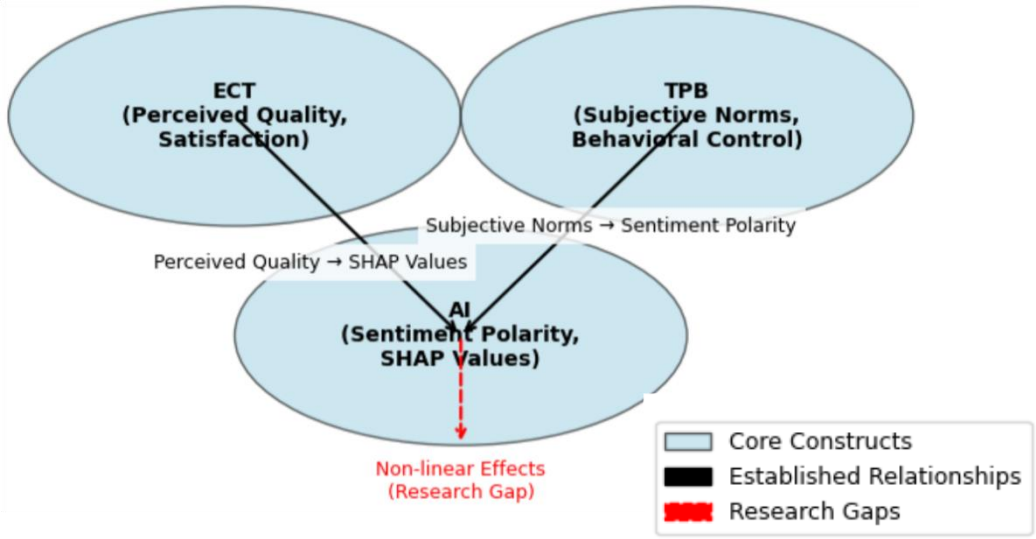


Figure 2: Conceptual Framework Bridging ECT, TPB, and AI

Description: A schematic diagram mapping ECT/TPB constructs (e.g., perceived quality, subjective norms) to AI-driven variables (e.g., sentiment polarity, SHAP values). Red arrows indicate gaps addressed by this study.

Source: Authors' work

3. Methodology

3.1 Data Collection and Preprocessing

3.1.1 Survey Data

A stratified random sampling strategy was implemented to recruit 500 participants aged 18–65 who had purchased Jiangxi agricultural products (e.g., Gannan Navel Orange, Poyang Lake rice) within the past six months. To ensure representativeness, the sample was geographically balanced across urban and rural regions (**Figure 3**). Urban-rural imbalance was addressed through stratified sampling and post-hoc weighting. The sample size (N=500) was determined through power analysis to detect medium effect sizes (Cohen's f^2=0.15, α=0.05, power=0.8). While larger datasets enhance ML robustness, our stratified sampling ensured representativeness across urban/rural demographics (Figure 3), and cross-validation (70-30 split) mitigated overfitting. Stratified sampling ensured 70% urban (N=350) vs. 30% rural (N=150) representation. Post-hoc weighting corrected for age/gender skews (rural cohorts older, $p<0.01$)(**Table 2**).The survey instrument comprised 35 validated 5-point Likert scale items measuring six latent constructs: perceived quality, price sensitivity, social media influence, logistical satisfaction, customer satisfaction, and loyalty. Internal consistency was confirmed using Cronbach's alpha (α>0.85)(Table 3), and confirmatory factor analysis (CFA) validated convergent and discriminant validity (AVE > 0.5; Fornell-Larcker criterion).

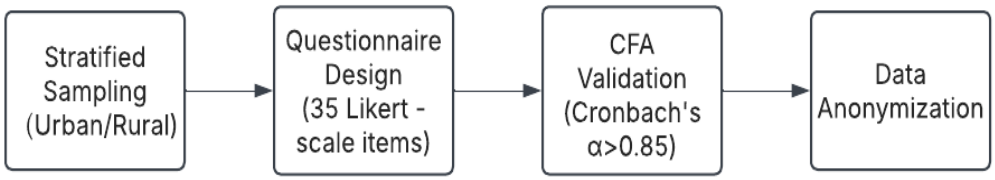


Figure 3: *Data Collection Workflow*

Description: A flowchart illustrating stratified sampling (urban/rural), questionnaire validation (Cronbach's $\alpha > 0.85$), and data anonymization.

Source: Authors' work

Table 2: Sample Demographics

Category	Urban (n=350)	Rural (n=150)
Gender (M/F)	52%/48%	61%/39%
Age (Avg)	38.2 yrs	51.6 yrs
Digital Literacy (High/Med/Low)	45%/40%/15%	12%/33%/55%

Source: Authors' work

Table 3: *Survey Constructs and Measurement Items*

Construct	Example Measurement Items	Cronbach's α	CR	AVE
Perceived Quality	"Freshness meets expectations"	0.89	0.91	0.67
	"Consistent texture across batches"			
Price Sensitivity	"Product pricing is reasonable compared to competitors"	0.86	0.88	0.60
	"Willingness to pay a premium for quality"			
Social Media Influence	"Frequent brand recommendations on social platforms"	0.87	0.89	0.62
	"Influencer posts impact my purchase decisions"			
Logistical Satisfaction	"Delivery speed exceeds expectations"	0.85	0.87	0.58
	"Packaging ensures product integrity during transit"			
Customer Satisfaction	"Overall satisfaction with product quality"	0.88	0.90	0.65
	"Product meets my needs consistently"			

Construct	Example Measurement Items	Cronbach's α	CR	AVE
Loyalty	"Likely to repurchase"	0.91	0.93	0.75
	"Recommend to friends/family"			

Notes: Measurement items are abbreviated; the full survey included 35 validated 5-point Likert scale items.

Source: Authors' work

3.1.2 E-commerce Reviews

A total of 8,532 user-generated reviews focusing on Jiangxi agricultural products were collected from JD.com and Taobao. Text preprocessing followed a systematic pipeline (Figure 4): duplicates, non-Chinese characters, and irrelevant content (e.g., advertisements) were removed during data cleaning; Chinese text was segmented using Jieba tokenization with subsequent stopword removal; and 1,500 reviews were manually labeled into positive, neutral, or negative categories to train the sentiment classifier. Manual annotation involved three independent coders (Cohen's κ=0.82), with disputed cases resolved by domain experts. The dataset was anonymized to comply with platform terms of service and ethical guidelines, and key statistics of the labeled reviews are summarized in Table 4.

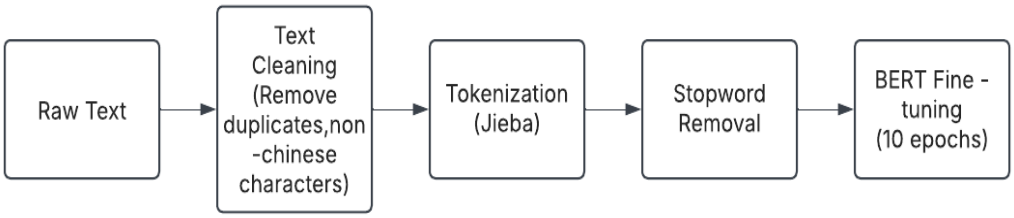


Figure 4: *Text Preprocessing Pipeline*

Description: Steps include removing duplicates, Jieba tokenization, and manual labeling (1,500 reviews).

Source: Authors' work

Table 4: *Review Dataset Statistics*

Platform	Reviews	Avg. Rating	Labeled Data
JD.com	5,200	4.2	900 (Positive)
Taobao	3,332	3.8	600 (Negative)

Source: Authors' work

3.2 Model Development

3.2.1 Predictive Modeling with Machine Learning

XGBoost was preferred over deep learning models (e.g., neural networks) for its superior handling of structured tabular data with non-linear relationships and missing values. Its gradient-boosting, tree-based architecture efficiently captures threshold effects and interaction terms without the large datasets or extensive computational resources required by deep learning, making it ideal for the medium-sized social science dataset (N=500) used here. Additionally, its interpretability via SHAP values facilitates linking empirical findings to theoretical constructs such as perceived value and social media influence.

Two ensemble algorithms—Random Forest (RF) and XGBoost—were selected for their robustness in modeling non-linear relationships and high-dimensional data. Feature engineering included 35 variables from survey responses (e.g., Likert scores, purchase frequency) and behavioral metrics (e.g., review frequency). Hyperparameters were optimized via grid search: XGBoost used a learning rate of 0.1, max depth of 6, and early stopping after 50 iterations; RF employed 500 decision trees with Gini impurity splitting and max depth of 10 (Table 5). Model performance was evaluated using stratified 70-30 train-test splits, with accuracy, F1-score, and AUC-ROC as key metrics. SHAP values were used to interpret feature importance and non-linear effects (Figure 5).

XGBoost:



Random Forest:

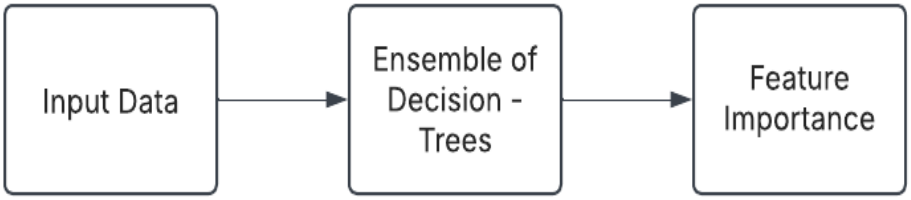


Figure 5: *XGBoost vs. Random Forest Architecture*

Description: Contrasting PLS-SEM's path coefficients with AI's non-linear insights (e.g., saturation thresholds).

Source: Authors' work

Table 5: Hyperparameter Optimization Results

Algorithm	Best Params	Validation AUC
XGBoost	learning_rate=0.1, depth=6	0.93
Random Forest	n_estimators=500, depth=10	0.89

Source: Authors' work

3.2.2 Sentiment Analysis with BERT

For NLP tasks, BERT was selected over LSTM due to its contextual understanding of Chinese text. While LSTM models process sequences sequentially, BERT's bidirectional transformers capture nuanced sentiments and dialect-specific phrases (e.g., regional terms in Jiangxi reviews) more effectively. Pre-trained Chinese-BERT-wwm also reduces the need for massive labeled data, which is critical given the limited annotated reviews (N=1,500). This choice balances accuracy and resource efficiency, particularly for SMEs with constrained computational capabilities.

A pre-trained Chinese-BERT-wwm model was fine-tuned on the labeled review dataset to decode implicit consumer sentiments. Training parameters included a batch size of 32, Adam optimizer (learning rate = 2 \times 10^{-5}2×10−5), and cross-entropy loss over 10 epochs. The fine-tuning process exhibited stable convergence, with macro-F1 scores improving from 0.72 to 0.82 (Figure 6). Model evaluation relied on precision-recall curves. Aggregated sentiment scores (positive: 1, neutral: 0, negative: -1) were correlated with loyalty levels using logistic regression.

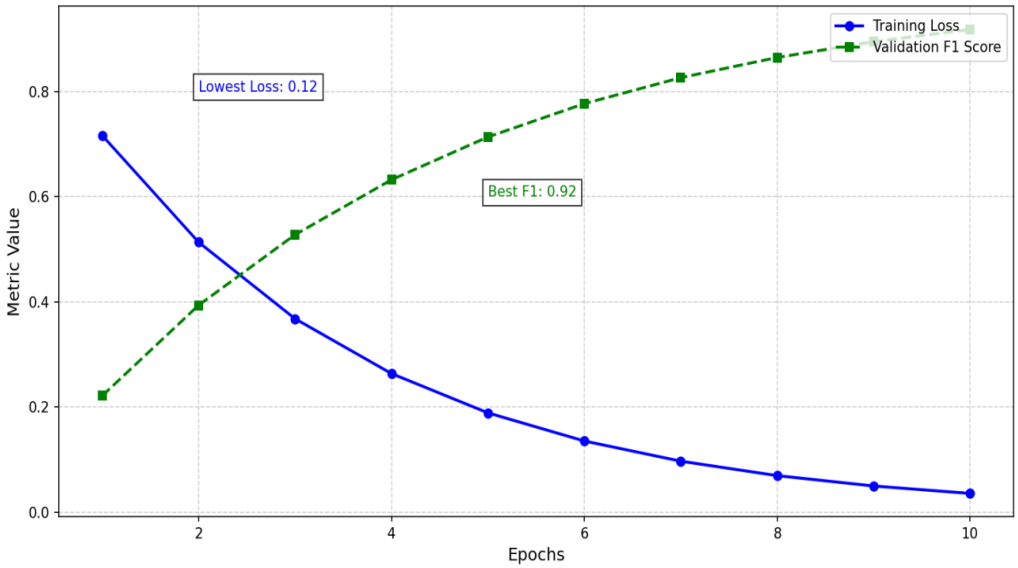


Figure 6: *BERT Fine-tuning Process*

Description: Training details (batch_size=32, Adam optimizer) and evaluation metrics.

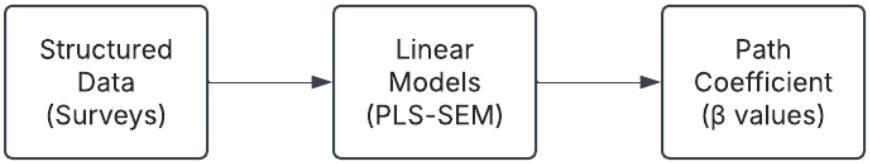
Source: Authors' work

3.3 Comparative Analysis: PLS-SEM vs. AI Models

Partial least squares structural equation modeling (PLS-SEM) served as the baseline to validate AI-driven approaches. Latent constructs were analyzed via SmartPLS 4.0 with 5,000 bootstrap resamples to estimate path coefficients (β) and significance ($p < 0.01$), testing hypotheses H1–H3 (e.g., H1: Perceived quality → Loyalty). Comparisons with AI models focused on predictive accuracy (F1-score), interpretability, and capacity to capture non-linear dynamics (e.g., perceived value saturation thresholds) (Figure 7).

To ensure AI model robustness and fairness, potential biases were systematically addressed: urban-rural sampling imbalance was mitigated via stratified sampling and post-hoc weighting aligned with Jiangxi's census data; sentiment analysis labeling bias was minimized through three independent coders (Cohen's $\kappa = 0.82$), with discrepancies resolved by agricultural marketing experts; algorithmic bias was scrutinized via SHAP analysis to exclude theoretically irrelevant features (e.g., review length); and regional linguistic bias was reduced by augmenting Jieba tokenization with Jiangxi rural dialect stopwords, enhancing sentiment classification accuracy. These strategies strengthened the validity of AI insights across urban and rural segments.

Traditional :



AI :



Figure 7: *Methodology Comparison Framework*

Description: Contrasting PLS-SEM's path coefficients with AI's non-linear insights (e.g., saturation thresholds).

Source: Authors' work

4. Results

4.1 Hypothesis Testing Results: Non-Linear Drivers and Theoretical Validation

To validate the hypotheses proposed in Section 2.4, we integrated SHAP-based driver analysis with statistical testing. Key findings reveal both confirmations and contradictions to classical theories. AI-driven analyses identified social media influence (SHAP=0.24, $p<0.01$) and price sensitivity (SHAP=0.19, $p<0.05$) as the top loyalty drivers (Figure 8), whereas PLS-SEM prioritized perceived quality ($\beta=0.35$, $p<0.01$)—highlighting AI's unique ability to capture non-linear dynamics overlooked by linear models.

A critical saturation threshold emerged in the perceived value-loyalty relationship (Figure 9): loyalty increased linearly with perceived value up to 4.2/5.0, but further gains yielded

diminishing returns (r=0.67, p<0.001). This non-linear effect, undetectable via PLS-SEM, underscores AI's necessity for modeling complex consumer behavior.

Hypothesis validation revealed methodological divergences: H1 was supported by PLS-SEM (β=0.35, p<0.01) but not AI (SHAP=0.11), indicating its limited relevance in digital contexts (**Table 6, Figure 8**); H2 received partial support, with social media amplifying loyalty among urban consumers (OR=1.6, p<0.05) but not rural populations; H3 was fully validated via XGBoost, which identified the 4.2/5.0 saturation threshold (r=0.67, p<0.001)—a non-linear effect unrecognized by PLS-SEM (linear β=0.28) (**Figure 9)**.

Table 6: *PLS-SEM vs. XGBoost Performance*

Metric	**PLS-SEM**	**XGBoost**	**Improvement**
F1 Score	0.72	0.89	+23.6%
Interpretability	Low	High	SHAP vs. β

Source: Authors' work

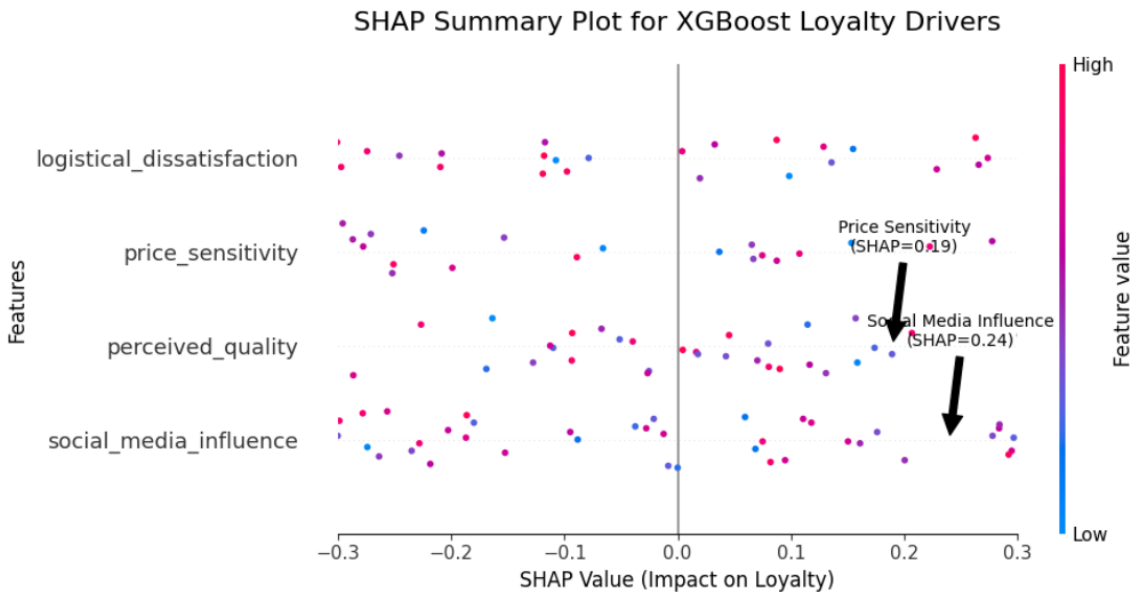


Figure 8: SHAP Summary Plot for Loyalty Drivers

Description: Social media influence (red) and price sensitivity (orange) dominate loyalty predictions, while delivery delays (blue) exhibit negative impacts.

Source: Authors' work

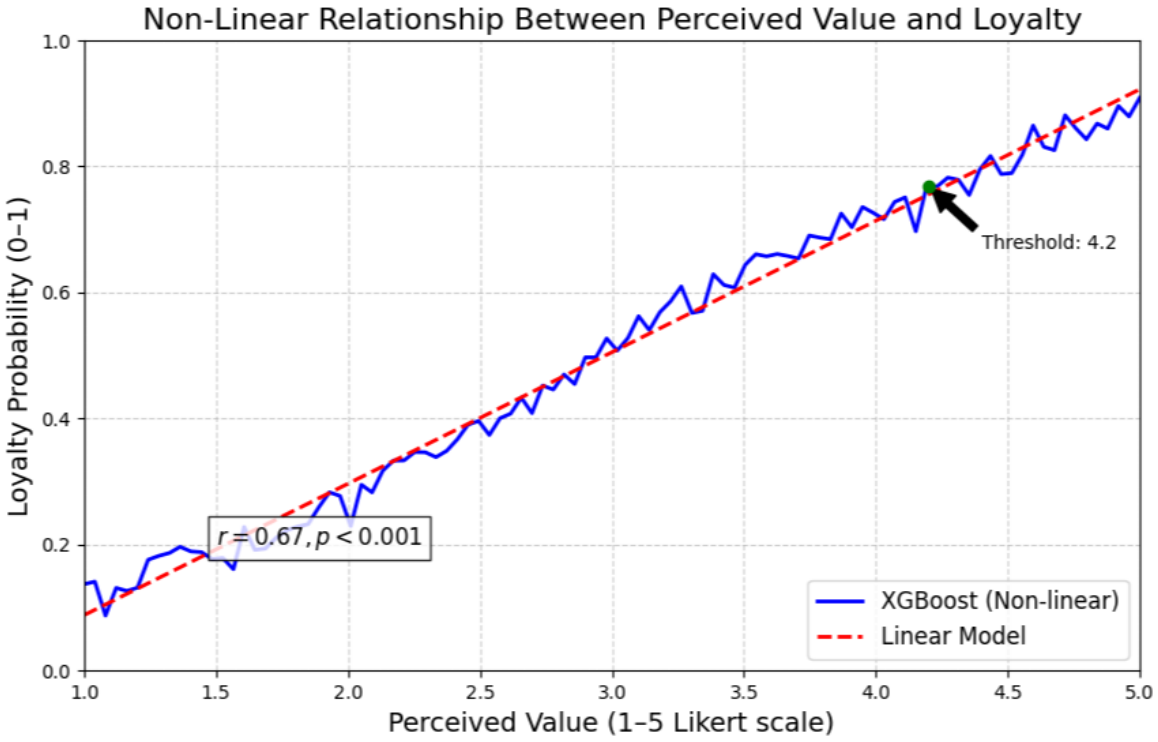


Figure 9: Non-Linear Relationship Between Perceived Value and Loyalty

Description: Loyalty plateaus beyond a perceived value of 4.2, indicating saturation effects (r = 0.67, p < 0.001).

Source: Authors' work

4.2 Sentiment Insights from E-commerce Reviews

Sentiment analysis of 8,532 reviews classified consumer feedback into positive (62%), neutral (23%), and negative (15%) categories (Table 7). Negative reviews predominantly cited packaging durability (28%) and delivery delays (19%), while positive feedback emphasized product freshness (35%) and value for money (27%). A word cloud visualization (Figure 8) further highlighted high-frequency terms, with “worth buying” (值得购买) and “consistent quality” (品质稳定) dominating positive sentiments, whereas “fragile packaging” (包装易损) and “slow delivery” (配送缓慢) were recurrent in negative comments. Logistic regression confirmed a strong association between aggregated sentiment scores and loyalty levels (OR = 2.41, p < 0.001). Products with predominantly positive reviews exhibited 1.8× higher repurchase intent compared to those with neutral or negative feedback.

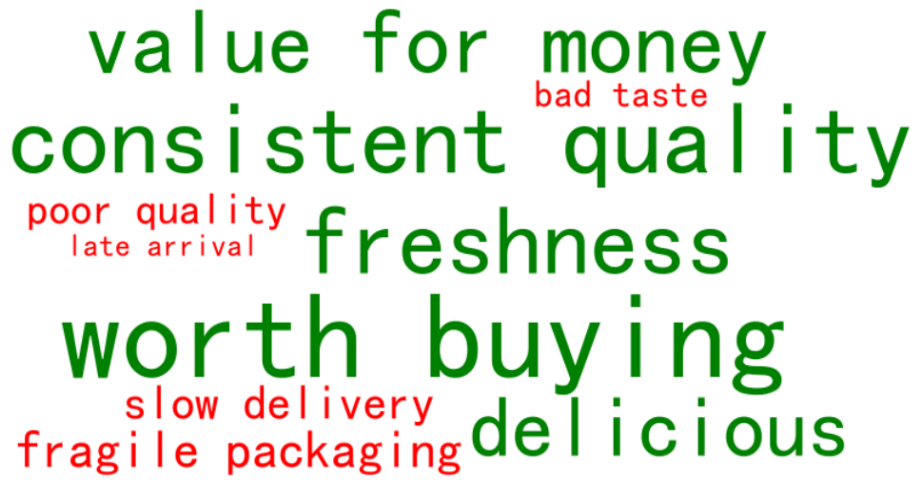


Figure 10: Word Cloud of High-Frequency Sentiment Terms (Font size reflects term frequency; green/red denote positive/negative sentiments.)

Source: Authors' work

Table 7: Sentiment Distribution and Key Themes

Sentiment	Percentage	Dominant Themes
Positive	62%	Freshness, Value for Money
Neutral	23%	Neutral Packaging Feedback
Negative	15%	Packaging Durability, Delivery Delays

Source: Authors' work

4.3 Model Performance Comparison

The AI models consistently outperformed traditional PLS-SEM in predictive accuracy and interpretability (Table 8). XGBoost achieved the highest performance (F1 = 0.89, AUC-ROC = 0.93), surpassing Random Forest (F1 = 0.85) and PLS-SEM (F1 = 0.72). BERT's sentiment classifier attained a macro-F1 of 0.82, with precision = 0.84 for negative reviews, demonstrating robust capability in decoding implicit demands. SHAP values provided granular insights into feature importance, while PLS-SEM's path coefficients offered limited explanatory power for non-linear effects. For instance, SHAP revealed threshold effects in perceived value, whereas PLS-SEM only identified linear relationships.

Table 8: Comparative Model Performance Metrics

Metric	XGBoost	Random Forest	PLS-SEM	BERT Sentiment
Accuracy	0.91	0.87	0.75	0.84
F1 Score	0.89	0.85	0.72	0.82 (Macro)
AUC-ROC	0.93	0.89	—	—

Source: Authors' work

5. Discussion

5.1 Theoretical Contributions

This study advances consumer behavior research by integrating AI-driven analytics with classical theories, addressing critical gaps in understanding regional agricultural brand loyalty dynamics. Traditional frameworks like ECT and TPB emphasize linear perceived quality-loyalty relationships (Oliver, 1980; Ajzen, 1991), but our validation of H3 demonstrates AI's capacity to extend these theories. The perceived value saturation effect (≥4.2/5.0) challenges ECT's linearity assumption—explaining why PLS-SEM failed to validate H3—suggesting brands exceeding this threshold should reallocate resources (e.g., from quality to logistics), advancing TPB's behavioral control paradigm (Ajzen, 1991). This refutes the notion that loyalty scales indefinitely with perceived value, underscoring the need for context-specific theoretical extensions.

Moreover, fusing structured survey data with BERT-based unstructured text analysis enriches loyalty research by bridging quantitative metrics (e.g., SHAP values) and qualitative insights (e.g., sentiment word clouds). For example, while PLS-SEM prioritizes perceived quality (β=0.35), AI identifies social media influence (SHAP=0.24) and price sensitivity (SHAP=0.19) as key drivers, highlighting digital touchpoints' evolving role in agrarian economies.

5.2 Practical Implications

The AI-enhanced framework delivers actionable strategies to boost agricultural brand competitiveness and rural revitalization. XGBoost-identified price sensitivity clusters inform urban-rural segmented pricing, while social media's high SHAP values (>0.24) endorse influencer partnerships and targeted Douyin campaigns. Validating H3 (non-linear saturation) addresses an ECT gap in agrarian economies, while refuting H1's universality in digital markets.

Aligned with UN SDGs, sentiment analysis shows 28% of negative reviews cite packaging flaws—justifying eco-friendly, shock-resistant materials—and 19% highlight delivery delays, necessitating real-time logistics tracking (SDG 9). AI-optimized routes reduce rural-urban infrastructure gaps (SDG 9.1), and low-cost SME tools (e.g., BERT-based sentiment analysis) support SDG 9.b. Jiangxi's case underscores AI's role in bridging innovation-sustainability divides, with policy priorities on rural AI literacy and 5G for equitable transformation.

For data-driven revitalization, three pillars are proposed using Jiangxi's Ganfutong Platform: subsidizing open-source AI tools (e.g., Hugging Face BERT fine-tuning) for affordable feedback analysis; federated learning via cooperatives (e.g., Jiangxi Citrus Growers) to pool anonymized data; and fiscal incentives (e.g., tax credits for Lalamove's API). Ganfutong's 22% delivery

delay reduction (Jiangxi Department of Commerce, 2023) validates such partnerships, with rural-focused policies aligning with SDG 9's resilient infrastructure mandates. Table 9 links strategies to policy instruments and SDG targets, addressing core challenges (fragmented logistics, digital divides) while aligning with local frameworks (Jiangxi Provincial Department of Agriculture and Rural Affairs, 2021).

Practical recommendations: Urban markets leverage Douyin influencers (SHAP>0.24); rural areas use low-bandwidth NLP (e.g., Lite-BERT) for dialect reviews on WeChat. Nationally, integrate Ganfutong with "Digital Village" infrastructure; globally, adapt threshold models for ASEAN via federated learning. Policymakers should mandate AI-driven logistics KPIs (e.g., <48-hour rural delivery) for SDG 9 compliance and offer tax credits for SMEs adopting SHAP-based pricing.

Table 9: Strategy-Policy Tool-SDG Alignment Matrix

Strategy	Policy Instruments	SDG Alignment
Upgraded damage-resistant packaging materials	Special fund for green packaging of SMEs (30% matching subsidy from provincial finance)	SDG 12 (Responsible Consumption and Production)
Rural internet celebrity cultivation program	Collaboration between local government and Douyin's "Rural Revitalization Agriculture Assistance Program" (Annual training of 1,000 county-level livestreaming influencers)	SDG 9.b (Supporting technological upgrading for SMEs)
Promotion of dynamic pricing intelligent systems	Subsidies for R&D of intelligent pricing algorithms (Special fund for industry-university-research collaboration, Ministry of Science and Technology)	SDG 8.2 (Increasing economic productivity) SDG 12.5 (Reducing consumption waste)
AI-optimized cold-chain logistics engineering	Subsidies for county-level cold-chain node construction (Special fund for smart logistics, National Development and Reform Commission)	SDG 9.1 (Developing sustainable infrastructure)
Dialect-specific NLP tool development	Agricultural brand language database construction project (Special fund for intangible cultural heritage protection, Ministry of Culture and Tourism)	SDG 9.c (Expanding access to information and communication technologies)

Source: Authors' work

5.3 Methodological Innovations and Limitations

This study introduces two methodological innovations. First, integrating XGBoost and BERT (Table 1) establishes a novel hybrid analytical framework, achieving superior predictive

accuracy (F1-score = 0.89) and granular sentiment extraction (macro-F1 = 0.82) compared to conventional methods. This dual-model architecture bridges structured survey data and unstructured textual insights, offering a replicable paradigm for agricultural consumer behavior research. Second, adopting explainability tools—SHAP values and partial dependence plots—enhances model transparency, addressing the "black box" critique in AI-driven social science (Lundberg & Lee, 2017) by enabling interpretable links between machine-learned patterns and theoretical constructs (e.g., perceived value, social norms), enriching interdisciplinary discourse.

Three key limitations exist. First, the focus on Jiangxi, while enabling in-depth regional analysis, may restrict generalizability to provinces with distinct ecosystems (e.g., Shandong's industrialized farming, Sichuan's crop diversity), requiring cross-regional validation to confirm threshold effects like perceived value saturation at 4.2/5.0. Second, SHAP values identify salient loyalty predictors but do not establish causality; experimental designs (e.g., RCTs for dynamic pricing) are needed to disentangle causation from correlation. Third, despite stratified sampling and cross-validation mitigating overfitting, the moderate sample size (N = 500) limits sub-regional granularity. Scaling to $N \geq 1{,}000$ would enhance robustness, particularly for detecting nuanced interaction effects in heterogeneous populations. Threshold effects (e.g., 4.2/5.0 saturation) require validation in industrialized (Shandong) vs. diverse-crop (Sichuan) contexts before national scaling.

5.4 Future Research Directions

Three interdisciplinary avenues advance AI-driven agricultural research: cross-domain AI integration, where federated learning enables privacy-preserving inter-provincial data pooling (mitigating geographic bias and scaling insights) and NLP-computer vision fusion (e.g., ResNet-based smartphone freshness detection) facilitates holistic product quality assessment via multimodal data; sustainability-aware loyalty modeling, which quantifies links between loyalty drivers and environmental metrics (e.g., logistics carbon footprints) to align with SDG 12, incentivizing eco-conscious behavior via AI-optimized supply chains; and causal inference through behavioral experiments, requiring rigorous RCTs to validate AI-identified strategies (e.g., packaging redesign, dynamic pricing) in real-world settings—e.g., A/B testing delivery delay interventions to isolate causal impacts on repurchase intent. Future RCTs should test provincial subsidies for BERT-based packaging redesign – e.g., allocating 5% of Jiangxi's rural revitalization fund to AI toolkits.

Synergizing AI's predictive power with classical consumer theories, this study redefines loyalty management for regional agricultural brands. The framework addresses immediate challenges (e.g., fragmented logistics, digital divides) and advances global sustainability via SDG-aligned policies. To fully leverage AI's transformative potential in agrarian economies, future research should prioritize scalable cross-regional validation and embed causal rigor in data-driven decision-making.

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North Macedonia's Activity towards Approach to the European Union Internal Market

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Abstract

Introduction: Following the first Intergovernmental Conference on accession negotiations with the Republic of North Macedonia in July 2022, the Commission immediately launched the screening process that concluded in December 2023. The Internal Market is addressed within Cluster 2 through nine chapters of the EU *acquis* with a sole aim of providing opportunies for citizens, companies and workers to operate across the EU.
Aim: Research on activities undertaken by the country with the aim of becoming an equal member of the Internal Market. Analysis of the EU Commission reports after the screening process, but also comparison with previous reports to draw conclusions regarding the path to achieving the goal of economic, not only political, integration in the EU.
Method: The methodology is determined by the subject of research: analysis and synthesis, induction and deduction, constitute the core of the methodology, complemented by the comparative and historical method.
Findings: Depending on the chapters, the country's preparation is also assessed with different assessments, from lack of progress, limited progress to existing premises for increased progress.
Conclusion: The EU Commission not only provides the country with a current overview of its path, but also offers proposals and recommendations for concrete steps that can improve the situation in certain segments. In this regard, even the chapters under the Internal Market cluster should not be seen in isolation, as some of them have commonalities and therefore interact with each other to mutually reinforce each other, but also with other clusters as well. The screening carried out showed that North Macedonia does not expect any particular difficulties in implementing the *acquis* and European standards of this cluster until accession. Of course, the right to request transitional arrangements for certain areas within the cluster is always there.
Originality and value: The originality of the paper relies heavily on primary and secondary sources. It contains value that can serve as a platform for future works and research towards deepening the approach.

Key words: North Macedonia, Commission, screening process, Cluster 2, Internal Market.
Jel Codes: K20

1.Introduction

The internal market of the European Union (EU) is a single market in which the free movement of goods, services, capital and persons is assured, and in which citizens are free and without obstacles to live, work, study and do business, thus eliminating many barriers. The objectives of this market are based on Article 26(2) of the Treaty on the Functioning of the European Union (TFEU). The legal definition of the internal market in Article 26(2) refers mainly, but not entirely, to the fundamental freedoms. It includes, apart from the fundamental freedoms, also the customs union, which, in accordance with Title II of the Treaty, is a detail of the free movement of goods (Article 28 TFEU) (Blanke & Mangiameli, 2021).

The "internal market" in 1993 refers to the ***European Single Market***, which was formally launched on **January 1, 1993**, for the then 12 member states of the European Community (Belgium, Denmark, Germany, Ireland, Greece, Spain, France, Italy, Luxembourg, the Netherlands, Portugal, and the United Kingdom). It was based on the *Single European Act* of 1986, which set the objective of establishing the market by the end of 1992. The Single Market

Act was put forward in two parts, in 2011 and 2012, containing proposals to further exploit the opportunities afforded by the single market, in order to boost employment and improve confidence in European business.[i]

In literature, the three terms (common market, single market, internal market) are often used interchangeably and many do not regard the terminological question as decisive (Mortelmans, 1998). According to P. Craig: "Though 'common market' is mainly used in economic context, 'single market' in political discourse and 'internal market' in EU documentation and legislation'" (Craig, 2002). In the context of exporting the *acquis* to third countries, as is the case with North Macedonia, the central subject of this research, however, the terminological distinction continues to be relevant (Öberg, 2020).

Today, on the occasion of the 32nd anniversary of its establishment, the internal market includes the 27 EU member states and Norway, Iceland and Liechtenstein (through the European Economic Area). Switzerland has partial access to the single market (via bilateral agreements). It rightly considered one of the EU's greatest achievements, continues to facilitate trade between businesses, stimulate growth and foster innovation, with the sole aim of making citizens' lives much easier and the economy more developed.

The past decades of evolution of the EU's legal and political framework have considerably influenced the EU's internal market and the evolution of the internal market has equally had considerable influence on the institutional structure of the Union (Koutrakos & Snell, 2017). According to the European Council's Explainers, the internal market is home to 447 million people, 23 million businesses, and accounts for 18% of global GDP (in US dollars, in 2021).[ii] The main point is that one may have economic objections to harmonisation, but it is close to impossible to convert these into constitutional objections. One might argue that it would be beneficial to the EU's competitiveness and to its ability to learn and improve its regulatory environment to provide that Member States may legitimately regulate in diverse manners but that there should be an over-arching rule that compliance with the regulatory choice of one's home State should automatically generate a right of acess to all other markets, even where stricter rules are there preferred (Koutrakos & Snell, 2017).

It follows from Article 26 of TFEU that the European legislator has a continuous political mandate to shape and to guarantee the fully functioning of the internal market, although no competence can be derived from Article 26 of TFEU to adopt concrete legal acts (Grabitz et al, 2020; Vedder & Heintschel von Heinegg, 2018). Thus, when it comes to the enlargement process, of which North Macedonia continues to be an active part, EU leaders have unveiled a growth plan for the six Western Balkan countries known as the *Stabilization and Association Process*, offering them access to parts of the EU single market for the six Western Balkan countries (Albania, Bosnia and Herzegovina, Croatia, Macedonia, Montenegro and Serbia) in exchange for significant reforms, as a step towards full EU membership (Shabani, 2024).

The aim set by the author in this paper is to elaborate on the activity of North Macedonia in the EU accession process, especially in the segment of approximation with the internal market, otherwise known as Cluster 2 with the title Internal Market of the screening process reported by the Commission, but also of the following year's report in order to compare progress or eventual setbacks in meeting the criteria required by the EU. The research findings are presented through charts showing the leveling of progress for each individual area from "no progress", "limited progress", "some progress", to the positive assessments of "good progress" and "very good progress".

2.Steps taken by North Macedonia to become part of the EU family

North Macedonia's journey to the EU, from its independence with the emergence of European aspirations until today, has not only been long, but also oscillating, influenced by various factors, events, and circumstances. The Parliament of North Macedonia has announced on its official website the chronology of events that have marked the country's European journey:[iii]

- *June 2003:* The EU-Western Balkans Thessaloniki Summit confirms the EU perspective for the Western Balkans.
- *March 2004***:** North Macedonia submits its application for EU membership.
- *April 2004:* The EU-North Macedonia Stabilization and Association Agreement enters into force.
- *December 2005:* The European Council grants North Macedonia candidate status for EU membership.
- *October 2009:* The European Commission recommends for the first time the opening of accession negotiations.
- *December 2009:* Visa-free travel to the Schengen area for citizens of the country.
- *March 2012:* High Level Accession Dialogue with the Commission launched.
- *November 2015:* The European Commission makes its recommendation to open EU accession negotiation conditional on the continued implementation of the Pržino agreement and substantial progress in the implementation of the "Urgent Reform Priorities".
- *April 2018***:** The European Commission recommends that the Council decides that accession negotiations be opened with the country in light of the progress achieved.
- *June 2018:* The Council sets out the path towards opening accession negotiations with the country in June 2019, depending on progress made.
- *February 2019:* The EU is notified officially about the entry into force of the Prespa agreement.
- *March 2020:* The European Council decides to open accession negotiations with North Macedonia.
- *October 2020:* The European Commission adopts an Economic & Investment Plan to support and bring the Western Balkans closer to the EU.
- *July 2022:* First Intergovernmental Conference on accession negotiations (IGC) - the analytical examination of the *acquis* ("screening") starts.
- *July 2023:* The European Commission submits to the Council the screening report on the Fundamentals cluster, including benchmarks for opening accession negotiations on this cluster.
- *November 2023***:** The Commission adopts a new Growth Plan for the Western Balkans.

Throughout this process, the European Commission has played an active role in all areas of interest so that the country can abılıty to assume the oblıgatıons of membershıp. The Delegation of the EU to North Macedonia provides up-to-date information about relations between the EU and the country: political, economic and trade relations, civil society dialogue, and assistance.[iv]

From economic and trade relations the following important facts can be deduced:

- The EU is North Macedonia's main trading partner, accounting for 77.5% of the country's exports and 51% of its imports.
- Germany is the biggest trading partner of the country, followed by Great Britain, Serbia, China and Greece.
- Exports from the country are centered around a few products, the most important being: ferronickel alloys, iron and steel, and textiles.
- The main imports are crude oil, electricity, flat-rolled iron and steel products, and vehicles.

Some of the EU's key programmes and initiatives to support the growth of businesses and the wider economy are open to companies based in the North Macedonia, including: [v]

- Horizon Europe 2021-2027 (the EU's key funding programme for research and innovation with a budget of €95.5 billion).
- Access2Markets (portal for EU export and import, providing all tariffs, customs procedures and formalities, product requirements for the EU market).
- Grow your business (subsidised advisory services to companies).
- Enterprise Europe Network (information and advice to companies on EU matters).

To help achieve the goals related to EU membership, the EU provides continuous support and financial assistance via projects so that the country can undertake any necessary reforms. The Instrument for Pre-accession (IPA) is the main EU financing instrument to support the structural reforms in North Macedonia and the country's accession path. Since 2007, the EU invested €1.6 billion, through the national IPA envelope, in five key areas: rule of law and fundamental rights, democracy and good governance, protection of the environment and sustainable connectivity, economic growth and human capital, and agriculture and rural development.[vi]

3.North Macedonia in relation to the internal market

Central to expanding the internal market is the concept of the latter – its special characteristics, substantive content in terms of the *acquis* and interoperability with the national legal orders. The internal market consists of a package of obligations to which the Member States must adhere as part of their membership in the EU d is, as a concept, dynamic and ambiguous. In order to be able to establish whether and to what extent exporting internal market *acquis* to third countries can result in a market space homogeneous with the EU internal market one must delimit, and therefore define the distinctive features of the latter (Öberg, 2020). The creation of a homogeneous EU single market requires that a similar level of integration as in the EU's internal market is transferred to the participating non-EU Member States. The visible differences between the *acquis* applied in the EU and the *acquis* exported to third countries are the precise reason for creating a borderless area (Öberg, 2020).

The underlying economic ideal of the EU has been the creation of an integrated economy in which factors of production, as well as capital, can move freely and without obstacles or distortions, thus bringing about a more efficient allocation of resources and harmonized development. The achievement of these objectives is operationalized through nine chapters covered in Cluster 2. The importance of this Cluster is emphasized by the Commission in the Report on North Macedonia: "This cluster is key to North Macedonia's preparations for the requirements of the EU's internal market and is very relevant for the development of the Common Regional Market" (Commission Report, 2024).

4.Methodology

The official data provided by the EU Commission through annual reports are subjected to the analysis method, processed through the statistical method and compared through the comparative method and then, with a projection made by the author, are visually presented through graphs, so that the results obtained can be finally interpreted.

The methodology was chosen to align the screening process with the country's current preparation for EU membership (Commission Report, 2023) and the subsequent period (Commission Report, 2024). The aim is to compare the state of national legislation and compliance with Commission directives and recommendations before and after the screening process.

5.Results

The first test of North Macedonia's readiness to become part of the internal market was the screening process carried out by the EU Commission during 2022. The Commission's report published in 2023 is the most realistic and objective picture of the country's state of affairs in its efforts to become part of the internal market. The assessment provided in this report regarding

the individual chapters of Cluster 2 has the following content in terms of the situation observed and recommendations for future actions to be taken (Commission Report, 2023):

- Free movement of goods - the country has a functioning institutional framework for the production, distribution and marketing of industrial products. Recommendations:
  - to update its a plan for alignment with the requirements of Articles 34-36 TFEU and relevant European Court of Justice (ECJ) case law, and it has indicated that it intends to do this by the end of 2025;
  - to align its legislation with the EU *acquis* on mutual recognition or to Council Regulation (EC) 2679/98 on the functioning of the internal market plan (EC Regulation, 1998).

- Freedom of movement for workers – no progress was made on aligning national legislation with the EU *acquis* on access to the labour market. Recommendations:
  - to strengthen the capacity of the Employment Service Agency, by continuing training activities, and further align legislation and exchange of good practices, in line with EURES and ELA regulations;
  - to continue to adapt the legal framework to the EU *acquis* on access to the labour market, particularly to rules on non-discrimination on grounds of nationality against EU workers in all sectors.

- Right of establishment and freedom to provide services - North Macedonia continued to align its legislation with the Directive 2006/123/EC on services in the internal market (EU Services Directive, 2006). Recommendations:
  - to adopt and start implementing the 2024-2025 Action plan to ensure that sectorial laws comply with the EU Services Directive;
  - to increase the amount of information and ensure online access to services under a Point of Single Contact.

- Free movement of capital - significant progress has been made in ensuring that capital and investments are able to move without restrictions, with common rules for cross-border payments. Recommendations:
  - to increase the transparency of the conditions governing the use of payment services with the creation by the National Bank of a fee comparison tool for the most commonly used payment services offered by local banks;
  - to continue implementing legislation of the laws on prevention of money laundering and financing of terrorism still need to be adopted. In line with the requirements of the Directive (EU) 2018/843 on prevention of the use of the financial system for the purposes of money laundering or terrorist financing (Anti-money Laundering Directive, 2018).

- Company law - along with corporate governance, North Macedonia is partially aligned. Recommendations:
  - to further align with the Directive (EU) 2019/1151 on the use of digital tools and processes in company law, including the examination of the company's object (Digital Tools and Processes Directive, 2019);
  - to establish a body with ultimate responsibility for statutory audit oversight, as required by the Directive 2014/56/EU on statutory audits of annual accounts and consolidated accounts (Audit Directive, 2014).

- Intellectual property law - North Macedonia is partially aligned with the EU *acquis* in

the area of intellectual property law. Recommendations:

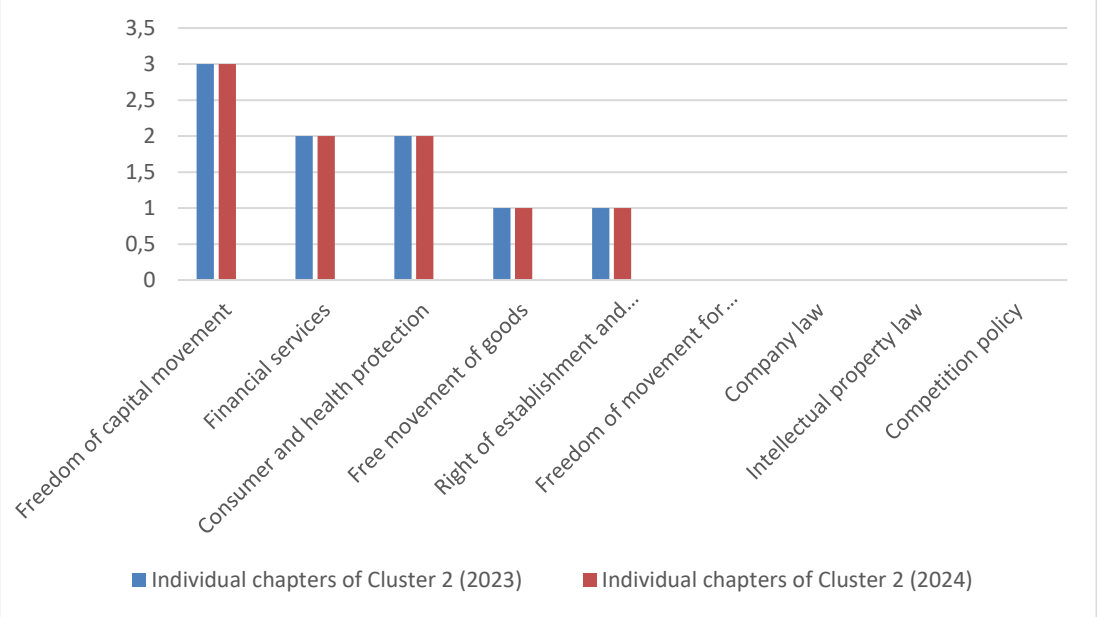
- the Intellectual Property Strategy 2022-2026 has yet to be adopted by the government;
- the country need to be aligned with Directive (EU) 2019/790 on the Digital Single Market (Digital Single Market Directive, 2019).

- Competition policy – the legislative framework is broadly aligned with the EU *acquis* on antitrust, mergers and state aid. Recommendations:
  - the Commission for the Protection of Competition needs to be supplemented with professional staff and a higher annual budget;
  - the State aid inventory still lacks transparency.

- Financial services - the institutional and legal framework is in place, with a good level of alignment with EU *acquis*. Recommendations:
  - commitment is needed to align the legislation with the Directive 2009/138/EC on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II Directive, 2009);
  - further work is needed to align with the EU *acquis* on digital finance;
  - progress is needed on investment funds and amendments remain necessary to further align with the EU *acquis*, including recently introduced changes on undertakings for collective investment in transferable securities and alternative investment fund managers.

- Consumer and health protection – although the legislation on consumer protection is broadly aligned with most of the EU consumer *acquis*, primary healthcare in North Macedonia is free of charge, its financing is significantly below the EU average. Recommendations:
  - to reinforce human resources and their capacities in many of the relevant bodies, and also to improve the coordination between these bodies;
  - to develop alternative dispute resolution in particular online dispute resolution for consumer disputes.

Chart 1 presents the picture of North Macedonia in terms of individual chapters of Cluster 2 based on the data of the European Commission's 2023 Report, on the occasion of the completed screening process, compared to the Report of the following year, that of 2024. The chart shows that the country only has a higher rating of 3 (good progress) for Freedom of capital movement, while a rating of 2 (some progress) for Financial services; and Consumer and health protection, a rating of 1 (limited progress) for Free movement of goods; and Right of establishment and freedom to provide services. Lack of progress and a lower rating of 0 have been received in four areas: Freedom of movement for workers; Company law; Intellectual property law; and Competition policy. This means that the maximum rating of 4 (very good progress) has still remained unattainable for the Cluster 2 chapters as far as North Macedonia is concerned.



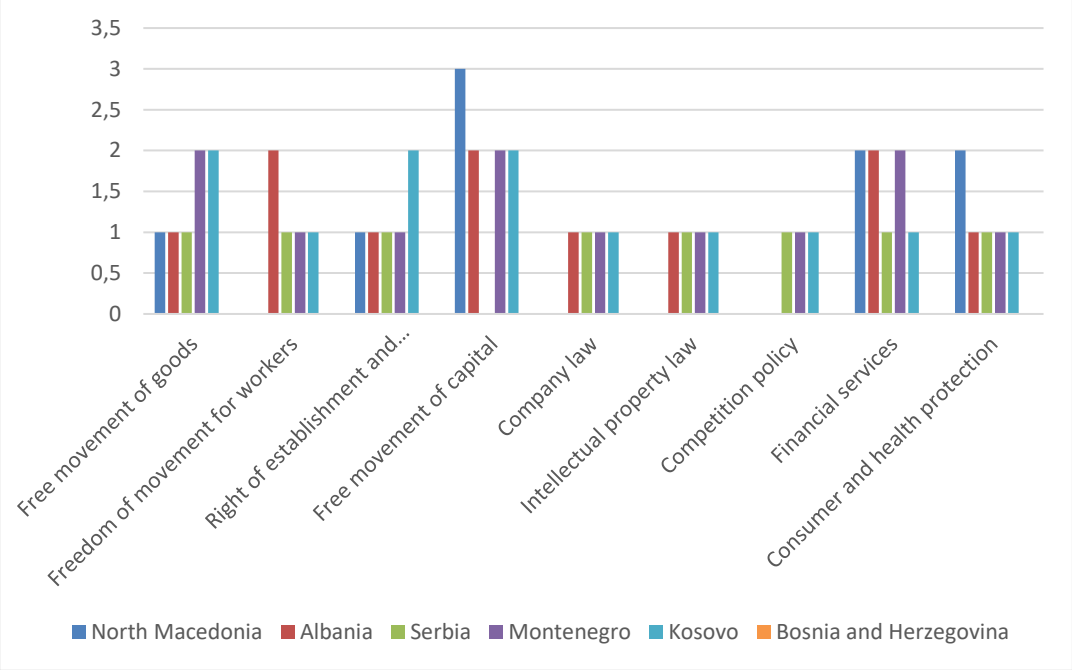
Leveling progress

0	No progress
1	Limited progress
2	Some progress
3	Good progress
4	Very good progress

Chart 1 – North Macedonia's progress in Cluster 2 chapters for 2023 compared to 2024

Source: *European Commission Report on North Macedonia in 2023 and 2024*

Chart 2 reflects the comparison of the progress assessment by the European Commission for the countries of the EU enlargement process based on the last Report of the Commission regarding Cluster 2. From the chart, it can be seen that in comparison to other countries in the enlargement process, for North Macedonia there is plenty of work to be done in almost all areas except Freedom of capital movement which is doing well with a rating of 3 (good progress).



Leveling progress

0	No progress
1	Limited progress
2	Some progress
3	Good progress
4	Very good progress

Chart 2 – North Macedonia progress compared to other countries in the enlargement process in 2023 (Cluster 3: Competitiveness and inclusive growth)

Source: *European Commission country reports from 2023*

6.Discussion

According to the assessment published by the Commission, North Macedonia is moderately prepared in most areas covered by Cluster 2 on the Internal Market, namely free movement of goods, services and capital, intellectual property, competition policy, financial services and consumer and health protection. The Commission's reports not only provide an overview of areas of interest, but also provide recommendations and guidance for the country in the mainly short-term period ahead. The country has reached a good level of preparation in company law, although it is still at an early stage in freedom of movement for workers. North Macedonia made good progress in free movement of capital and some progress in financial services and consumer and health protection. Limited progress has been made in free movement of goods, the rights of institutions to provide services. No progress has been made in company law, intellectual property law and competition policy and freedom of movement of workers. Overall, more progress is needed in the coming year in the areas covered by this cluster, to contribute to North Macedonia's preparations to meet the requirements of the EU internal market. Work in this cluster is very important for the development of the Regional Common Market.[vii]

Chart 1, which visualizes the country's situation in the chapters of Cluster 2, comparing those in 2023 with those in 2024. The chart shows no change in the situation in any of the chapters in 2024 compared to 2023. Unfortunately, in a full year, no change is observed in terms of compliance and action towards fulfilling the recommendations given by the Commission in 2023.

The fact that in 2023 North Macedonia joins the EU Single Market Program remains a positive step. The Single Market Program focuses on strengthening the governance of the internal market, supporting the competitiveness of industry and in particular of micro, small and medium-sized enterprises (SMEs), promoting human, animal and plant health and animal welfare and establishing the framework for financing European statistics.[viii]

From October 7, 2025 North Macedonia officially begins implementing the Single Euro Payments Area (SEPA), allowing citizens and companies to make and receive payments in euros to and from SEPA member countries under the same conditions as in the EU.[ix]

7.Conclusion

It has been argued that the importance of an internal market, such as the EU's, lies in its ability to foster economic development, progress and efficiency. Within North Macedonia, there is a growing awareness of how vital the country's membership of the internal market is. The benefits will not only be for the government. Producers and businesses will have the opportunity to expand the market for their products and thus compete with all other European products under the same conditions and rules (without border controls and the associated costs, without quantitative restrictions, and without additional costs for customs duties). On the other hand, consumers will have access to more, more innovative, better quality, and cheaper products due to increased competition from one country and reduced costs for producers from another country. The research conducted shows that out of the nine chapters of Cluster 2, it has been found that North Macedonia is making progress in: Free movement of capital, Financial services, Consumer and health protection, Free movement of goods and Right of establishment and freedom to provide services; while no progress has been found in: Freedom of movement for workers, Company law, Intellectual property law, and Competition policy. With the Commission's Report for 2023, the country has received not only a clear picture of the real situation in relation to the fulfillment of the membership criteria, but also recommendations for steps that are expected to be taken immediately by the government. Unfortunately, the analysis of the Report for 2024 is not hopeful because no increase in the level of progress is observed in any of the Cluster 2 chapters.

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Perceptions and Experiences of Preparatory Class Students on the Use of ChatGPT for English Learning: A Qualitative Study

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Abstract

Introduction: The use of artificial intelligence (AI) technologies has the potential to facilitate and enhance English learning, particularly for non-native English learners. ChatGPT, as one of these technologies, can significantly contribute to students' English learning when used appropriately.
Aim: This study aims to explore the perceptions and experiences of preparatory class students on the use of ChatGPT for learning English language skills, including its advantages and drawbacks.
Method: The data for this qualitative study were collected through semi-structured interviews and analyzed using content analysis. The participants consisted of preparatory class students from English major departments: English Language Teaching and English Language and Literature at a state-intensive research university in Türkiye.
Findings: The findings showed that students use ChatGPT as a supporting learning tool for learning various English language skills, as well as advantages and drawbacks.
Conclusion: The study can shed light on the contribution of ChatGPT when used effectively and responsibly by preparatory class students, and can establish a basis for lecturers to guide students to use ChatGPT effectively.
Originality and value: This study aims to show the facilitative role of ChatGPT for language learning purposes, and the results can show how ChatGPT can be effectively and responsibly integrated into the courses, as well as out-of-class English learning.

Keywords: ChatGPT, English, language skills, advantages, drawbacks
Jel Codes : I20, I21, I29

1. Introduction

In recent years, technology has significantly impacted and transformed the way language is taught as well as the concept of language teaching and learning, and the transformation of the educational industry has begun with the emergence of ChatGPT, an AI-powered language model (Muniandy & Selvanathan, 2024). On the other hand, the current advancements in AI technologies, such as ChatGPT, necessitate both educators and students to refine their competencies to effectively align with the process (Klimova et al., 2024). As an interactive supplementary learning tool, ChatGPT offers learners a wide range of authentic materials, instant feedback, and, when compared to traditional teaching and learning materials, ChatGPT has the strengths of easy access and can be adapted to the learners' proficiency level, and can initiate a personalized learning environment aligning with learners' personal learning styles, aptitude, and needs. However, the use of ChatGPT in education has created a kind of dilemma, as it is perceived both as an opportunity and a threat, leading to ethical problems (Muniandy & Selvanathan, 2024). Therefore, a considerable gap has been identified and requires filling with research that can demonstrate whether its advantages outweigh its disadvantages and the utilization of this technology by students inside or outside of the classroom, particularly by learners for whom English is not their first language.

Recent studies have focused on documenting the facilitative role of AI-derived tools, particularly ChatGPT, as a supplementary tool as well as its pitfalls, and an increasing number of studies

have consistently linked high levels of motivation, self-efficacy, and enhancement for learning English with the help of ChatGPT (e.g., Aydın Yıldız, 2023; Karataş et al., 2024; Song & Song, 2023). On the other hand, potential challenges and drawbacks are also associated with the use of ChatGPT for language learning, including particularly over-reliance and lack of generating abstract ideas (e.g., Kohnke et al., 2023; Baskara & Mukarto, 2023). Therefore, there appears to be a considerable need for research that explores the integration of AI technologies into language teaching, particularly regarding the perceptions and experiences of students because despite its increasing popularity in the context of English as a Foreign Language (EFL), as a supplementary tool, to clarify how students think of ChatGPT in language learning remains a need and requires further and detailed investigation. Gaining insights into these perceptions is critical to cultivating effective teaching strategies for consolidating the promises of ChatGPT as well as alleviating pitfalls (Klimova et. Al., 2024). Thus, the proposed study seeks to apprehend the experiences and reflections of preparatory class students with ChatGPT, addressing the following research questions:

1.1. Research Questions

1. How often do students report using ChatGPT for language learning?
2. What are the strengths and drawbacks of using ChatGPT while learning English?
3. How do preparatory class students use ChatGPT to enhance their English language proficiency?

2. Literature Review

In the field of education, recent research delves into the use of ChatGPT from various dimensions. ChatGPT makes it possible to negotiate English outside the classroom for learners with limited language access (Aljohani, 2024). Studies have accentuated personalized learning, real-time and instant feedback, and flexibility in accessing educational resources as crucial strengths or advantages of ChatGPT (Aljohami, 2024; Karataş, 2024; Xiao & Zhi, 2023). Particularly, instant and real-time feedback offered by ChatGPT is considered a prominent aspect of this AI tool (Xiao & Zhi, 2023). With their studies focused on the use of ChatGPT in English class, Ali et al. (2023) highlighted the pivotal role of ChatGPT in enhancing motivation, with a more pronounced effect on reading and writing skills compared to speaking and listening. In another study with preparatory class students, Karataş et al. (2024) aimed to delve into the effects of ChatGPT on foreign language education and noted that ChatGPT has contributed to creating an engaging learning experience, augmenting motivation. Moreover, their participants appreciated the positive effect of ChatGPT on their language skills, including writing skills, vocabulary, and grammar, as well as the instant feedback ChatGPT offers. The study also illuminated students' concerns regarding the overreliance on ChatGPT as a drawback. In another study, Xiao and Zhi (2023) reported that students use ChatGPT for grammar, vocabulary, and writing skills, and ChatGPT is an easily accessible language partner for them compared to traditional ways. However, the notable issue addressed by one of their participants is that while ChatGPT refines their surface-level language skills, it does not considerably enhance their deep language proficiency. This result preliminarily illuminates students' awareness regarding ChatGPT use since they can evaluate their own language proficiency and, thus, hold a realistic belief about their real proficiency levels. ChatGPT generates a judgment-free context where students can experience language, eliminating the impending effect of making mistakes (Barrot, 2023). On the other hand, it should be noted that the intensity of use for ChatGPT may be linked to various parameters such as academic level, ICT literacy, and academic exposure to digital tools (Aljohami, 2024); therefore, these parameters should also be considered to explain the use of ChatGPT in foreign language education settings.

Recent studies have also focused specifically on the use of ChatGPT for acquiring various English skills, such as speaking (Muniandy & Selvanathan, 2024; Wang, 2025**)** and writing (Tsai et al., 2024; Jmaiel et al., 2025; Khampusaen, 2025; Polakova & Ivenz, 2024; Bašić et al., 2023; Abdulkareem et al., 2024). For example, as a result of a mixed-methods study, Muniandy and Selvanathan (2024) underscored that ChatGPT boosts speaking skills by creating an engaging

environment and enhancing confidence. Moreover, in another empirical inquiry that directed attention to the effects of ChatGPT as a supplementary tool for writing skills of English majors, Tsai et al. (2024) observed a significant increase in the quality of papers written by students after they adopted the suggestions of ChatGPT. However, the researchers also accentuated that the considerable improvement in papers has no direct link to advancement in students' writing skills. These studies underscore that students can utilize ChatGPT both for productive and receptive skills, learning grammar, and building lexical knowledge.

On the other hand, besides the benefits of ChatGPT, some potential drawbacks and challenges are also associated with this AI tool regarding its use for language learning. Despite the positive contribution of ChatGPT, studies have concluded potential drawbacks and challenges. Overreliance on ChatGPT, technical issues, and ethical concerns are considered among the important drawbacks (Karataş et al., 2024; Yan, 2023). In an EFL setting, with the study focusing on master's and bachelor's students' perceptions of ChatGPT, Aljohami (2024) found that overreliance, critical thinking, and discontinuation of ChatGPT were considered among the challenges. Moreover, in a qualitative study conducted on the effect of ChatGPT on L2 writing practicum, Yan (2023) found that students are concerned about the academic dishonesty of ChatGPT as a disadvantage. These results were also echoed in a systematic review carried out by Yang and Li (2023), who documented issues such as plagiarism, overreliance, technical barriers, and inaccurate responses as disadvantages of ChatGPT as a learning tool for English.

3. Research Design

The current study employed a qualitative research approach within the interpretivist paradigm, addressing the exploration of preparatory class students' perceptions and experiences regarding the use of ChatGPT to learn English and improve their proficiency level.

3.1. Participants

The participants in this study were 20 preparatory class students enrolled in the English Language Teaching (ELT) and English Language and Literature (ELL) departments at a research-intensive state university in Türkiye. Purposive sampling was utilized to select students who had already had the experience of using ChatGPT for learning and developing English. Detailed information regarding participants is given in Table 1.

Table 1. Demographic Information of Participants

		Frequency	Percentage (%)
Gender	Female	19	95
	Male	1	5
Age	17-18	4	20
	19-20	15	75
	21-22	1	5
Department	English Language Teaching	11	55
	English Language and Literature	9	45

3.2. Data Collection and Analysis

Semi-structured interviews were employed to collect data. The interviews were conducted face-to-face and were administered in Turkish to ensure the linguistic comfort of participants and minimize linguistic barriers to voice their ideas easily. The researcher explicitly outlined the purpose of the study and data confidentiality to the participants, and their consent was obtained for the study. Anonymity of students was ensured by using code names for them. Each interview lasted about 7-15 minutes. Data obtained from semi-structured interviews were analyzed through content analysis.

4. Findings

The responses from the semi-structured interviews were analyzed through content analysis. The analysis yielded three themes, and for each theme, codes and categories were identified. Moreover, students reported use of frequency of ChatGPT was also demonstrated.

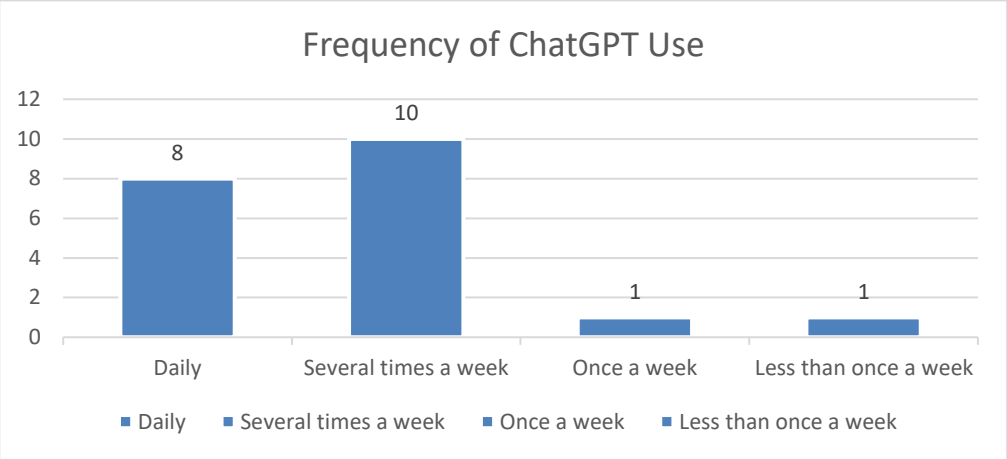


Figure 1. Frequency of ChatGPT Use by Preparatory Class Students

Figure 1 shows the frequency of ChatGPT use by preparatory class students. As illustrated in Figure 1, the majority of participants reported using ChatGPT several times a week(n=10), followed by daily use (n=8). A small number of participants stated using it once a week (n=1) or less than once a week (n=1). These results suggest that participating students integrate ChatGPT into their English learning practices on a regular and consistent basis as a frequent supplementary tool.

Table 2. Strengths and Advantages of ChatGPT for Learning English

Category	**Codes**	**Participants**
Motivational Strengths	Increased motivation	P1, P2, P7, P8, P9, P11, P14, P16, P17, P19
	Sense of achievement in English and positive reinforcement	P2, P7, P11, P19
	Teaching discipline and control	P18
	Educational companion	P6
	Personalized learning	P11
Emotional Strengths	Increased self-confidence	P5, P11, P14, P15, P20
	Absence of human presence (leading to less fear of making mistakes)	P4, P8, P16
	Lack of fear regarding mistakes, scoring, asking questions, or being judged	P7, P16, P19, P8
	Explicit articulation of learning goals and lack of knowledge	P1, P13
	Integration of English into daily life	P5

Language Development and Learning Benefits	Offering a variety of activities and sources (film clips, games, music, podcasts)	P6, P12, P15, P16
	Offering precise and relevant information	P8, P9, P10, P20
	Easy and fast access to sources	P15, P18, P20
	Constructive, corrective, and nonjudgmental feedback	P3, P5, P7

Table 2 explores the preparatory class students' perceived strengths of ChatGPT in learning English. Students reported a wide range of advantages for utilizing GhatGPT in English learning. The first category is associated with the motivational contribution of ChatGPT. According to the experiences of preparatory class students, one of the most salient strengths of ChatGPT lies in its effectiveness in increasing motivation for learning and developing English. Half of the participating students appreciated that ChatGPT considerably enhanced their motivation. Students also pointed out that ChatGPT use led to a sense of achievement and contributed to their willingness to learn English, perceived as guidance for teaching discipline and control. Another concern raised by participants, linked to emotional strengths, is the ability of ChatGPT to provide personalized learning experiences. Moreover, one of the students described ChatGPT as an educational tool and perceived this tool as an English language aid or roommate since she does not have anyone to talk to in English in her immediate environment. She voiced her feelings:

"It actually helped me learn the language in a way I didn't expect, because, you know, I don't have a special friend, a foreigner, or anyone in my room with whom I can speak English. I only have friends at school. I could say ChatGPT is an English roommate for me." (P6).

The second category delves into the emotional factors that have a clear link to the emotional strengths of ChatGPT. Increased self-confidence is the most commonly reported strength by the preparatory class students. The anonymity and nonjudgmental nature of ChatGPT reduce affective barriers such as anxiety, making mistakes. As stated by the participants, particularly the absence of human presence, lessens the fear of making mistakes or asking questions, and offers a friendly atmosphere where students do not hold the fear of being judged for their proficiency level. Therefore, they feel free to ask everything about language learning, and this leads to a more resilient language learning experience. As expressed by some students:

"I can be more comfortable there because at least, humans are absent, so I use it more comfortably and I feel calm." (P4)

"Yes, I'm comfortable because I know there's no judgment, no grade, nothing to gain, just teaching me, and sometimes praising me, which I like. Of course, it increases my motivation." (P7)

Additionally, the participants underscored the effective role of ChatGPT on language development and the benefits ChatGPT offered. With the help of ChatGPT, students have the potential to notice their deficiencies and articulate clearly and directly what they should learn. This awareness and interactive learning experience allow familiarity with the target language, enabling students to integrate English into their daily lives, as well as making English learning more fun. One of the students confirmed this contribution, saying:

"I feel more confident because it feels like you are talking to someone there, and because ChatGPT constantly corrects my words, I feel like I am ready to talk. I am starting to talk with my friends around me, and I slowly start to integrate English into my daily life." (P5)

ChatGPT's extensive repertoire enables preparatory class students to encounter a wide range of language materials, content, and practices. In parallel with this advantage, students can save a significant amount of time; that is, ChatGPT is time-efficient for them, generating the exact and relevant information or content that students require with fast and easy access. At the same time, their engagement with language learning through the use of ChatGPT provides constructive,

corrective, and nonjudgmental feedback. These strengths were noted by students as follows:

"... I can reach ChatGPT very quickly, you can look immediately, even if you are afraid of making a mistake, especially if you have a little bit of time ahead of you and you don't need to do it quickly, you can reach directly, you can see different options, it opens up a lot of doors for learning." (P15).

"Since I realized the mistakes I made, I try not to make them again, and that provides good feedback" (P3).
"Sometimes ChatGPT makes really good channel suggestions for language learning. For example, I asked for podcast suggestions while I was listening, and ChatGPT suggested a couple of channels. I think it's good, not bad." (P16)

Table 3. Drawbacks of ChatGPT Use for Language Learning

Category	**Codes**	**Participants**
Pedagogical and Learning Barriers	Complex explanations	P1
	Writing effective and correct prompts	P7, P17
	Being lazy and less creative due to overreliance	P12, P19, P20
Technical and Practical Barriers	Premium subscription plan	P4, P5, P8, P11
	Technical issues/errors	P2
	Limited use/content for some specific skills	P9, P16
	Simplicity of exercises	P3, P17
Ethical Concerns	Risk of plagiarism	P15
No Challenges Identified	No identified challenge	P6, P10, P13, P14, P18

Table 3 demonstrates the drawbacks of ChatGPT for learning English. Despite the advantages or strengths of ChatGPT for learning English, preparatory class students also identified various challenges and potential drawbacks for using ChatGPT. Students reported concerns regarding pedagogical and learning challenges. One of the students perceived the complex explanations provided by ChatGPT. Two of the students had difficulty in writing clear and effective prompts to attain exactly the intended answers, as expressed by one student:
"If you don't write exactly as you want, if you don't write in detail, ChatGPT won't understand anything, so ChatGPT doesn't give it as I want." (P17)
Concerns about overreliance on ChatGPT are also among the barriers reported by three students. ChatGPT creates a potential overreliance despite its usefulness, and this excessive dependency can impede students' creativity since they spend less effort as they interact with ChatGPT. One of the students uttered that:
"I'd say ChatGPT makes people a little lazy, because when information is directly accessible, people no longer do research all the time. This makes people a little lazy." (P20)
Technical barriers are another concern experienced by students. Four students mentioned the cost of the premium subscription to ChatGPT since they use the free version. Moreover, technical issues, limited use for some skills, and simplicity of some required exercises are among the barriers students experienced during their interaction with ChatGPT for learning English. However, students also underscored that these barriers have no dramatic negative effect on their use of ChatGPT. One student summarized the technical barrier clearly by stating that:
"Sometimes it gives errors, but that's not a problem, after all, it's not a very common thing yet. It's very rare, but other than that, I don't think there are any disadvantages." (P2).
One of the students participating in the study has also linked the drawback of ChatGPT use with the risk of plagiarism. Indeed, students are aware that in case of any task or homework, if ChatGPT is used excessively, AI detectors can uncover plagiarism. However, it should be noted

that five students did not identify any potential drawbacks or disadvantages associated with the use of ChatGPT for learning and improving English.

Table 4. Use of ChatGPT for Learning English

Category	Codes	Participants
Writing Practices	Essay writing	P1, P2, P4, P5, P9, P10, P12, P18, P19
	Translation	P1, P15
	Feedback for writing practices	P3, P4, P5, P6, P7, P8, P9, P10, P11, P12, P13, P14, P15, P16, P18, P19
	Generating ideas for writing	P17, P19, P20
Grammar-Related Use	Feedback for grammatical accuracy	P1, P11, P13
	Grammar instruction	P2, P3, P5, P6, P7, P8, P9, P11, P17, P18, P20
	Grammar exercises	P2, P3, P8, P14
Oral Communication Skills	Conversational practice	P4, P5, P6, P7, P11, P14, P16, P17, P19
	Pronunciation practice	P5, P6, P8, P9, P10, P13, P14
Receptive Skills	Reading comprehension	P5, P6, P9, P14
	Listening comprehension	P8, P18
Lexis	Lexical expansion	P2, P4, P6, P7, P9, P10, P11, P12, P13, P14, P15, P17, P18, P19, P20

Table 4 shows the results for students' use of ChatGPT for learning English language skills. The majority of students primarily reported the use of ChatGPT for writing practices, focusing on receiving instant and real-time feedback for their writing. ChatGPT makes the necessary corrections and suggests a revised version of paragraphs or essays for students. For example, one of the students noted that:

"...I write everything, paragraphs, essays etc., and send it to ChatGPT, then I say, where is my grammar mistake, where is my disruption of the flow, and ChatGPT says, here is the revised version of it, like this." (P7)

Participating students also appreciated the contribution of ChatGPT to learn about various essay types, such as argumentative, narrative, or cause and effect, outside of courses. Students praised how ChatGPT enhanced their knowledge of writing skills, as expressed by one of the students:

"Sometimes we cannot understand the essay types as soon as they are explained, so I say, can you write me a paragraph about this essay type, or give me a little more information about the argumentative essay?" (P1)

Three of the students highlighted the contribution of ChatGPT for generating ideas, when they are confused about how to begin to write, and the suggestions of ChatGPT make the process easier and reduce their anxiety. One of these students articulated that:

"Sometimes you may run out of ideas. We are human beings. I can ask for ideas, I can say, write me a text that gives me an idea about this topic." (P20)

For writing practices, some of the students utilized ChatGPT for translation activities. Another use of ChatGPT for language learning is associated with grammar-related use, focusing on participants' reliance on ChatGPT for feedback on grammatical accuracy, grammar instruction,

and practice. More than half of the participants remarked on the explicit grammar-focused support of ChatGPT while learning English. For example, two students appreciated this support, saying:

"I want small, important information and tips for each grammar topic, and ChatGPT helps me with that too." (P18)

"In grammar questions, there are grammar rules that I forget. When I forget the tense that comes after a conjunction, I immediately ask." (P20)

As well as the interactive learning experience, writing practice, feedback, and explicit grammar support, in their language learning experiences, preparatory class students also employed ChatGPT as a means to improve their receptive skills, particularly for reading and listening comprehension, and one of the students also stated that he asks ChatGPT to suggest various activities, videos, podcast, music or films. Another concern is vocabulary knowledge expanded through the use of ChatGPT. The majority of preparatory class students praised the way ChatGPT expanded their lexical knowledge. ChatGPT is specifically used as a means to acquire new words, learn how to use words in context, and their synonyms and antonyms. Two students exemplified this contribution as:

"For example, what other words can I use instead of this word effectively, or how can I use this word in a sentence, where it is used, that is, where can I use the adjective, where can I use the adverb." (P12)

"It also helps me a lot with vocabulary, for example, it helps me with synonyms and antonyms." (P6)

5. Discussion

By examining the perceptions and experiences of students, the study sought to unlock the potential strengths, drawbacks, and uses of ChatGPT in learning English. The first research question of the inquiry delves into the students' reports regarding the frequency of ChatGPT use. The results indicate that half of the students use ChatGPT several times a week, showing that it is used regularly and consistently and has become a frequently appealing and supportive tool for students. The intensive English courses program may explain this frequent and consistent use, as the preparatory class students are enrolled in intensive English courses for four skills over two semesters. However, in contrast to the current study, Aljohani's (2024) study showed infrequent use of ChatGPT by bachelor's degree students, and the author attributed this infrequency to various factors, such as limited knowledge about the tool and the less demanding nature of bachelor's courses.

The second research question of the study focuses on the strengths and potential drawbacks of ChatGPT use for learning English. Students' experiences and perceptions show that the strengths of ChaGPT can outweigh the drawbacks. Participants consistently emphasized the motivational, emotional strength, and language and learning benefits of this AI tool. The results highlight that the use of ChatGPT enhances motivation for learning, increases self-confidence, and particularly eliminates affective barriers, enabling students to be free from the fear of making mistakes, asking questions, or being judged for incorrect answers, which are impediments to language learning and teaching. These results align with the literature and the strengths of ChatGPT use in English learning are supported by previous studies emphasizing the contribution of ChatGPT to motivation of learners (Ali et al., 2023; Aljohnai; 2024; Karataş et al, 2024), enhanced confidence (Muniandy & Selvanathan, 2024), and judgment free context and less fear of making mistakes (Barrot, 2023). These insights suggest that ChatGPT, as a supportive learning aid, offers significant and various benefits for preparatory class students to develop their English proficiency. Another concern of the second research question has been devoted to the drawbacks of ChatGPT use. Regarding the drawbacks of ChatGPT-assisted language learning, the first major concern addressed by the participants was over-reliance on ChatGPT. This drawback is also supported by Karataş et al. (2024), who discussed the effects of ChatGPT on foreign

language education, including learners' apprehension regarding possible over-reliance on ChatGPT. Moreover, the results of the current study also show that this potential over-reliance on ChatGPT has the risk of impeding the creativity of learners since they have easy and fast access to generating original ideas, as well as easy access to sources. Preparatory class students also indicated technical barriers, including a premium subscription plan, technical errors, simplicity of exercises, and limited content offered by ChatGPT for specific skills. The risk of plagiarism was also reported as a drawback of ChatGPT; however, it should be underscored that preparatory class students, despite their limited undergraduate experience, are aware of the issue and risk of plagiarism. Besides, five students reported no challenge associated with ChatGPT. This result indicates that ChatGPT is a user-friendly and time-saving tool for them.

The last research question of the current inquiry has attempted to seek how students utilize ChatGPT to enhance their English proficiency. The result shows that ChatGPT positively affects language skills, particularly written skills, grammar, receptive skills, and lexis. Nearly all participants utilize ChatGPT for practicing writing skills, writing essays, generating ideas, or for real-time feedback. Requiring instant and real-time feedback makes ChatGPT a promising and valuable educational companion. These results align well with the previous research (Aljohami, 2024; Karataş et al., 2024; Xiao and Zhi (2023; Son & Song, 2023).

6. Conclusion

The results of the current study highlighted the facilitative role of ChatGPT for preparatory class students' efforts for English learning, as well as potential challenges and drawbacks. Preparatory class students utilized ChatGPT for various skills, ranging from writing to vocabulary. The results also indicated that the advantages and strengths of ChatGPT are more dominant when compared to the challenges and drawbacks. Therefore, if used effectively and responsibly, ChatGPT has the potential to make a substantial contribution to both the language teaching and learning process. However, further research is required to explore the advantages of this supportive AI tool for learning language regarding different proficiency levels and student groups, and also more research is required to explore the perceptions and experiences of graduate students as well as undergraduate students regarding ChatGPT use for learning English and improving their proficiency level.

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Education and social sustainability challenges through art: Dramatization as an instrument of knowledge and inclusiveness in pre-university and university systems

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Abstract

Introduction: Today's challenges of modern social development have placed Education for Sustainable Development (ESD) at the forefront of educational priorities. This approach requires the active engagement of students through cognitive and affective learning, critical thinking, and emotional intelligence. Drama, as an art form in education and upbringing, provides an interactive platform to address global priorities, including social and environmental sustainability.
Aim: This study examines the role of dramatization as a pedagogical tool for promoting sustainability awareness, developing problem-solving skills, and fostering inclusive participation among pre-university and university students.
Method: The research combines a literature review with a qualitative case-based analysis of dramatization practices in pre-university systems and at the University of Tirana. UNESCO's ESD Framework serves as a guiding theoretical model for assessing the importance and opportunities offered through art-based learning, as well as the fulfillment of educational goals through it.
Findings: Integrating dramatization into teaching methodologies enhances creative thinking, empathy, non-verbal communication, and holistic problem-solving. Students not only develop individual competencies but also collective awareness and readiness to act on issues of social justice, environmental stewardship, and climate preservation.
Conclusion: Dramatization contributes to sustainable education by linking knowledge acquisition with emotional engagement and social responsibility. It strengthens interdisciplinary competencies and skills, humanistic values for global citizenship, and the future.
Originality and value: This paper highlights the importance of the dramatization method as a transformative pedagogical and didactic approach that combines artistic creativity with sustainability education, aligning with the global objectives of ESD.

Keywords: **dramatization, education for sustainable development, sustainability, art-based learning, social inclusion,**
JEL Codes: I25, Q01, Z11, O35, A13

1. Introduction

The dramatization method in pre-university education systems is increasingly attracting the interest of researchers, teachers, and students due to the skills and opportunities it offers both within and beyond the school curriculum. It remains a pedagogical and didactic tool that achieves the curriculum's learner-centered goals, aligning with the objectives of *Education 2030* in the *Lisbon Strategy* (European Commission, 2004). Dramatization is also viewed as a tool for promoting awareness of sustainability, inclusivity, critical thinking, problem-solving, reading skills, and other essential skills, not only in pre-university education systems but also in higher education. Dramatic teaching processes, both inside and outside the classrooms, such as role-play, simulations of various dramatic scenarios, staged integration of problem-focused dramatic works, and digital theatre, act as bridges between cognitive knowledge and affective experience,

facilitating integrated learning that promotes critical thinking, empathy, and social responsibility as a collaborative and practical learning technique (Zakopoulos et al., 2023).

Relying on methodologies that repurpose dramatic security by combining artistic, interactive, and utilitarian elements, teachers and students in the classroom have the opportunity to develop instructional and didactic scenarios that foster new ideas, critical thinking, and sustainable development in real-world contexts. The requirement for systemic, individual, and solution-oriented thinking through interdisciplinary collaboration trains students to communicate effectively, solve problems innovatively, and stimulate systemic thinking, particularly in the application of dramatization in STEAM contexts (Kasbary & Novák, 2024). The development of dramatization methods, role-play, improvisation, and student engagement enhances and supports key citizenship competencies and can serve as tools for sustainability education (Moula et al., 2022; Pavlou, 2024).

In today's landscape of diverse social, cultural, and psychological student profiles, dramatization, through its demonstrated capacity to foster social closeness, empathy, and related aspects, ensures greater inclusion and engagement of students with varied interests, drawing them into the idea and purpose of collective participation (Moula et al., 2022). In this context, social empathy and collaboration encourage students to engage in discourses on social justice, environmental issues, and other topics. Dramatization thus supports the development of social empathy and the skills necessary to address sensitive topics concerning social justice and environmental challenges. This method aligns with *UNESCO's Education for Sustainable Development* (ESD) objectives, as well as the *Lisbon Strategy and the Renewed Lisbon Strategy* for Growth and Jobs. UNESCO emphasizes the integration of knowledge with student skills, civic, professional, and moral competencies, preparing individuals for the future and for coexisting with the environment and all life forms on our planet (UNESCO, 2019). Similarly, the Lisbon Strategy highlights scientific research and technology as key focuses for human capital growth and development.

Through the analysis of cases in the pre-university system and at the University of Tirana, this study aims to identify how dramatization not only supports students' personal and academic development but also enhances collective awareness and readiness to act on issues related to the environment, climate, and social justice. From this perspective, dramatization is presented as an innovative pedagogical and didactic approach that combines artistic talent with sustainability education, contributing to the formation of well-informed, conscious, and practical citizens who are prepared to face the challenges of the millennium.

2. Methodology

This study utilized two primary investigative approaches: a literature review and a subjective investigation of concrete cases of dramatization practices.

2.1 Writing Review

As part of the writing survey, we examined how drama and artistic expression, as well as realistic narrative writing, are used as tools in education and pedagogy in various forms. These methods were considered within the context of Education for Sustainable Development (ESD).

The survey reviewed publications from global literature in the relevant fields between 2019 and 2024, focusing on how educational drama and dramatization methods are applied at both pre-university and higher education levels.

The survey, conducted in several regions of the country, explored the impact of drama on sustainability awareness, socio-emotional skills development, and student engagement (Zakopoulos et al., 2023; Kasbary & Novák, 2024).

2.2 Subjective Analysis

In the subjective analysis, we examined specific examples of educational drama and

dramatization practices, such as Master's theses from the Professional Master's Program in Teaching at the University of Tirana, as well as a university-led project in this field that involved field research conducted throughout the national territory, targeting teachers and students from both pre-university levels.

These projects relied on data collection through fieldwork, surveys, and questionnaires addressed to teachers and students in pre-university education, including lower and upper secondary levels, as well as students enrolled in the Professional Master of Teaching program. Students were the main group involved in these activities. This approach followed case study methods (Yin, 2018), which facilitate the evaluation of academic and educational practices in a personalized manner and enable the understanding of the corresponding social and cultural contexts-an approach that, in our case, proved effective.

Considering that UNESCO's ESD framework provides global guidelines for integrating sustainability into educational modules and outlines the core competencies that students should develop (UNESCO, 2019), and acknowledging that learning through the arts is a highly effective teaching strategy that promotes empathy, solidarity, cooperation, critical thinking, and global citizenship, our study was grounded in this approach. Moreover, this orientation was shaped by the dynamics of cultural development and Albania's ongoing efforts toward EU integration, both of which determined the direction of our research.

2.3 Data Collection

Qualitative data were collected through surveys, questionnaires, and interviews with teachers, students, and Professional Master of Teaching students who conducted pedagogical and didactic teaching practice in various schools across the country at two pre-university levels: Lower Secondary Education (LSE) and Upper Secondary Education (USE). Additionally, data were collected from school-based projects where technology was used, and dramatization methods were integrated into the curricula of Albanian language, science, and environmental education. These various data collection methods-known as triangulation-helped ensure the reliability and validity of the findings (Creswell & Poth, 2018). In analyzing the cases, affective, social, and interactive aspects related to the development of sustainability competencies were also considered (Moula et al., 2022; Pavlou, 2024). By following these methods and using these instruments, we were able to directly explore the value and significance of educational drama and dramatization in education for sustainability across complex fields of knowledge and respective curricula.

3. Literature Review

The application of educational drama and dramatization methods in teaching has proven to be both highly effective and necessary, as increases in interest, interaction, and qualitative understanding of concepts have been observed at all educational levels. Dramatization, in particular, provides students with the opportunity to share individual experiences, integrate into group work, and enhance their research and critical thinking skills on a specific topic through collaborative activities. One of the primary benefits of drama is its capacity to foster creative thinking. The creation of new didactic situations, even with the support of technology, allows students to think creatively, activating their imagination and applying skills that not only fulfill lesson objectives but also enhance emotional intelligence, collaboration, and aesthetic appreciation. As has been widely acknowledged, when innovative elements are incorporated through technology, particularly within dramatization methods learning process becomes more effective and engaging, supporting long-term educational growth and sustainable learning (Zakopoulos et al., 2023).

The distribution of roles and responsibilities, collaboration with peers, and mutual support in working toward common goals make drama an essential tool for fostering empathy.

It helps students connect with others and develop essential social, cultural, psychological, environmental, and health-related competencies, both within the classroom and in their

relationship with nature.

This gives creativity a new dimension-encouraging learners to perceive nature as an integral part of everyday life. Participation in such activities also raises students' awareness and engagement regarding key contemporary issues such as social justice, diversity, and equality, helping them build more meaningful and sustainable relationships with others (Moula et al., 2022). Body language, or non-verbal communication, which has increasingly been recognized as one of the most utilized forms of group communication, further reinforces the need for the application of educational drama in schools.

Through dramatic play, students learn to express themselves using body language. In line with UNESCO's goals to promote diversity, intercultural dialogue, culture, and agreement, dramatization shows how nonverbal communication, such as mimicry, imitation, and gestures, can express more than words. It helps explore complex layers of consciousness, providing intercultural and interdisciplinary skills that make dramatization one of the most preferred methods in modern education. It is also seen as an essential skill for an appropriate global citizen (Pavlou, 2024).

A particularly significant characteristic of using dramatization in education is how it helps evolve both group capability and personal skillfulness.

This implies that students learn to think about the well-being of their community, as well as the individual and collective responsibilities integrated within a shared environment, climate, and social justice framework. Such learning helps them develop as global citizens who can understand and face the challenges that the future holds for humanity. Through initiatives such as the Education for Sustainable *Development (ESD) Roadmap* (2021), *Global Citizenship Education* (GCED), and the *UNESCO Culture|2030 Indicators*, UNESCO highlights the evolution of transformative, intercultural, and interactive skills as hallmarks of active citizenship-fostering greater participation and healthier relationships within communities. From this perspective, educational drama and the method of dramatization move beyond the framework of a traditional pedagogical process, transcending the boundaries of conventional learning quality. Instead, teaching becomes a transformative and interactive process of evolution, where cognitive learning skills merge with individual and collective emotional, social, cultural, and educational experiences. Fundamentally, this transforms education into a meaningful and constructive pedagogical and didactic experience for the future citizens of our planet.

4. Case Study

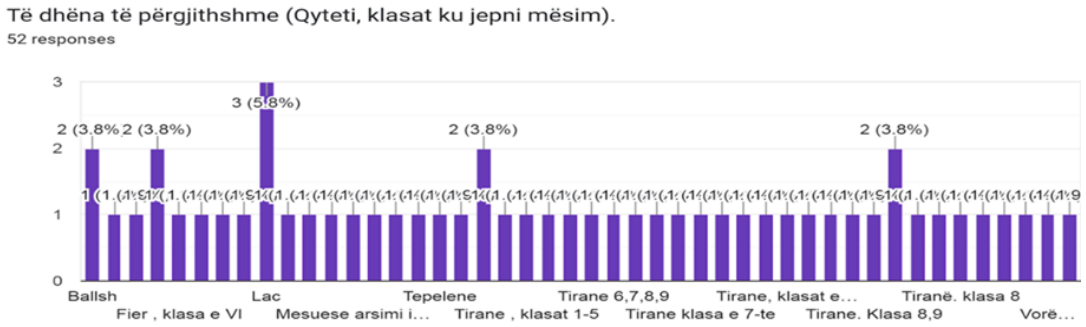
The experience at the University of Tirana, both through the research project and the investigation conducted during the preparation of diploma theses, was grounded in key competencies that support the enhancement of the pre-university education and training system through the process of dramatization: 1) Communication in the mother tongue, 2) Learning to learn, 3) Interpersonal competencies, 4) Intercultural and social competencies, 5) Civic competence, 6) Entrepreneurship, 7) Cultural expression, 8) Self-expression, and 9) the universal key competence proposed by European experts: "Being Human!".

Taking into account the developments in Albanian society, including demographic, migratory, cultural, educational, and social changes, the classroom, as the space for teaching and learning, as well as the school itself, has become a much more complex environment.
Within this setting, students interact with diverse cultural backgrounds and traditions, precisely because of the factors mentioned above. Educational drama and the techniques of the dramatization process have been viewed as essential in education, especially in a society that is continuously evolving, not only demographically but also culturally, educationally, religiously, and aesthetically (Courtney, 1990).
Students who were directly involved in the field, within schools as part of their teacher training practice and in the preparation of their theses on dramatization in education, focused on: the investigation of dramatization as a didactic concept and its application in teaching; the collection and processing of data through questionnaires and interviews with students and teachers at both

levels of pre-university education; and the practical application of Bloom's Taxonomy in the learning process through the dramatization of non-literary texts observed in various subjects such as Biology, History, Albanian Language, and Science, to evaluate the method's implementation in multidisciplinary scientific and creative interaction.

To conduct this study, five questionnaires and interviews were developed to suit the needs of the two different levels of pre-university students and teachers, as well as a questionnaire for the next generation of Master's students in Teaching at the University of Tirana, who applied the method during their classroom studies and also had three months of practical experience in Albanian schools.

Table 1. General Information (City, Classes Taught)



This chart shows the geographical distribution of the teacher survey across various urban areas and cities in Albania. The sample was sufficient to provide a qualitative analysis of population distribution at the regional level, while the open-ended questions allowed us to explore the diversity and concrete experiences of teachers in their respective schools.

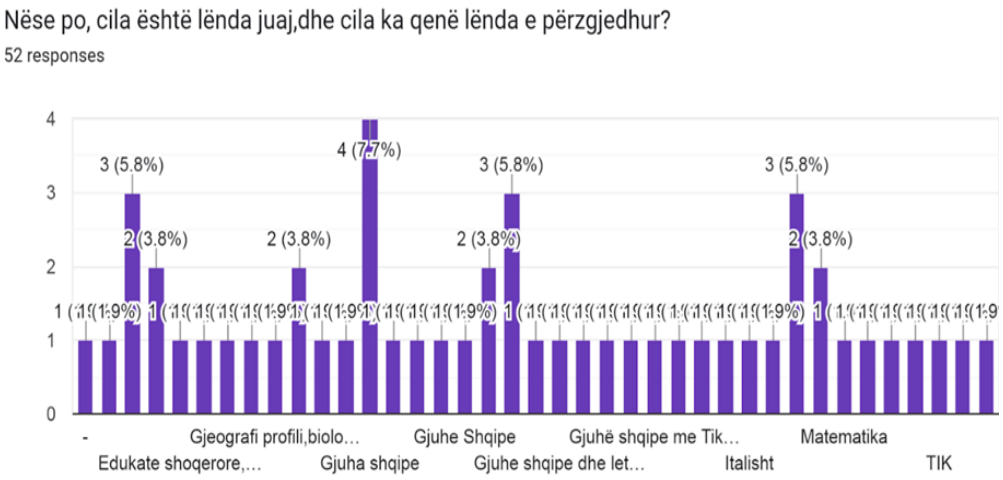
Table 2. Are you open to teaching that involves interdisciplinary integration, either in the teaching/learning process or in the concepts being taught?



The table shows that most people have a positive view of using an interdisciplinary approach in teaching and learning. Over 94.2% of the teachers surveyed are willing to work together across different subjects. This indicates they are focused on the important skills needed for the 21st century and also shows that they welcome new teaching methods. These methods are seen as a way to support sustainability, help teachers grow professionally, be more adaptable, and create different learning environments. Because of this, aspects like teamwork, responsibility, inclusiveness, and other factors that help make institutions, groups, and individuals more sustainable are strengthened. A small number of teachers who are not so positive provide useful

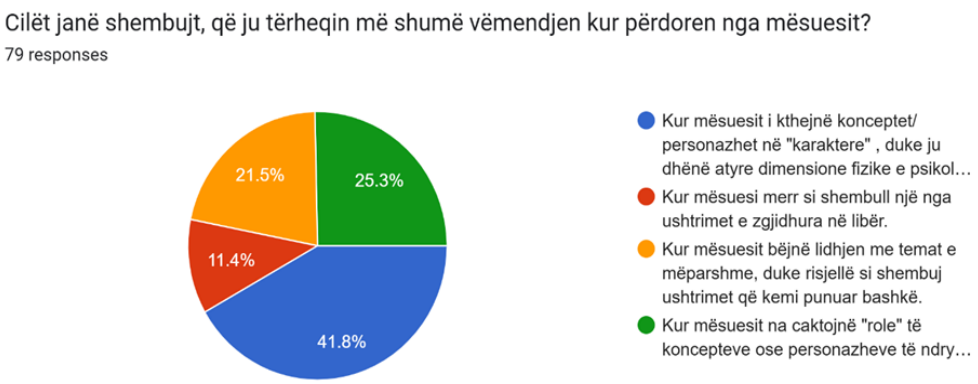
insights. This shows the need for long-term training and support for teachers that matches the goals set by the United Nations for education by 2030.

Table 3. If yes, what is your subject, and which one is the chosen interdisciplinary subject?



The responses of the 52 participants indicate that they show a clear interest in selecting dramatization as a teaching method. The subjects of Social Education, History, Geography, and Foreign Language appear to focus on helping students understand their shared environment, become responsible citizens, and improve the quality of life within their communities. This wide range of subjects, which allows for the integration of different types of knowledge in an interdisciplinary manner, provides a broad and open space for continuous development. Interestingly, Mathematics also emerges as a subject in which teachers propose the use of dramatization as an applicable method, alongside the use of ICT. Over the past two years, teachers in both pre-university education systems have been trained by Albanian universities, not only in preparation for PISA assessments but also in the implementation of modern teaching methodologies. Within these training programs, educational drama, dramatization, and the use of audiovisual tools and applications were central components of the training curriculum.

Table 4."Which examples attract your attention the most when used by teachers?"



According to the chart, 79 student respondents who completed the questionnaire answered the question: “Which examples capture your attention the most when used by teachers?” as follows:

41.8% of the respondents, that is, 33 students, stated that they are most engaged when teachers transform concepts or characters into fully developed figures, assigning them both physical and psychological traits.
11.4% of the respondents, or 9 students, reported that they pay greater attention when the teacher uses an example from a solved exercise in the textbook.
21.5% of the respondents, or 17 students, indicated that lessons become more interesting when teachers connect the current topic with previous ones, using examples or exercises they have already worked on.

25.3% of the respondents, or 20 students, stated that they are most engaged when teachers apply role-play activities based on various concepts. This finding suggests that interactive and recreational methods are preferred by students, as they make the learning process more engaging and enhance students' flexibility toward learning.

Table 5: In these activities (as well as in class), have you ever dramatized non-literary texts?"

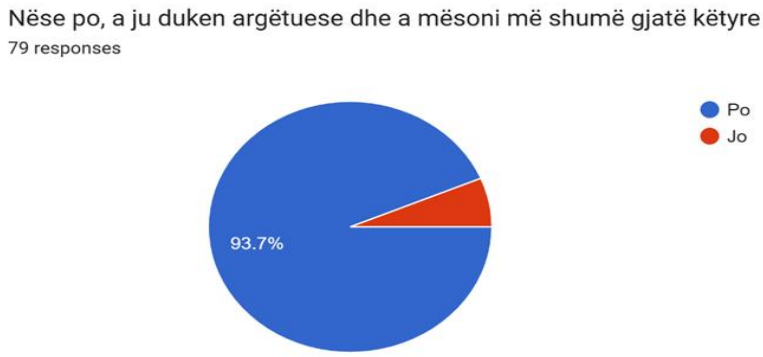


The graph illustrates that the student questionnaire was completed by 79 respondents. Notably, 70.9% of students (56 out of 79) reported having engaged in the dramatization of non-literary texts, while 29.1% (23 out of 79) indicated that they had not. The high percentage of students participating in the dramatization of non-literary texts suggests that many are involved with materials such as informative texts, journalistic content, descriptions, everyday dialogues, and other forms that typically fall outside traditional literary classifications.

This finding supports the validity of teachers' claims and aligns with data reflecting a diverse range of creative instructional methods. These approaches contribute to the enhancement of students' expressive skills, critical thinking, and collaborative abilities, even within the context of non-literary texts.

The notable percentage of students who have not engaged in the dramatization of non-literary texts (29.1%) may be attributed to a variety of factors, including a lack of initiative among teachers or insufficient knowledge and preparation to implement dramatization more widely. This situation presents an opportunity for schools and educators to invest in the systematic integration of dramatization, not only in literature classes but across other subjects as well.

Table 6: If yes, do you find them enjoyable, and do you learn more during these lessons?



93.7% of student respondents reported that the individual assignments they were given, which incorporated the dramatization method as an application, were enjoyable and feasible for them, whereas 6.3% of the respondents indicated that they did not share this view. The high percentage suggests, in our assessment, that students have a certain affinity for the dramatization method and perceive it as an attractive learning strategy. Educational drama and the dramatization method, widely recognized as interactive and collaborative, naturally generate unique experiences for both teachers and students. Even for those students who do not regard dramatization as one of the most engaging methods, several factors can be considered, which require analysis within complex, real-world contexts, such as personal preferences, established learning traditions, individual cultural background, and social or psychological factors. Meanwhile, students enrolled in the Professional Master's Program in Teaching, who completed their teaching practicum in various schools across the country over two months, evaluated student participation during the implementation of the dramatization or role-play method in their respective schools.

Table 7: How would you assess student engagement during the implementation of dramatization or role-playing activities?



The data in the table show that 67.7% of students demonstrated enthusiasm, active participation, and a high level of engagement. This finding supports our view that students enjoy learning through dramatization and are highly motivated when this teaching method is used. Meanwhile, 22.6% of students encountered certain challenges, despite their participation. This is a valuable

indicator in terms of collecting authentic information, as it reflects various parameters that may be individual or related to the implementation and teacher's familiarity with the method.

Additionally, 6.5% of students preferred only to read in roles, indicating that they were oriented toward a less participatory form of dramatization in the classroom.

Finally, 3.2% of students expressed no interest in this method. Although a small percentage, it highlights the diversity of interests that naturally exist among students regarding teaching approaches within the classroom.

5.Conclusion

The dramatization method in schools continues to be an effective strategy, as it allows students to gain knowledge through meaningful interactions with teachers, which increases their level of engagement and makes them responsible for specific roles in learning and sharing information. It also encourages them to take part in discussions about topics that are relevant to society. Through acting out scenarios, students are able to reflect on how human actions impact the environment, which helps them develop a sense of environmental awareness and a willingness to protect nature and use resources sustainably (Zakopoulos et al., 2023). Research shows that the use of dramatization significantly boosts student engagement throughout all levels of pre-university education. It allows students to connect emotionally with the material and gives them chances to express their talents while taking part in meaningful conversations. Especially in interdisciplinary settings, combining knowledge from different subjects into one dramatic performance helps students think more independently, analyze issues deeply, and think creatively.

This method leads to a comprehensive understanding of diverse topics and prepares students to face real-life challenges that demand critical thinking, innovation, and teamwork across disciplines (Pavlou, 2024; Kapur et al., 2021). Important subjects like respecting the environment and contributing to its preservation are easier for students to grasp through dramatization and role-playing, making it a highly valued teaching method. Emotionally, students grow and develop empathy, gaining awareness of their role in society, their rights, justice, equality, and their responsibility to the community. This process helps build conscious and responsible citizens by simulating various situations and encouraging collaborative work (Ó Breacháin & Fagan, 2021).

In summary, the dramatization method is a powerful way of teaching and learning that successfully combines educational and instructional elements. It helps students develop social, cognitive, and emotional skills while supporting the growth of other abilities that shape them into responsible individuals who are aware of their roles in both society and the environment, as well as the importance of sustainable values. By using this method, education becomes more engaging and inclusive at all levels of the pre-university system and beyond.

Acknowledgments: *I would like to thank my six students who worked on this thesis topic at the conclusion of the Professional Master's program, and who demonstrated discipline, dedication, and a genuine passion for the work in dramatization.*

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Testing the Cost Stickiness Hypothesis within the Scope of the BIST Chemistry and Pharmaceutical Sector

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Abstract

Introduction: Recent studies highlight that business costs do not always change proportionally with activity levels. While traditional models assume a linear relationship, evidence shows that some expenses rise quickly with sales increases but decrease more slowly when sales decline, a phenomenon known as cost stickiness.
Aim: This study aims to test the validity of the cost stickiness hypothesis for companies operating in the chemical and pharmaceutical sectors listed on Borsa Istanbul
Method: The analysis focuses on the variables of sales and cost of sales, and it is conducted using the panel data analysis method based on the financial data of 42 firms for the 2022–2024 period. The study examines whether costs respond asymmetrically to changes in sales.
Findings: The findings reveal that during periods of declining sales, costs do not decrease proportionally; however, since the corresponding coefficient is not negative, costs do not exhibit sticky behavior. In other words, cost behavior is symmetric for the examined period and sectors.
Conclusion: This result indicates that the costs of firms operating in the chemical and pharmaceutical sectors adjust proportionally to changes in sales, suggesting the absence of cost stickiness in these industries during the study period.
Originality and value: This study uniquely examines cost stickiness in the chemical and pharmaceutical sectors listed on Borsa Istanbul, using 2022–2024 panel data, and addresses a key research gap due to the industries' high R&D intensity and fixed cost structures in a developing economy.

Keywords: **Cost Stickiness, Borsa Istanbul, Chemical and Pharmaceutical Sector, Panel Data.**
Jel Codes: M40, M42

1. Introduction

In recent years, there has been growing interest in the asymmetric behavior of costs within the business management literature. Traditional cost approaches assume that costs fluctuate symmetrically with changes in activity levels. However, studies since the early 21st century have shown that costs can behave asymmetrically, responding more strongly to increased activity than decreases. The concept of asymmetric costs was first introduced by Noreen and Soderstrom (1997), who provided evidence that costs react more intensely to increased activity than to equivalent decreases. Later, Anderson et al. (2003) formalized this phenomenon as cost stickiness, arguing that costs are sticky when increases in activity lead to larger cost changes than equivalent decreases.

Turkey's chemical and pharmaceutical sectors provide a particularly relevant context for studying cost stickiness. These sectors are key contributors to production and exports and are characterized by high fixed costs, intensive regulations, and significant R&D expenditures. Understanding how costs, particularly the cost of sales, respond to changes in sales volume is therefore crucial for both financial planning and crisis management.

This study examines companies listed on Borsa Istanbul (BIST) in the chemical and pharmaceutical sectors, using financial data from 2022 to 2024. Using panel data analysis based on the model developed by Anderson et al. (2003), the research tests the assumptions of cost stickiness in these sectors. By providing sector-specific evidence from Turkey, the study aims to contribute to the literature on asymmetric cost behavior while offering practical insights for managerial decision-making and cost management.

2. Literature Review

The concept of asymmetric costing was first introduced by Noreen and Soderstrom (1997), and later Anderson et al. (2003) termed this phenomenon cost stickiness. A study conducted in the US by Anderson et al. (2003) found that costs rise more rapidly during periods of growth but decrease more slowly during decline. This finding demonstrates that costs have limited resilience to decreases in activity volume and represents an important behavioral characteristic influencing management decisions. International literature has reported that cost stickiness varies by country and sector. Calleja et al. (2006) compared companies operating in the US, the UK, and France and noted that levels of cost stickiness vary across countries. Similarly, in the Australian case, Bugeja et al.(2015) demonstrated that management incentives, institutional structure, and market conditions influence cost stickiness. These findings suggest that cost stickiness depends not only on accounting systems but also on economic and cultural factors. The first study analyzing cost stickiness in the Turkish literature was conducted by Yükçü and Özkaya (2011). In their study, Yükçü and Özkaya (2011) found evidence of cost stickiness in variable costs. Çelik and Kök (2013), in their analysis of companies traded on Borsa Istanbul, observed significant stickiness in some expense items. Using panel data analysis, Erdoğan et al. (2019) examined cost stickiness in different sectors and found differences across sectors. Ürgüp (2022) reported that marketing and management expenses were sticky in the BIST Chemical, Pharmaceutical, Petroleum, Rubber and Plastic Products sector, which is traded on Borsa Istanbul.

Existing literature demonstrates that cost stickiness is a multidimensional phenomenon sensitive to sectoral differences. Accordingly, this study, covering the period 2022–2024 and focusing on the chemical and pharmaceutical sectors traded on Borsa Istanbul, aims to analyze the existence and level of cost stickiness in these sectors. The chemical and pharmaceutical sectors were selected primarily because they have high fixed costs, intensive capital requirements, and stringent regulatory structures. These characteristics increase the likelihood of asymmetric cost responses to fluctuations in activity volume and provide a suitable basis for explaining cost stickiness. Therefore, this study aims to make a unique contribution to the literature at the sectoral level by analyzing cost behavior in these sectors.

3. Method

This study employs panel data analysis to examine causal and long-term relationships among variables, using data that combines cross-sectional and time-series dimensions (Baltagi, 2005; 2008). Panel data allow for observations across multiple units over time, providing richer information, higher degrees of freedom, and more reliable parameter estimates compared to purely cross-sectional or time-series models. Depending on structure, panels can be micro-panels (2–20 years, many units) or macro-panels (20–60 years, fewer units) and may be balanced or unbalanced depending on data completeness. Panel regression also controls unobserved heterogeneity, distinguishing between unit-specific effects and overall trends. Two common approaches are fixed effects (FE), which account for time-invariant unit characteristics, and random effects (RE), which assumes no correlation between unit effects and explanatory variables. The Hausman test determines the most appropriate model (Hsiao, 2014).

4. Findings

This section of the research aimed to test the validity of cost stickiness using data from 42 BIST Chemical and Pharmaceutical sector companies for the 2022 - 2024 period. First, descriptive statistics on the values of the variables in the created models are presented.

Table 1 summarizes the descriptive statistics for LOGSMM, LOGSAT, and the Dummy variable based on 503 observations. The mean values of LOGSMM (0.01890) and LOGSAT (0.01850) are lower than their medians, indicating the presence of negative outliers. The Dummy variable, representing periods of declining sales, has a mean of 0.2345, showing that roughly 23% of the observations correspond to sales declines. LOGSMM and LOGSAT exhibit high variability (Std. Dev. = 1.2714 and 1.2223) and negative skewness, while their kurtosis values indicate heavy tails and extreme values. The Dummy variable has moderate variability, slight positive skewness, and near-normal kurtosis. The Jarque-Bera test confirms that all variables significantly deviate from normality (p = 0.000).

Table 1. Descriptive Statistics

Variables	**LOGSMM**	**LOGSAT**	**Dummy**
Mean	0.01890	0.01850	0.2345
Median	0.3834	0.3799	0.000
Maxsimum	3.7071	3.4091	1.000
Minimum	-7,3692	-6.980	0.000
Std.Dev.	1.2714	1.2223	0.424
Skewness	-2.1636	-2.1358	1.252
Kurtosis	9.7790	9.3530	2.569
Jarque Bera	1355.62	1228.34	135.44
Probability	0.000	0.000	0.000
Observations	503	503	503

Cost stickiness is tested using data from 42 companies in the BIST Chemical and Pharmaceutical sectors for the 2022-2024, based on cost of sales. Model 1 tests the validity of cost stickiness using the cost of sales. The model is expressed as follows:

$$\ln(\Delta Cost) = \beta_0 + \beta_1 \ln(\Delta Sales) + \beta_2 [d * \ln(\Delta Sales)] + \varepsilon_t \quad (1)$$

Here, ln(ΔCost) is the dependent variable and represents the cost change. Ln (ΔSales) represents the natural logarithm of the change in sales. The variable d is a dummy variable representing periods of decreasing sales (d = 1). The variable d * ln(ΔSales) measures the behavior of costs during periods of decreasing sales.

In the panel data literature, two panel data estimators are frequently used to estimate the regression model coefficients expressed in Equation 1. These estimators are random effects (RE) and fixed effects (FE), respectively. The Hausman test is used to determine which of these estimators is the most appropriate (Hausman, 1978; Tatoğlu, 2016).

Table 2. Hausman Test

	Test İstatistiği	P value
Model 1	0.408	0.815

According to the Hausman test result, it was determined that the random effects model would give more consistent results than the fixed effects model in panel data analysis, based on the probability value of 0.9873>0.05. Table 3 shows the panel data regression model results investigating cost stickiness in the cost of sales.

Table 3. Cost Stickiness in Cost of Sales

Variable	**Coefficient**	**Std.Errror**	**t-Statistics**	**Prob.**
β_0 (Sabit)	0.9962	0.0119	83.265	0.000
β_1Ln(ΔSat)	0.0389	0.0150	2.5894	0.009
β_2 d*ln(ΔSat)	0.0171	0.0075	2.2821	0.022

R-squared	0.995	Mean depent var	0.061
Adjusted R squared	0.995	S.D.dependent var	3.974
S.E.of regression	0.264	Akakike info criterion	0.280
Log likehood	-25.43611	Schwars criterion	0.649
F-statistics	2622.156	Hannan-Quin Criter.	0.424
Prob.(F statistics	0.000	Durbin Watson stat.	1.9612

The results obtained indicate that the model has very high explanatory power. The R^2 and adjusted R^2 values of 0.995 indicate that the model explains 99.5% of the variation in the dependent variable. Furthermore, the F-statistics (2622.156) and its significance level ($p = 0.000$) indicate that the model is statistically significant overall.

The Durbin-Watson statistics (1.961) indicate no autocorrelation problem in the model. This increases the reliability of the model's predictions.

After evaluating the entire model in this way, the findings regarding the coefficients of the independent variables included in the model can be explained as follows.

The coefficient of the ln(ΔSat) variable is 0.0389, which is statistically significant ($p<0.01$). This result shows that a 1% increase in sales results in an average cost increase of 0.0389%. The coefficient of the interaction term d*ln(ΔSat) is 0.0171, which is statistically significant ($p<0.05$). Cost stickiness can generally be considered when the β^2 coefficient, i.e., d*ln(ΔSat), is negative, indicating asymmetric cost behavior. A non-negative β^2 parameter indicates symmetric cost behavior. This positive coefficient indicates that costs do not decrease at the same rate during declining sales, but because the coefficient is non-negative, costs do not exhibit a sticky characteristic.

5. Conclusion and Recommendations

This study investigated cost stickiness in the chemical and pharmaceutical sectors listed on Borsa Istanbul, using panel data from 42 firms over the 2022–2024. The results indicate that while sales increases lead to significant cost rises, costs decrease proportionally during sales declines, showing symmetric behavior and no evidence of sticky costs. These findings suggest that firms in these sectors can adjust costs flexibly in response to changes in sales. Based on these findings, firms are advised to adopt flexible cost management strategies that allow expenses to adapt dynamically to both sales increases and decreases. This enables them to align cost planning with sales forecasts for improved financial planning and cash flow management.

Additionally, implementing crisis management measures is crucial for maintaining operational stability during downturns. Moreover, strategic decisions regarding production capacity and investments should account for the high fixed-cost structures in these sectors, ensuring that sales fluctuations are incorporated into cost-sensitive planning. Continuous cost and sales behavior monitoring using analytical methods can further support timely and informed managerial decision-making, enhancing efficiency and financial resilience.

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Humble Leadership and Job Performance: The Role of Creative Team Climate in the Healthcare Sector

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Abstract

Introduction: In today's business world, the sustainable success of organizations depends not only on individual competencies but also on fostering interaction and creativity within teams. In this context, a humble leadership approach is key in unlocking employee potential and enhancing employee performance.
Aim: The purpose of this study was to determine the role of creative team climate (CTC) in the impact of humble leadership (HL) on job performance (JP). Data were collected through a voluntary survey conducted among 399 employees working at a university hospital.
Method: In a study involving three different scales, the effects of HL on JP and CTC were determined separately, and the effects of CTC on JP were determined using a linear regression model. Moreover, the mediator effect of CTC on the relationship between HL and JP was determined using the Hayes mediation test.
Findings: The study's correlation analysis reveals a positive but weak relationship among all variables. Regression analysis results indicate a significant positive effect of HL on both JP and CTC. The effect of CTC on JP is also positive, as expected. Furthermore, the study found that CTC effectively mediates the relationship between HL and JP.
Conclusion: These findings suggest that CTC plays a critical role in amplifying the impact of HL on JP. Therefore, the presence of CTC significantly enhances the relationship between leadership style and performance.
Originality and value: This study fills an essential gap in the literature by examining the mediating role of CTC in the relationship between HL and JP.

Key words: humble leadership, job performance, creative team climate, hospital.
Jel Codes: I10, M10, L80, L20

1. Introduction and Literature Review

In today's dynamic and uncertain business environment, sustainable competitive advantage for businesses largely depends on leadership approaches and the effects these approaches have on employees. Leadership style can influence subordinates' perceptions, work attitudes, and behaviors. It can also increase performance by motivating subordinates to work harder, thereby having a significant impact on team and organizational outcomes (Ye, 2019). In leadership, there is an increasing emphasis on the importance of humility. Among leadership styles, particularly servant leadership (Greenleaf & Spears, 2002), level 5 leadership (Collins, 2001a, 2001b), participative leadership (Kim, 2002), and of course humble leadership (Morris, Brotheridge, & Urbanski, 2005; Vera & Rodriguez-Lopez, 2004) highlight the necessity of the virtue of humility for leadership effectiveness (Owens & Hekman, 2012). Humble leadership, which is also recognized as a bottom-up leadership style among these leadership types, has received intense attention in both theoretical and practical fields in recent years (Zheng & Ahmed, 2024).

Research highlights the effects of humble leadership on employees. For example, research has shown that humble leadership positively impacts employee development, resulting in increased employee engagement, work commitment, team integration, and job performance (Owens, Johnson, & Mitchell, 2013; Ou et al., 2014). Since job performance plays a significant role in

achieving business objectives, organizations are highly interested in identifying factors that positively develop their employees' work skills and performance. Simply offering a monetary contract as an incentive is not sufficient for today's businesses to optimize workforce productivity. Psychological and social support must also be utilized to improve employee performance. Therefore, quality relationships between leaders and employees are considered a vital factor in enhancing workforce performance and maintaining high work standards (Soyalın, 2023).

When examining the relationship between humble leadership and creativity, significant progress has been made in understanding how humble leadership encourages employees' creativity or innovative behavior (Wang, Liu & Zhu, 2018a). Humble leadership is a style that prioritizes the needs and interests of team members over personal goals or agendas (Ou, Waldman, & Peterson, 2015). Leaders who adopt humble behaviors in the workplace exhibit modest behaviors such as admitting their mistakes, being open to learning and new ideas, and appreciating the strengths and contributions of others. This attitude of leaders creates an environment where employees focus more on their personal development and are more willing to take risks to learn new things (Owens & Hekman, 2012; Chughtai & Arifeen, 2023). Furthermore, in teams, which have become a common structural unit in many organizations today, it also serves as a motivating force for members (Liu, Liu, Wang & Wang, 2021).

Studies support this view and show that modest leadership not only increases individual and organizational performance but also has a positive relationship with team creativity (Cho, Schilpzand, Huang, & Paterson, 2020; Ye, Tung, Li, Zhu, 2020; Hu, Erdogan, Jiang, Bauer & Liu, 2018). Team creativity is the process by which team members combine their diverse knowledge, skills, and experiences to generate new and useful ideas and collaborate to transform these ideas into innovative products, services, processes, or business models. Team creativity develops through social interaction, knowledge sharing, mutual trust, and joint problem-solving processes (Chen, 2006). Humble leaders play a crucial role in fostering a creative team climate within organizations by providing an environment that encourages individuals to develop innovative ideas and bring them to life. Climate refers to the shared perceptions among team members regarding which policies, procedures, and practices will be rewarded and supported in a work environment. In this context, climate encompasses the collective meaning-making process through which team members gain insight into the role behaviors expected of them in relation to strategic goals (Kiratli, Rozemeijer, Hilken, De-Ruyter & De-Jong, 2016). Academia and the business world tend to assume that team creativity increases job performance. However, this assumption has rarely been confirmed in organizational settings. Studies have focused more on the elements that generate creativity than on the outcomes of creativity. However, Sung, Du, and Choi found in their 2018 study that team creativity has a positive impact on job performance.

In summary, a review of the literature reveals that there are no studies that address the concepts of humble leadership, job performance, and creative team climate together. Focusing primarily on filling this gap in the literature, the aim of our study is to conduct a comprehensive analysis of humble leadership, job performance, and creative team climate at a university hospital operating in Afyonkarahisar, Turkey. In this regard, the answers to the following questions were sought:

1. How does humble leadership affect employee performance and creative team climate?

2. Does creative team climate act as a mediator between humble leadership and job performance?

The study aims to contribute to the literature in various ways. First, a review of the relevant literature reveals no studies that address the concepts of humble leadership, job performance, and creative team climate from a holistic perspective. As summarized above, studies have examined humble leadership and job performance (Owens, Johnson & Mitchell, 2013; Ou et al., 2014); humble leadership and team creativity (Cho, Schilpzand, Huang, & Paterson, 2020; Ye, Tung, Li, Zhu, 2020; Hu, Erdogan, Jiang, Bauer & Liu, 2018), and team creativity and job

performance (Sung, Du and Choi, 2018). This study aims to contribute to the literature by revealing the relationship between humble leadership, job performance, and creative team climate variables.

Secondly, it is noteworthy that most existing studies in the field focus on manufacturing companies, while studies on healthcare institutions are limited. Therefore, it is particularly valuable to examine leadership, performance, and team relationships in hospitals, where multidisciplinary teams (including doctors, nurses, and technicians) are perhaps most intensively observed. A review of the national literature reveals that studies have focused on modest leadership (Gül & Timuroğlu, 2023; Alimoğlu Özkan, Ardıç & Özsoy, 2022; Özer, Özkan, Özmen & Üzümcü, 2021; Kerse, Koçak & Özdemir, 2020), while studies on the relationship between modest leadership and job performance (Gökçe, Sarıgül & Yıldız, 2025; Soyalın, 2023) are quite limited. The creative team climate has been examined in two studies (Pekkan & Çalışkan, 2020; Gökgöz, 2023). Aslan, Atalay, and Yeter, in their 2024 study conducted in healthcare institutions, investigated the relationship between employees' individual creativity levels and the innovation climate from a broader perspective. Although several studies in the national literature have examined the relationship between humble leadership and variables such as psychological safety, employee voice, and job engagement, no study has empirically tested the relationship between humble leadership and creative team climate. Therefore, original studies, especially those conducted in healthcare institutions, could significantly contribute to the literature. In conclusion, it is appropriate and highly important to conduct systematic and comprehensive studies on these topics in national and international literature.

2. METHODOLOGY

2.1 Sample and Research Procedures

The study aimed to examine the issues of humble leadership (HL), job performance (JP), and creative team climate (CTC) using data obtained from healthcare workers. Data were collected from 399 personnel at a university hospital using a 5-point Likert-type survey. Participants included 101 administrative staff and 298 healthcare personnel. The data were collected using convenience sampling, with the survey being entirely voluntary. All the scales included in the study have been validated in previous studies. Therefore, only factor distributions and reliability coefficient values are included in this study.

Descriptive statistics, correlation coefficient values, regression analysis, and Hayes Mediation Effect Test analyses were conducted using IBM SPSS 22 with the SPSS Process V3 plugin.

2.2 Measures, Research Model, and Hypothesis

Of the scales used in the study, the humble leadership scale is a nine-item scale developed by Owens et al. (2013). The scale was adapted to Turkish by Kerse, Koçak, and Özdemir (2020), and its current form was used in the study. The job performance scale was measured using four statements from Sigler and Pearson (2000) and Kirkman and Rosen (1999). Questions adapted to Turkish by Çöl (2008) were used in the study. The Creative Team Climate Scale was introduced as a single dimension to the literature by Kıratli et al. (2016) and adapted to Turkish by Pekkan, N. Ü. & Çalışkan, A. (2020), was included in the study. The research model, in line with the theoretical expectations of the three scales used in the study, is presented in Figure 1.

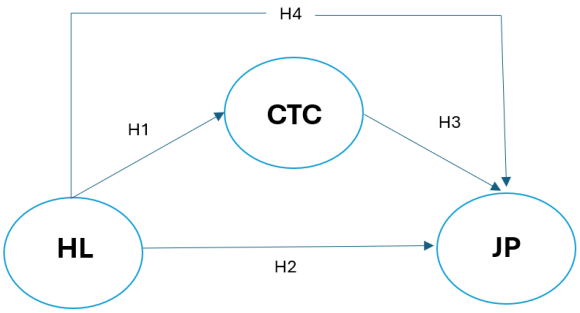


Figure 1. Research Model

Based on the research model, the hypotheses of the study are as follows:

H_1: HL positively affects CTC.

H_2: HL positively affects JP.

H_3: CTC positively affects JP.

H_4: CTC has a mediating effect on the relationship between HL and JP.

3. RESULTS

3.1 Demographics, Descriptives, and Correlations

Of the individuals participating in the study, 55.4% were female (221) and 44.6% were male (178). The distribution of individuals by age range was particularly concentrated between the ages of 21 and 40. In terms of educational level, it was observed that 55.4% held a bachelor's degree. An examination of the individuals' tenure at the institution revealed that 36.3% had worked for 1-5 years, and 30.1% had worked for more than 11 years. A similar pattern was observed regarding length of service, with 31.6% having experience between 1 and 5 years, and 31.1% having more than 11 years. 16.8% of the participants held a managerial position (67). Table 1 shows the means, standard deviations, and Spearman's correlation coefficients for the variables.

Table 1. Descriptive Statistics and Correlations

			Correlations		
Variables	**Mean**	**SD**	**HL**	**CTC**	**JP**
HL	3.33	1.01	-	-	-
CTC	3.76	0.84	0.471***	-	-
JP	4.08	0.76	0.204***	0.401***	-

***p < 0.001 (two-tailed).

According to Table 1, among the variables, JP has the highest mean value (4.08). The HL variable has a standard deviation of 1.01; in other words, it has a relatively high variability. The correlation coefficient values among all variables are positive and statistically significant.

3.2 Exploratory and Confirmatory Factor Analysis

An exploratory factor analysis was conducted to determine the overall validity and reliability of the research scale. Accordingly, the Kaiser-Meyer-Olkin (KMO) value was found to be 0.926. Furthermore, the probability value of the Bartlett's test was determined to be p = 0.000, and the null hypothesis of the test was rejected. Both test results yielded the desired results regarding the validity of the scale. Table 2 shows the factor loading values for each question in the relevant scales, along with the results of each question falling under each factor. The table also includes Cronbach's Alpha values for the reliability analysis, as well as the values of average variance extracted (AVE) and composite reliability (CR) used for validity.

Table 2. Factor loadings, Cronbach's Alpha, AVE, CR

	Factor Loadings
HL	
HL1	0.638
HL2	0.743
HL3	0.793
HL4	0.851
HL5	0.850
HL6	0.859
HL7	0.857
HL8	0.867
HL9	0.850
Cronbach's Alpha: 0.947 **AVE:0.665 CR: 0.946**	
JP	
JP1	0.782
JP2	0.860
JP3	0.870
JP4	0.793
Cronbach's Alpha: 0.875 **AVE: 0.684 CR: 0.896**	
CTC	
CTC1	0.777
CTC2	0.824
CTC3	0.825
CTC4	0.805
CTC5	0.821
CTC6	0.812
CTC7	0.785
CTC8	0.756
CTC9	0.760
Cronbach's Alpha: 0.944 **AVE: 0.634 CR: 0.940**	

In scale analyses, Cronbach's Alpha value should be greater than 0.7, AVE value should be greater than 0.5, and CR value should be greater than 0.7 as indicators of reliability (Hair et al., 2010; Tabachnick and Fidell, 2007). All values in the table indicate that the minimum requirements for the relevant criteria are met.

The goodness-of-fit criteria calculated in the confirmatory factor analysis indicate that the model's goodness of fit is quite good. (CMIN/df: 2.377, GFI: 0.903, RFI: 0.931, CFI: 0.965, NFI: 0.942, RMSEA: 0.059, IFI: 0.966)

3.3 Regression Analysis

Regression analysis was used to examine the first three hypotheses of the study. The regression model results are presented in Table 3. Y is the dependent variable, X is the independent variable, and ***$p < 0.001$ means rejection of zero hypothesis for a two-tailed test.

Table. 3 Regression Analysis

Hypothesis	**Y**	**X**	**Coefficient**	**F**	**Result**
H1	CTC	HL	0.372***	101.224***	Accept
H2	JP	HL	0.158***	18.532***	Accept
H3	JP	CTC	0.348***	69.042***	Accept

For all three hypotheses, model significance is determined by the F-statistic. Accordingly, the

probability values ($p < 0.001$) for the F-statistics for all three models were extremely low, and the null hypothesis was rejected, demonstrating the overall significance of each model. For hypothesis H1, the positive effect of the HL variable on CTC was determined with the relevant coefficient value (0.372). In hypothesis H2, the coefficient of the HL variable was found to be 0.158, indicating a positive effect on JP. In the final hypothesis, the coefficient value determined for the impact of CTC on JP was 0.348. The relevant hypotheses determined after the literature review were accepted within the framework of the data obtained from the research.

3.4. Mediation Analysis

Another vital hypothesis was evaluated in the study: whether creative team climate mediates the relationship between humble leadership and job performance. In this context, the approach proposed by Hayes (2015), which does not include p-values, was utilized. In this method, the presence of a mediation effect is determined by the BootLLCI and BootULCI values provided in the model. The results regarding the mediation effect are presented in Table 4.

Table 4. Mediation Analysis

Outcome Variable: CTC						
	Coef.	SE	t	LLCI	ULCI	Std. Coef.
Constant	2.5243	0.1289	19.5896***	2.2710	2.7776	
HL	0.3721	0.0370	10.0610***	0.2994	0.4448	0.4507
Outcome Variable: JP						
	Coef.	SE	t	LLCI	ULCI	Std. Coef.
Constant	2.7273	0.1691	16.1322***	2.3949	3.0596	
HL	0.0353	0.0388	0.9114	-0.0409	0.1115	0.0473
CTC	0.3289	0.0470	7.0048***	0.2366	0.4212	0.3636
Outcome Variable: JP Total Effect						
	Coef.	SE	t	LLCI	ULCI	Std. Coef.
Constant	3.5575	0.1276	27.8711***	3.3066	3.8084	
HL	0.1577	0.0366	4.3049***	0.0857	0.2297	0.2112
Completely standardized indirect effect(s) of HL on JP						
	Effect	BootSE	BootLLCI	BootULCI	**H4 accepted**	
CTC	0.1639	0.0393	0.0918	0.2453		

The "Outcome Variable: CTC" section in Table 4 reveals the effect of HL on CTC, while "Outcome Variable: JP" shows the combined impact of HL and CTC on JP. It is noteworthy that the coefficient value for HL is not statistically significant. The results under "Outcome Variable: JP Total Effect" demonstrate the effect of HL on JP. The BootLLCI and BootULCI information under the "Completely standardized indirect effect(s) of HL on JP" section in the last section determines whether a mediation effect exists in the table. Accordingly, since the BootLLCI (0.0918) and BootULCI (0.2453) values do not include zero, it is possible to assert the presence of a mediating effect of CTC. Accordingly, CTC has a full mediating effect between HL and JP. While HL has no direct effect on JP, we can say that HL has an indirect relationship with JP because HL provides CTC, and CTC has a direct relationship with JP. This demonstrates the importance of the mediating variable and its significant contribution to the model. Based on this, H4, another research hypothesis, was accepted.

4. Conclusion

This study examined the mediating role of creative team climate in the relationship between humble leadership and job performance among employees working at a university hospital. The findings indicate that HL does not have a direct significant effect on JP; however, HL has a strong and positive effect on CTC, and CTC significantly increases JP. The mediation analysis results confirmed that CTC plays a full mediating role in the relationship between HL and JP, indicating that team-level dynamics are crucial in translating leadership traits into performance outcomes.

When we examine the hypothesis results in detail;

H1 hypothesis suggests that HL has a positive effect on CTC. According to this finding, humble leadership is effective in developing a team climate that supports creativity. Humble leaders facilitate sensitive responses to mistakes and weaknesses, encourage trying new ways to accomplish tasks, and adopt a paradigm based on development and growth, which increases trust, openness, and risk-taking tendencies among employees. This situation facilitates the emergence of creative ideas, especially in project and innovation-focused teams (Owens & Hekman, 2012; Rego et al., 2017).

The positive and meaningful relationship between humble leadership and job performance indicates that humble leadership can directly improve employee performance. When examining the relationship between leadership styles and performance in management literature, it is emphasized that humble leaders, in particular, make positive contributions to employee motivation, job commitment, team integration, and job performance (Soyalın, 2023; Owens, Johnson & Mitchell, 2013; Ou et al., 2014). The relatively low coefficient suggests that the effect of modest leadership on performance may occur partially through indirect channels (such as creative team climate in this study). Since creative team climate was found to positively affect employee performance, H3 hypothesis was accepted. Studies also support the notion that the creative environment (climate) formed by employees' ability to freely generate ideas, take risks, and feel that these ideas are valued positively affects overall job performance (Zhang & Bartol, 2010b; Anderson, Potočnik, & Zhou, 2014). Furthermore, it emphasizes that the creative team climate has a stronger effect on job performance than modest leadership. This indicates that a creative and supportive environment plays a crucial role in enhancing performance.

Finally, Hypothesis H4 proposes that the creative team climate mediates the relationship between modest leadership and job performance. Research findings suggest that although HL has a limited direct effect on performance, its indirect effect through CTC may be more significant. Based on this result, we can say that rather than directly increasing performance, modest leadership contributes to job performance indirectly by first creating a creative team climate.

These results demonstrate that leadership practices aimed at improving job performance should not be limited to focusing solely on individual competencies; fostering a supportive and creative team environment is also critical. The presence of a strong CTC reinforces the positive effects of HL and contributes to organizations achieving sustainable performance increases.

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Analyzing the Effect of Covid-19 Pandemic on Consumer Behavior under Structural Breaks: Evidence from the U.S

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Abstract

Introduction: The United States (U.S) was greatly affected by the COVID-19 pandemic in terms of health, economy, society and politics. In this context, The U.S became one of the countries with the highest number of cases and deaths in the world in the early years of the pandemic. The unemployment rate also rose to almost 15 percent in the first half of 2020, one of the highest rates since the Great Depression in the 1930s while the consumer spending dropped by nearly 13 percent in the same period. With trillions of dollars in aid packages, the Federal government provided cash withdrawals to individuals, unemployment benefits and credit support to small businesses.
Aim: In this study, we try to explain the economic impact of the pandemic and also attempt to analyze the impact of pandemic on consumer spending, consumer loans, and consumer sentiment by using the monthly data in the period of 2000-2021.
Method: We employ the Carrion-i Silvestre et al. (2009) unit root test which allows for the inclusion of up to five structural breaks in the analysis, thus providing stronger results.
Findings: Our findings support the evidence of the dramatic decline in consumer spending, consumer credits, and consumer sentiment, thus signaling to the significant impact of COVID-19 pandemic on consumer behavior.
Conclusion: Our findings reveal the remarkable changes in our variables resulting from the COVID-19 pandemic. Consumer spending, consumer credits, and consumer confidence all show signs of recovery in the third quarter of 2020, following steep declines in the first two quarters of the year. It is possible that the reopening of the economy and the stimulus packages that the United States has enacted have contributed to this encouraging trend.
Originality and value: Our paper enhances the academic literature in multiple dimensions. Initially, a few researches examine the economic ramifications of the COVID-19 outbreak in the United States. Additionally, we utilize the Carrion-i Silvestre et al. (2009) unit root test, which accommodates many structural fractures, hence enhancing the robustness of our findings. In this context, we seek to enhance the academic literature by examining the economic repercussions of the COVID-19 pandemic while utilizing a unit root test to identify the dates of structural breaks.

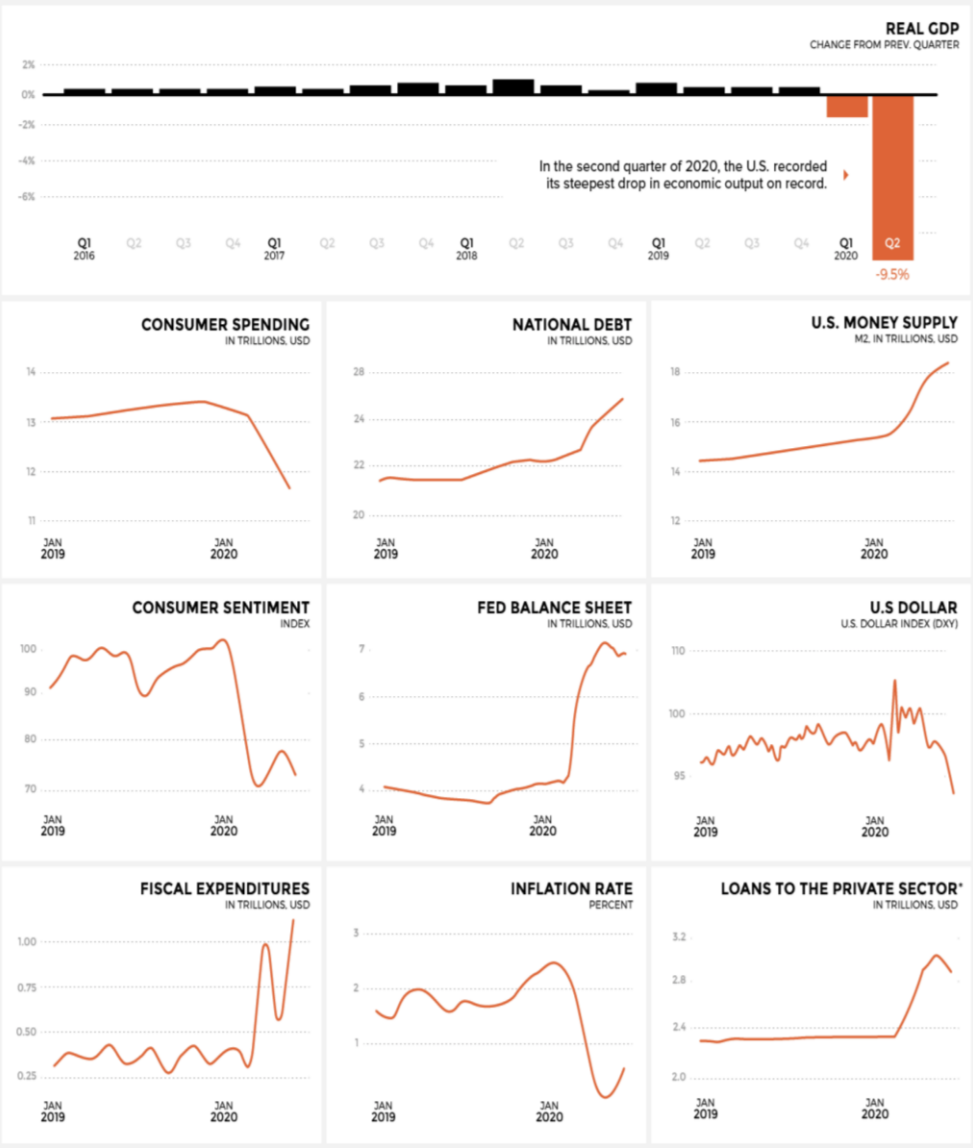
Key words: consumer loans, consumer sentiment, pandemic
Jel Codes: C10, D12, E21

1. Introduction

Early in 2020, the U.S. economy was greatly disrupted by the COVID-19 epidemic and public health security measures. First, the United States' industrial progress was halted and economic growth was significantly impacted. Consumer spending fell, businesses closed, and millions of workers were laid off. In April and May, the unemployment rate reached 14 and 13 percent, respectively, which was a high figure for 80 years. The real gross domestic product (GDP) declined by 5 percent yearly in the first quarter of 2020 and by 33 percent in the second quarter. These numbers provide a gauge of the pandemic's overall economic impact, but they do not account for the severe difficulties that many people encounter, such as the financial strain that may result from losing their jobs. Furthermore, the economic collapse had a significant effect on the capital markets in the United States. The epidemic has caused very noticeable disruptions that can potentially have serious negative effects on businesses, consumers, state and municipal

governments, and other cash flows. In reaction to the growing realization, many investors and corporations tried to liquidate their interests in other assets in order to enhance their cash resources and other highly liquid assets. This attempt to raise money caused a lot of pressure in a lot of financial markets at the beginning of March. In the U.S. Treasury securities markets, for instance, the difference between the prices paid for buying and selling such securities has increased significantly, making trading challenging. The Treasury Market, which is usually one of the most liquid marketplaces in the world, was more affected by financial crisis. Many businesses and state and local governments struggle to raise enough money to operate because they usually issue short-term cash security to cover their short-term costs, such as wages, leasing, and supplier payments. In March, the ensuing cash shortage reached a very serious level, which could significantly worsen the negative effects of the pandemic on economies (Ihrig et al, 2020).

Figure 1: Economic Effects of the COVID-19 Pandemic



Source: Visualcapitalist. Available from: https://www.visualcapitalist.com/economic-impact-of-covid-h1-2020/

Figure 1 indicates the overall health of the economy at this critical moment in time by illustrating the impact of COVID-19 on some macroeconomic fundamentals. Accordingly, the second quarter of 2020 saw the greatest decline in economic growth ever recorded in the United States. Numerous economic metrics seem unsavory when COVID-19 persisted in spreading around the globe, causing economic turmoil. Quarterly GDP had never fallen by more than 3 percent since records started in 1947, making the 9.5 percent decline all the more worrisome. A number of problems affected the economy, including falling consumer expenditure and increasing unemployment. To begin, in many regions of the globe, limitations remained in place and businesses permanently shut down, leaving more than 50 million people without jobs. April saw the steepest decline in consumer expenditure, which constituted almost two-thirds of the U.S. economy, at 12.6 percent. Household incomes were boosted by the CARES Act's weekly payouts of 600 USD, which helped to mitigate sharp losses to some extent. As a result of the unprecedented borrowing of trillions of dollars to weather the storm, the money supply exploded and the central bank's balance sheet has broken records. Deflationary pressures on the economy were signaled by inflation falling to nearly zero despite the monetary stimulus, which was significantly lower than the FED's goal rate of 2 percent (Visual Capitalist, 2020).

In light of the pandemic's effects on the actual economy, we empirically examine consumer spending, consumer credit, and consumer attitude in this study from 2000 to 2021 in an effort to test the pandemic's influence on consumer behavior. Our work makes multiple contributions to the scholarly literature. First, since the COVID-19 pandemic is a relatively new problem, there aren't many research that concentrate on its economic effects. Additionally, to strengthen our findings, we use the Carrion-i Silvestre et al. (2009) unit root test, which accounts for various structural fractures. By concentrating on the economic effects of the COVID-19 pandemic and using a unit root test to ascertain the dates of structural breaks, we aim contribute to the academic literature.

The structure of the study is as follows: Following a brief overview of the COVID-19's economic impact, Section 2 describes the empirical methodology, data, and findings. And the final section concludes by summarizing the study.

2. Econometric Analysis

A structural break takes place when a time series switches suddenly change at a time point. This shift could include a switch in the parameters of the process that generate the series. When we employ traditional unit root tests, our results can be inaccurate as these tests ignore the structural changes resulting from indigenous or exogenous shocks. Tests considering structural breaks enable us to recognize the information about the presence of an important change in our data and when this change occurs. Perron (1989), Zivot and Andrews (1992), Bai and Perron (1998), Bai and Perron (2003), Perron and Qu (2006) show the importance of considering structural breaks when testing the stationarity of the series. In this study, we employ Carrion-i Silvestre et al. (2009) that allow for multiple structural breaks, thus acquiring more robust findings.

2.1 Methodology

Carrion-i Silvestre et al. (2009) devised a novel unit root test that accommodates up to five structural breaks. The Data Generating Process for the test can be articulated as follows:

$$y_t = d_t + u_t \tag{1}$$

$$u_t = \alpha u_{t-1} + v_t, \quad t = 0,1,....T \tag{2}$$

$$P_T^{GLS}(\lambda^0) = \frac{\left\{S\left(\bar{\alpha},\lambda^0\right) - \bar{\alpha}S\left(1,\lambda^0\right)\right\}}{s^2\left(\lambda^0\right)} \tag{3}$$

$$MZ_{\alpha}^{GLS}(\lambda^0)=\left(T^{-1}\tilde{y}_T^2-s\left(\lambda^0\right)^2\right)\left(2T^{-2}\sum_{t=1}^{T}\tilde{y}_{t-1}^2\right)^{-1} \tag{4}$$

$$MSB_T^{GLS}(\lambda^0)=\left(s\left(\lambda^0\right)^{-2}T^{-2}\sum_{t=1}^{T}\tilde{y}_{t-1}^2\right)^{1/2} \tag{5}$$

$$MZ_T^{GLS}(\lambda^0)=\left(T^{-1}\tilde{y}_T^2-s\left(\lambda^0\right)^2\right)\left(4s\left(\lambda^0\right)^2T^{-2}\sum_{t=1}^{T}\tilde{y}_{t-1}^2\right)^{-1/2} \tag{6}$$

$$MP_T^{GLS}(\lambda^0)=\frac{\left[\bar{c}^2T^{-2}\sum_{t=1}^{T}\tilde{y}_{t-1}^2+\left(1-\bar{c}\right)T^{-1}\tilde{y}_T^2\right]}{s\left(\lambda^0\right)^2}. \tag{7}$$

The bootstrap method is used to find the asymptotic critical values of the unit root tests proposed by Carrion-i Silvestre et al. (2009). A unit root is not present if the computed test statistics are less than the associated critical values, which means that the null hypothesis is rejected.

2.2 Data and empirical findings

This paper uses monthly data that belonged to consumer spending, consumer credits, and consumer sentiment index for the U.S over the period from 2000 through 2021. The source of the variables is Federal Reserve St. Louis Database. We transform the data into natural logarithms after we account for seasonality. The labels of the logarithmic variables are **LCONSEXP**, **LCONSCREDIT**, and **LCONSSENT**, respectively.

Starting with the assumption that no structural breaks exist, we conduct our analysis using the standard ADF and PP unit root tests with intercept and trend (Dickey and Fuller, 1979; Philips and Perron, 1988). Table 1 displays the outcomes of these unit root testing.

Table 1: The ADF and PP unit root tests findings

	ADF		**PP**	
Series	**Level**	**First difference**	**Level**	**First difference**
LCONSEXP	-1.515	-10.605[a]	-3.338	-13.890[a]
LCONSCREDIT	-2.822	-12.672[a]	-2.817	-13.549[a]
LCONSSENT	-2.996	-13.265[a]	-2.713	-16.051[a]

Note: [a] shows the rejection of the unit root null hypothesis at the 1 percent significance level.

The ADF and PP unit root tests demonstrate that the **LCONSCREDIT, LCONSEXP,** and **LCONSSENT** series are nonstationary at the level, but they become stationary after first differencing according to Table 1. Based on Perron's (1989) argument that missing a potential structural break could lead to the unit root null hypothesis being falsely accepted, we include structural breaks in our unit root analysis. To achieve this, we use a novel unit root test created by Carrion-i Silvestre et al. (2009) that accounts for a maximum of five structural fractures. We can take structural breaks of up to three into account in our study, given the duration of our data period. Table 2 displays the results of all unit root tests conducted on samples with one, two, or three structural breakdowns for the sake of comparison.

The findings in Table 2 show that the null of unit root hypothesis cannot be rejected for **LCONSEXP** and **LCONSCREDIT** series with one, two, and three structural breaks. In order words, **LCONSEXP** and **LCONSCREDIT** series are nonstationary in levels for all structural break cases. Besides, we can not reject the null of unit root hypothesis for **LCONSSENT** with one break, we can reject the null of unit root hypothesis for this variable with two and three breaks. It shows us that when we take into account the structural breaks in our analysis, the findings can differ. The findings are consistent with conventional ADF and PP unit root tests for

LCONSEXP and **LCONSCREDIT** series, while **LCONSSENT** series with two and three breaks are stationary on the contrary to the findings of traditional ADF and PP unit root tests. Upon examining the identified structural breaks, it is evident that these transpired in **2008:10; 2020:02 and 2020:04** for **LCONSEXP,** in **2008:04; 2010:11; 2020:04** for **LCONSCREDIT** and in **2008:10; 2020:03; 2020:05** for **LCONSSENT.** These break dates are consistent with the macroeconomic deterioration resulting from the 2008-09 global financial crisis and the COVID-19 pandemic. In this period, the dramatic declines in the consumption expenditures, consumer credits, and consumer sentiment might have led to these structural breaks in these series. Furthermore, as we can see from Figure 1 these variables have a significant upward trend after the severe drop in the March-April period. It could imply that the stimulus packages could have a positive impact on consumer spending and consumer sentiment index in the U.S.

Table 2: The findings of Carrion-i Silvestre et al. (2009) unit root test

Series	P_T	MP_T	MZ_α	MSB_T	MZ_T	Break years
Panel A: The results for one break						
LCONSEXP	19.567 [6.013]	16.469 [6.013]	-5.502 [-16.454]	0.214 [0.169]	-1.180 [-2.906]	2020:04
LCONSCREDIT	21.633 [6.156]	21.450 [6.156]	-5.771 [-20.893]	0.293 [0.153]	-1.694 [-3.203]	2008:04
LCONSSENT	10.882 [6.025]	10.228 [6.025]	-9.590 [-16.300]	0.228 [0.169]	-2.188 [-2.895]	2020:05
Panel B: The results for two breaks						
LCONSEXP	33.385 [6.006]	30.907 [6.006]	-3.149 [-16.632]	0.393 [0.167.]	-1.240 [-2.944]	2020:02; 2020:04
LCONSCREDIT	28.814 [7.783]	27.170 [7.783]	-8.508 [-30.390]	0.232 [0.127]	-1.981 [-3.872]	2008:04; 2010:11
LCONSSENT	4.405 [6.677]	4.306 [6.677]	-39.616 [-25.417]	0.112 [0.140]	-4.445 [-3.567]	2008:10; 2020:05
Panel C: The results for three breaks						
LCONSEXP	51.966 [7.193]	47.060 [7.193]	-3.744 [-25.999]	0.358 [0.137]	-1.343 [-3.612]	2008:10; 2020:02; 2020:04
LCONSCREDIT	47.345 [6.078]	40.300 [6.078]	-4.768 [-32.448]	0.306 [0.125]	-1.461 [-4.018]	2008:04; 2010:11; 2020:04
LCONSSENT	5.628 [7.227]	5.340 [7.227]	-35.269 [-25.883]	0.118 [0.137]	-4.164 [-3.605]	2008:10; 2020:03; 2020:05

Note: The numbers in square brackets are critical values calculated using the bootstrap method.

3. Conclusion

The COVID-19 pandemic has had a significant impact on economic fundamentals in the United States, including GDP, unemployment rates, investment expenditures, and consumption. With a global impact, this protracted epidemic is predicted to cause the biggest recession since the Great

Depression of 1929 and the Global Financial Crisis of 2008-2009. In addition to reviewing the FED's policy reaction to the pandemic, this article examines how the COVID-19 epidemic has affected consumer behavior. In the analysis, we take into account the impact of structural breaks and use the data that was collected between 2000 and 2021. In order to determine the unit root features of our variables, consumer sentiment, consumer spending, and consumer credits that indicate consumer behavior, we apply the Carrion-i Silvestre et al. (2009) test. By considering up to five structural breaks, the Carrion-i Silvestre et al. (2009) test increases the level of confidence in the findings. Our results demonstrate how the COVID-19 pandemic significantly altered our variables. Following a steep drop in these metrics, we observe a recovery in consumer sentiment, consumer spending, and consumer credits in the third quarter. This encouraging trend may be aided by the stimulus plans the U.S has put in place as well as by reopening the economy.

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Gender Equality in Sustainable Development: A Sociological Interpretation

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Abstract

Introduction: Development is a sociological phenomenon primarily studied within an economic context, both globally and in Turkey specifically. The scope of this phenomenon is coordinated with the concept of development, which refers to the achievement of economic prosperity and progressive change within societies. In this sense, the implementation of economic investments and the establishment of the principle of equality between classes have evolved to necessitate the examination of the social aspect of development.
The shift in the link between development and the economy to the social axis over time has made it essential to conduct assessments from multiple perspectives. The key point corresponds to 1970 and beyond. The rise of neoliberal policies following the 1973 world oil crisis also highlighted the need to discuss the relationship between social themes and development. With this period of social policy development, the concept of development began to take on a new name and scope.
Aim: This study aims to theoretically explore the sociological context of the sustainability implications of the principle of gender equality in Turkey. To achieve this goal, it will categorize the progress of women's and family policies from 1923 to the present and analyze them within the framework of sociological phenomena.
Method: The sociology of the transition from the principle of statism to liberal, neoliberal, and neoliberal-conservative principles will be presented and interpreted from the perspective of the concept of sustainability.
Findings: The significant achievements and performances of Turkey's great leader, Ghazi Mustafa Kemal Atatürk, since the founding of the Republic, have been disrupted by neoliberal policies. Women, in particular, have been unable to secure sufficiently powerful positions in parliament, both in quantity and quality. Today, despite some improvements and increases, women's participation in employment remains at around 30%, and there are still significant educational disparities between male and female students. Increases in violence against women and femicide also demonstrate the negative impact of gender equality on Türkiye's report card.
Conclusion : Development of phenomenon has now become known as sustainable development. In addition to improving economic well-being, setting goals, formulating policies, and developing projects related to the role and importance of vulnerable groups in development has become a priority. The fifth principle of sustainable development is the principle of gender equality. This principle aims to reveal the social nature and extent to which women's visibility in education, working life, and the public sphere is integrated into the framework of gender equality.
Originality and value: This study aims to examine the reflection of the principle of gender equality, the phenomenon of sustainable development, on women and family policies in Turkey from a sociological perspective, making the study original and valuable in terms of contributing to the literature.

Keywords: **Sustainable, Development, Gender Equality, Turkey.**
Jel Codes: O10, J08, J16, J21, Z13

1. Introduction

The Industrial Revolution had a profound impact on the entire world, creating a profound impact. While the revolution's significance was initially seen as limited to the economic dimension, its broadening scope over time necessitated its consideration in different contexts. We encountered a situation where classes were redefined, and production spaces and relations expanded. Consequently, the distribution of labor and its structural position began to differ.
The changing and evolving structures of labor have directly impacted countries' development indicators. Thus, industrializing countries have begun to participate in capitalist processes. Consequently, the image of countries that are the primary subjects of production, or dependent countries where production cannot take place, has begun to dominate. Consequently, economically independent, highly productive, and distinct lifestyle differences between classes have begun to permeate the social sphere. Countries that do not embody this image are those where economic prosperity has not developed and whose development graphs are not sufficiently positive and robust.
The impact of the industrial revolution on countries' positions, and this structural transformation began to establish a direct connection with the phenomenon of development. Development became the most important indicator of the progress of countries and societies. The concept of development, often equated with economic progress, has expanded its scope and implications over time.

This study provides a sociological analysis of the development phenomenon in Turkey, specifically in relation to the principle of gender equality. This study, categorized historically, is examined from a critical perspective and on a factual level.

2. A Socially Focused Reading of The Phenomenon of Sustainable Development

The concept of development was used by Adam Smith and John Stuart Mill to refer to economic progress. The concept began to be frequently used in Western societies after World War I. It refers to economic progress and development, as well as the improvement of living standards in people's lives (Toksöz, 2012). By the 1970s, new developmental approaches began to dominate, transcending the purely economic dimension (Altındal, 2016: 41). It seems possible to argue that the social trajectory of the Keynesian welfare state, which aims to raise awareness and disseminate sustainable development principles in different areas of society, especially regarding vulnerable groups, is directly related to its foundation of equality and social rights. In this sense, as Pierson states, "the development of the welfare state and the concept of social citizenship reduces inequalities in society and increases social solidarity" (1991; 1995).

In terms of development, theories developed in the 1970s and later (Women in Development, Development and Women, Gender and Development, and the Empowerment Approach shaped by these theories) recognized women as interlocutors in the development of social policies. With the Women's Decade (1976-1985) program, a decision was made to actively include women in economic development. Priority was given to developing policies and projects aimed at the employment of poor women in underdeveloped countries.

Gender equality was prioritized, and this fundamental principle was particularly emphasized at the First World Conference on Women.

Thus, global awareness of the need to support women's development was raised.
This conference established three main principles:
1) Achieving gender equality and raising awareness of gender discrimination.
2) Including women in development.
3) Emphasizing women's contributions to strengthening world peace (Salem-Murdock, 1995).
All these developments have ensured the full participation of women, particularly in development policies, and the establishment of a gender equality-based perspective.

The institutions and organizations are conducting research and studies specifically to empower women to become active agents. Just as with the determination and implementation of the

principle of Gender Equality as Goal 5 of the Sustainable Development Goals, the broader meaning of development is also resonating on various platforms and country examples at the socio-political level.

3. Turkey's Gender Equality Photograpy

From past to present, societies have assigned individuals certain roles. These roles have been shaped primarily by individuals' sexes, giving rise to the concept of gender. It is crucial to recognize that gender is completely different from sex. While sex is determined based on an individual's biological sex, gender corresponds to a point different from being biologically male or female. This concept is used to describe the inequality-based roles attributed to women and men by the masculine social structure (Oakley, 1972; Connell, 1998).

In patriarchal societies, an unalterable dualistic structure has been created in which the male gender, generally identified with subject, culture, reason, science, and the public, is always opposed to the female gender, associated with object, nature, emotion, the non-scientific, and the private sphere. However, what must be emphasized here is that the former of these characteristics exalts itself by attributing a negative connotation to the latter. Thus, within the male-dominated structure that prevailed in society through patriarchal control mechanisms and remains so today, the male gender is associated with positive qualities, while women are burdened with (lack of) qualities that reinforce their passive and inactive nature (Altındal, 2009:355).

3.1.The Statist Period (1923-1950)

This period of Turkish history was characterized by strong state intervention in economic, social, and political spheres, aiming to modernize and strengthen the new Republic. Although women's struggle to gain rights in Turkey began in the late Ottoman period (Çakır, 2001), it was primarily undertaken by the Great Leader Mustafa Kemal Atatürk, founder of the Republic of Turkey. Atatürk ensured that women had access to their rights as individuals in the public sphere before many European countries, effectively handing these rights over to them on a silver platter.

Emphasis on state-led industrialization and development strategies. Implementation of policies favoring national sovereignty and economic independence. Limited role for private enterprise in early years, with the state as the primary driver of growth. Foundations for social policies, including education, healthcare, and family policies aimed at societal modernization. From the perspective of women and family policies; during this era, efforts were made to promote gender equality and improve women's status, including the adoption of the Civil Code and encouragement of - women's participation in education and public life. Societal Impact is the period laid the groundwork for future development, emphasizing national unity, modernization, and social reform.

3.2.The Liberal Period (1950-1960)

This decade marked a shift toward liberal policies, emphasizing free-market economy, individual freedoms, and reduced state intervention. Transition from statist to more liberal economic policies following the 1950 elections. Encouragement of private enterprise and foreign investment. Decreased government control over the economy and social sectors. Expansion of democratic freedoms and political pluralism.

From the perspective of women and family policies**;** some improvements in women's participation in education and workforce, but still limited in political representation. Continued challenges with gender equality in employment, education, and social roles.In addition to this social and cultural changes; growth of urbanization and modernization efforts. Increased influence of Western culture and ideas. Economic disparities persisted, and social inequalities remained. Limited focus on gender equality policies in this liberalization phase.

3.3 The Neo-liberal Period (1980-2000)

This era marked a significant shift toward neoliberal policies, emphasizing free markets, privatization, deregulation, and reducing state intervention in social and economic affairs.

Implementation of structural adjustment programs influenced by international organizations. Liberalization of trade, finance, and industry sectors. Privatization of state-owned enterprises and reduction of social subsidies. Promotion of individual entrepreneurial freedom and market efficiency.

Impact on Women and Families; increased employment opportunities in some sectors but overall increased economic inequality. Women's participation in the workforce saw some growth but remained limited, especially in managerial and political roles. Persistent gender disparities in education and employment. Social and Cultural Changes; Continuing urbanization and globalization influences. Rise in economic inequalities and social stratification. Challenges in achieving gender equality amid market-driven reforms. Widening social inequalities and poverty levels. Increased violence against women and femicide, highlighting ongoing gender-based issues.

Decline in the quality of social services and public welfare. In the 1960s, with the intense efforts of the women's movement, the phenomenon of domestic violence against women moved beyond the private sphere and became a major driver of social and political agendas. Femicide, the most severe and lethal form of violence against women, was first coined in 1976 by South African author Diana E. H. Russell, who defined it as "femicide" the killing of women by men simply because they are women (WHO, 2002 World Report on Violence and Health).

In Turkey, the concept of femicide is also referred to as "honor, custom, or honor crimes." Including custom and honor killings, the number of femicides, which was 66 in 2002, rose to 394 in 2024, and 259 women were found dead under suspicious circumstances. From the perspective of the right to life and gender equality, the picture is quite negative.

3.4 The Neo-liberal-Conservative Period (2000 – Present)

This period is characterized by a blend of neoliberal economic policies with a rise in conservative and traditional societal values, impacting social policies and gender roles.Continuation of market liberalization, privatization, and economic globalization. Increased influence of conservative political ideology, especially with the rise of political parties advocating social and cultural conservatism. Policies promoting family, religious values, and traditional gender roles alongside economic reforms.

Some improvements in women's participation in education and employment. Ongoing challenges with gender inequality, violence against women, and femicide. Debates around gender policies influenced by conservative societal norms. Strengthening of conservative societal values and religious influence. Tensions between modernization, gender equality efforts, and traditional values. Increased visibility of gender-based violence and gender inequality issues. Balancing economic growth with social justice and gender equality. Addressing ongoing gender disparities in employment, education, and political representation. Ensuring that development remains inclusive and sustainable with respect to gender equality principles.

After 2000, Turkey has experienced a mix of neoliberal and conservative policies, with family-centered approaches gaining prominence. These policies both support traditional values and raise questions about women’s rights and gender equality. Despite some progress, women still face challenges like violence, limited participation in decision-making, and social inequalities. There are notable achievements, such as increased awareness and legal protections, but also setbacks, especially with rising social conservatism and gender-based violence.

Meanwhile, women's influence was felt across a wide spectrum in Turkey. However, the low number of women in politics until 2007 is clearest evidence of the continued existence of sexist, traditional, and conservative policies in this area. The active role women assumed in politics in 2007 and afterwards was driven by civil society awareness. Strong women who crossed many critical thresholds in politics became more visible in parliament and local government, enabling them to make effective decisions and raise awareness of women's issues.

4. Conclusion and Evaluation

From a sociological perspective, achieving true gender equality is crucial for sustainable development. It requires changing societal norms, policies, and attitudes to create a more inclusive society. Continuing efforts in education, legal reform, and social awareness are essential for progress. In conclusion, Turkey's development journey shows that social policies and cultural norms significantly influence gender roles. Moving forward, fostering equality isn't just a policy issue but a cultural one, which needs collective effort.

It is crucial that girls and boys have access to education, and women have access to the right to work.Furthermore, the provision of quality voting and election rights, starting in this period, is recognized as the most fundamental, unconditional decision and practical reflection of modernity and secularism.

Following the establishment of the Republic of Türkiye, the reforms of the Great Leader Mustafa Kemal Atatürk, who granted women's rights before many European countries, gained momentum.

This empowerment of women in individual, social, economic, legal, and political spheres, however, became less effective in subsequent periods. Particularly from the 1950s to the 1980s, women cannot be said to have been active actors in politics. The 1980s, however, represented a brand new historical and sociological period in which women raised their voices worldwide and ensured that their rights received a broader response.

Thus, women began to question, discuss, and examine their feminine experiences within the context of daily life practices, to publish, to publicize, and to share these works, and to address a wider audience with a spirit of sisterhood. The fading of rights-based and gender equality policies, implemented by the state and viewed as subjects in the public sphere, became evident in the 1950s.

The most significant representation of women's rights in politics is the representation of 18 women in the 5th Parliament out of 550 members of parliament in 1934, suggesting that women were shaping politics. However, the argument that women would be empowered and their numbers in parliament would increase with the transition to multi-party politics in the 1950s was effectively dashed. Women's political influence entered a period of silence until the 1980s. The second wave of the women's movement, which became active worldwide with the new social movements of 1968, demonstrated the necessity of implementing policies aimed at further empowering women (Sancar, 2000).

Turkey was also significantly affected by this period, known as the Second Women's Movement. The face of the political sphere also changed, and a new era emerged in which women's demands for rights, the direction of labor, violence against women, and body politics began to be addressed in detail.

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Factors affecting the state of having agricultural insurance*

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Introduction: Agricultural insurance provides coverage for damages and losses that may occur to plant and animal products and agricultural assets due to all kinds of natural risks, diseases, and accidents during the agricultural production process. With agricultural insurance, farmers are protected against monetary losses by paying premiums.
Method: A binary logistic regression model is used to determine the factors affecting the state of farmers having agricultural insurance, with the dependent variable as the state of having agricultural insurance, and independent variables as age, education level, income, gender, marital status, farming experience, and land size in Gaziantep, Malatya, and Kahramanmaraş provinces of Turkey.
Findings: The study's findings indicate that factors such as age, education level, land size, and farming experience influence the likelihood of having agricultural insurance.
Conclusion: The state of having agricultural insurance in Turkey is affected by some socio-demographic factors for the provinces of Gaziantep, Kahramanmaraş, and Malatya, and 6% of farmers sampled in the relevant provinces adopted crop insurance.
Originality and value: This study may contribute to the literature by identifying the factors influencing the prevalence of agricultural insurance among farmers in the provinces of Gaziantep, Kahramanmaraş, and Malatya, which were affected by the Kahramanmaraş and Hatay earthquakes in 2023. Findings may ensure regarding the provision of policy recommendations for the expansion of agricultural insurance and the determination of farmers' perspectives on innovative products.

Keywords: Agricultural insurance, farmer, agricultural finance
Jel Codes: G22, G52, Q14

1. Introduction

When compared across sectors, the agricultural industry is more exposed to social and economic risks, and this risky process affects all stages of agricultural production. (Çukur and Saner, 2008; Karahan Uysal et al., 2014; Terin and Aksoy, 2015). Thus, agricultural production is highly sensitive to climate change and largely beyond the control of farmers. This situation creates income instability, necessitating the need for agricultural insurance to protect producers from potential losses. (Saltık, 2017). Agricultural insurance compensates farmers for their losses and ensures the sustainability of their businesses (Akçaöz et al., 2006). While insurance companies transfer risks to insurers, farmers pay premiums to the insurer as compensation for the risk they bear. The premium amount is determined proportionally to the severity of the risk, frequency of occurrence, and the damage, which causes.

Agricultural insurance provides a resource for managing farming-related risks, repairing financial losses that arise from unforeseen events. While providing farmers with financial sustainability, agricultural insurance also fosters environmental and economic innovation and resilience (Indra et al., 2023). Also, the combination of financial insurance and agricultural practices in agricultural insurance helps build resilience in the agricultural sector (Johnson, 2021).

Although agricultural insurance practices are introduced in Turkey as early as 1957, the development of agricultural insurance was delayed until 2005 due to factors such as the limited adoption of insurance, the high risk and diversity of agricultural production, and high insurance premiums. With the adoption of the Agricultural Insurance Law No. 5363 on June 14, 2005, and the provision of a 50% premium subsidy by the state, the emphasis on agricultural insurance in Turkey has accelerated. In addition to the 50% government support provided across all insurance branches to ensure the sustainability of agricultural insurance, a 2/3 (66.7%) premium support is also provided for fruit frost risk premiums in crop insurance, and a 60% premium support is also provided for district-based drought insurance in Turkey (TARSİM, 2022).

There was an agricultural insurance premium of 1,082,199,247,919 Turkish Liras (TL) in Turkey for 2024. In 2023, there was an agricultural insurance premium of 638,338,316,701 TL, and this premium has grown and gained importance for the agricultural sector from 2023 to 2024 (TARSİM, 2024). The widespread adoption of agricultural insurance is of great importance for countries regarding transferring risks arising from the structure of agricultural production (İkikat Tümer, 2011). Therefore, the main objective of this study is to determine the factors affecting the state of farmers having agricultural insurance for agricultural enterprises in Gaziantep, Malatya, and Kahramanmaraş provinces.

This study is expected to make a significant contribution to the existing literature. The study, covering the provinces of Kahramanmaraş, Gaziantep, and Malatya, which are affected by the earthquakes in Kahramanmaraş and Hatay in 2023, is unique in its scope. This study, which examines agricultural insurance, is expected to make significant contributions to the literature by providing an opportunity to evaluate the agricultural and financial sectors together. Face-to-face interviews are conducted with 815 farmers, and the large sample size makes the findings more robust. From the perspective of the provinces covered by the sample, these provinces, where strategic crops such as pistachios and apricots are grown. Determining the factors affecting agricultural insurance for producers of products strategically evaluated by the Ministry of Agriculture and Forestry of Turkey in these provinces may contribute to the literature and provide important findings for policymakers.

2. Literature Review

There are studies in the literature examining factors such as farmers' age, income, and premium amount that may affect their status and willingness to purchase agricultural insurance (Sherrick, 2004; Xiu et al., 2012; Liesivaara and Myra, 2014; Ghazanfar et al., 2015). Özeş Özgür (2019) list the reasons for the underdevelopment of agricultural insurance in Turkey, such as high insurance premiums, lack of information, inaccurate damage assessments by experts, farmers' educational status, and distrust of insurance companies.

Suriani et al. (2021) and Kızıloğlu (2017) determine that education and income positively affect producers' purchasing of agricultural insurance. İkikat Tümer et al. (2019) research the factors affecting farmers' crop insurance with a binomial probit model and find that there is a positive relationship between experience, number of family members, education, income, and willingness to purchase agricultural insurance, and a negative relationship with non-business investment and willingness to purchase agricultural insurance.

Wang et al. (2021) state that farmers' past positive insurance experiences are active in determining insurance demand. Gülse Bal et al. (2019) report that production costs are the main factor in insurance demand, while Tekin and Karlı (2021) show that insurance demand decreases due to the small and fragmented structure of agricultural lands. Nalinci (2018) analyze the factors

influencing producers' purchasing agricultural insurance using the logistic regression method in Amasya province for Turkey, and list these factors as follows: non-agricultural income, factors that encourage innovation, sources of innovation, frequency of access to mass media, and problems that arise when purchasing agricultural insurance.

Başer et al. (2023) use a logit model to study the factors affecting the state of farmers' agricultural insurance in grape, hazelnut, and citrus production for 138 agricultural enterprises and determine that education, experience, product, household population, and land size affect the stat of having agricultural insurance. Wang et al. (2021) and Dziwornu and Assefuah (2019) demonstrate that an increase in insurance premiums increases the insurance rate. Aydın et al. (2026) show that socio-demographic factors such as total annual income, education level, land size, and farming experience positively affect the propensity of farmers in Kırklareli and Edirne provinces in Turkey, while non-agricultural activities have a negative effect on their propensity to purchase agricultural insurance.

Aslan et al. (2012), for Eastern Anatolia, explore that the highest number of farmers purchasing agricultural insurance is in Malatya and the lowest in Bingöl. Ertan and Gök (2012) state the negative correlation between farmers' age and having agricultural insurance, and note the importance of public information on the willingness to purchase agricultural insurance. Pezikoğlu et al. (2012) assert that public support and awareness programs are important incentive factors for agricultural businesses in Bursa province for Turkey. Diallo and Karlı (2025) examine the impact on agricultural production and farmers' incomes in Turkey and discussed current practices.

Okpukpara et al. (2021) determine that the most commonly used insurance types by farmers in different regions are livestock insurance, crop insurance, and multi-risk agricultural insurance for Uşak province in Turkey. Naseri and Saner (2017) find that awareness of agricultural insurance and participation in relevant courses changed farmers' tendency to purchase insurance. Pekal (2019) focuses that the agricultural sector is the most affected by climate change and examines the TARSİM Agricultural Insurance Pool, established in Turkey in 2005 by the Agricultural Insurance Law No. 5363. İrven (2019) reports that producers' annual total income, age, education level, membership in farmer organizations, land size, and high insurance premiums are among the reasons for purchasing agricultural insurance.

Yazgı and Olhan (2018) list the major problems with agricultural insurance as inaccurate damage assessments by experts, lack of information, and high premiums. Taşı et al. (2024) emphasize that the willingness to purchase agricultural insurance decreases due to late and inadequate damage assessment in Ankara and Kayseri, and high premiums in Çorum in Turkey.

3. Material and Method

This study aims to determine the factors affecting the state of having agricultural insurance of farmers producing in Gaziantep, Malatya, and Kahramanmaraş provinces for agricultural enterprises. The research to ensure food security and continuity has become important since the earthquakes, which occurred on February 6, 2023, and after, have affected agricultural activities in Gaziantep, Kahramanmaraş, and Malatya provinces. According to the Republic of Turkey Presidency Strategy and Budget Directorate Kahramanmaraş and Hatay Earthquakes Report (2023), the measures should be taken to ensure a sustainable production environment in earthquake provinces and due to the Kahramanmaraş and Hatay earthquakes, risks related to ensuring food security and improving nutrition in Gaziantep, Kahramanmaraş and Malatya provinces until 2030 within the scope of the Sustainable Development Goals reveals the need for financing due to the damage of basic agricultural activities and livestock. Also, in the relevant report, it is stated that to reduce the damages caused by the earthquake, financial goods and services planning, which is included in the financial inclusion content, should be made for the rural areas of the earthquake provinces. In this study, a face-to-face survey is conducted with agricultural enterprises in Gaziantep, Kahramanmaraş, and Malatya provinces in Turkey. The number of surveys for all provinces is determined as 815 by using the stratified sampling method

for each province in determining the sample size. Three provinces constituting the research area are considered a separate population, and the Neyman Stratified Sampling Method, which is given in Equation (1), is used to determine the sample size.

$$n = \frac{\sum(N_h S_h)^2)}{N^2 D^2 + \sum N_h (S_h)^2} \quad (1)$$

In the stratified sampling method, land size is considered as the sampling criterion for the enterprises constituting the population. The population is determined to be four districts of three provinces from the TRB, TRC, and TR6 regions, encompassing the earthquake-affected provinces in Turkey. Malatya from the TRB region, Gaziantep from the TRC region, and Kahramanmaraş from the TR6 region are selected due to their significant impact from the earthquake and their consideration of agricultural land, rural population, and production volume. For Gaziantep province, 186 surveys are conducted in the range of 5-20 decares, 70 in the range of 20-40 decares, and 22 in the range of 40-60 decares; for Kahramanmaraş province, 185 surveys are conducted in the range of 5-20 decares, 61 in the range of 20-40 decares, and 21 in the range of 40-60 decares; and finally for Malatya province, 187 surveys are conducted in the range of 5-20 decares, 61 in the range of 20-40 decares and 22 in the range of 40-60 decares for agricultural enterprises. The state of having agricultural insurance is used as a dependent variable, and socio-demographic factors are used as an independent variable to test the purpose of the analysis. Socio-demographic factors are education level, marital status, farming experience, land size, gender, and net farm income per capita.

If the dependent variable has two categories, the binary logistic regression analysis can be applied, and in this situation, the normality assumption is not necessary (Bayram, 2017). In this study, the dependent variable has two categories, and therefore, a binary logistic regression model from the logistic regression family is used. The mathematical form of binary logistic regression is given below (Hosmer ve Lemeshow, 2000).

$$g(x) = \ln\left[\frac{\pi(x)}{1-\pi(x)}\right] = B_0 + B_1 x \quad (2)$$

The binary logistic regression analysis has the assumptions that the independent variable is not required to have multiple normal distributions, there is no multicollinearity problem between independent variables, the error term "e" shows a cumulative probability distribution, and the equality condition of variance-covariance matrices is not required (Gujarati, 2006). Considering these factors, binary logistic regression analysis is the appropriate model for this study. Also, for estimating the binary logistic regression analysis, the Chi-Square test (Model Chi-Square test), which is a likelihood ratio test, or the Hosmer and Lemeshow G statistic is used (Atan and Çatalbaş, 2004).

4. Findings

In the study, firstly, summary statistics of the variables are included in determining the factors affecting the state of having agricultural insurance, and the summary statistics are reported in Table 1.

Table 1. Summary Statistics of Variables (%)

Land size	**%**
≤ 20*	65
21–40	29
41-60	6
Net farm income per capita	

-14,503,350-0*	54
0-30,000	38
30,000 and above	8
Age	
18-24*	9
25-36	6
37-50	21
51 and above	64
Gender	
Woman*	2
Man	98
Maritus state	
Married	95
Single*	5
Farming experience	
≤ 20*	10
21–30	16
31-40	13
41 and above	61
Education Level	
illiterate and primary school*	42
Secondary school	29
High school	17
Associate degree, bachelor's degree, and above	12
The state of having agricultural insurance	
Yes*	6
No	94

* is referenced category

As seen in Table 1, regarding land size, 65% of farmers have property under 20 decares, net farm income per capita is significantly negative (54%), farmers over the age of 51 are predominant, 98% of farmers are male, and primary school graduates are predominant. Table 2 reports the binary logistic regression analyses findings, and Table 3 reports the binary logistic regression model tests.

Table 2. Findings of binary logistic regression analyses.

Variables	β	Exp(β) (Odds)
Having agricultural insurance (Dependent Variable)		
Age		
25-36	-1.84**	0.18
37-50	-1.67***	0.47
Education Level		

illiterate and primary school	-2.14*	0.33
Secondary school	-1.65***	0.43
High school	-0.59	0.76
Land size		
21–40	2,78*	2.73
41-60	4.31	7.05
Farming Experience		
≤ 20	1.79***	3.36
21–30	2.88*	4.38
31-40	1.49	2.04
Maritus state		
Married	0.68	1.95
Net farm income		
0-30,000	-0,05	0.98
30,000 and above	0.92	1.7
Constant	-3.27*	0.02

*, **, and *** indicate statistical significance levels at 1%, 5%, and 10%. The gender variable is an omitted variable.

As seen in Table 2, as age increases, the likelihood of the state having agricultural insurance decreases, and there is a negative relationship between age and the state having agricultural insurance. Farmers aged 25-36 are 0.18 times less likely to have agricultural insurance, while farmers aged 37-50 are 0.47 times less likely to have agricultural insurance. As age increases, the level of insurance decreases, and younger farmers are more willing to have agricultural insurance.

On the other hand, a negative relationship is observed between the level of education and the state of having agricultural insurance, and secondary school graduates have a 0.43 higher probability of not having agricultural insurance compared to those who do not graduate from primary school or are illiterate. A negative relationship emerges between education level and the state of having agricultural insurance for farmers with primary and secondary education levels. Education level is a negative factor in having agricultural insurance for secondary school. Indeed, the finding, which is the negative nexus between the state of having agricultural insurance and education level, may be due to the relatively lower proportion of farmers with bachelor's degrees. Also, the findings indicate that as land size increases, the likelihood of having agricultural insurance increases by 7.05.

A positive correlation is observed between farming experience and the state of having agricultural insurance. Thus, as farming experience increases, the likelihood of having agricultural insurance increases, and this likelihood is 4.38 times higher for those with 21–30 years of farming experience. Finally, the net farm income variable does not statistically affect having agricultural insurance.

Table 3. Tests of the binary logistic regression model.

Summary of the model	-2 Log likelihood	Cox & Snell R^2	Nagelkerke R^2
	317.14*	0.4	0.25
Hosmer ve Lemeshow Test			
Step	Chi-square	Degrees of freedom	Probability
1	65.09	8	0.78

* indicates statistical significance level at 1%,

In Table 3, the Hosmer-Lemeshow (H-L) test, which is used to test goodness of fit in binary

logistic regression model estimates, indicates that the model is significant. Since the significance values in the omnibus test are less than 1%, a relationship between the independent variables and the dependent variable is evident. On the other hand, as seen in Table 3, 25% of the change in the state of having agricultural insurance is explained by the independent variables examined.

5. Discussion, practical and managerial implications

The findings of this study are similar to the findings of the study conducted by İkikat Tümer et al. (2029), who assert that there is a positive relationship between the farming experience and state of having agricultural insurance. A negative relationship is identified between the state of having agricultural insurance and net farm income, and this finding is consistent with the findings of İkikat Tümer (2011). Indeed, as farmers' income increases, farmers may become less sensitive to insurance since they believe that insurance may cover disaster losses. This situation may lead to a negative or neutral relationship between income and the state of having agricultural insurance.

This study finds a negative relationship between education level and the state of having agricultural insurance, and this finding is consistent with the findings of the study conducted by Özeş Özgür (2019), who emphasized that a low level of education negatively affects the willingness to purchase agricultural insurance.

6. Results, Limitations, and Future Directions

Despite progress in Turkey for the insurance sector, agricultural insurance rates remain low, and problems with propensity to purchase agricultural insurance persist. Therefore, identifying the factors influencing agricultural insurance purchases is crucial for the agricultural sector. This study aims to determine the factors affecting the state of farmers having agricultural insurance in Gaziantep, Malatya, and Kahramanmaraş provinces using binary logistic regression. The study's findings indicate that factors as age, education level, land size, and farming experience influence the likelihood of having agricultural insurance.

6% of farmers sampled in Malatya, Kahramanmaraş, and Gaziantep provinces adopted crop insurance within the scope of this study. High insurance premiums and the inability of insurance companies to accurately assess damage may be active factors contributing to this low rate. Addressing these problems could make agricultural insurance more accessible and affordable to all farmers. Therefore, policies designed to reduce premiums and ensure accurate damage assessment by insurance companies could benefit the agricultural sector.

As emphasized by İkikat Tümer (2011), the low rate of farmers having agricultural insurance in the region may be due to insufficient information about their responsibilities to insured farmers or a lack of trust in insurance companies. For farmers who have not adopted crop insurance, awareness can be raised by increasing training on agricultural insurance benefits, premium amounts, damage procedures, and compensation measures. The results of the binary logistic regression model reveal a positive relationship between increasing land size and agricultural insurance coverage. Therefore, incentives and support for land leases can be provided to agricultural businesses to increase land size (Başer et al., 2023).

The study has several limitations. First, the sample consisted of farmers producing in the provinces of Kahramanmaraş, Malatya, and Gaziantep, and the sample covered a specific location. Furthermore, there are various socio-demographic factors that are not used in this study.

A clear understanding of the advantages of agricultural insurance and the insurance process can increase confidence in the insurance system and make insurance more widespread. Indeed, net farm income is used in this study, but the total income variable could be added to the models in another study to further investigate the impact of income on having agricultural insurance. Finally, the findings obtained by using different variables and examining different locations and regression models may contribute to the literature in the future.

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Calculating Earnings Management of BIST 100 Companies According to the Kothari Method*

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Abstract

Introduction: Earnings management practices are accounting strategies employed by managers to maximize company value and their incentives by deliberately shaping financial results.
Aim: This study aims to identify the earnings management practices of companies listed in the Borsa Istanbul (BIST) 100 index in Turkey.
Method: 70 companies from different sectors were included in the analysis over a 14-year period spanning the 2010-2023 period. The accrual-based Kothari model, widely used in the literature, was applied.
Findings: The results indicate that the BIST 100 companies included in the analysis do not engage in meaningful and consistent manipulative behavior through earnings management.
Conclusion: The fact that BIST 100 companies do not employ earnings management practices demonstrates that large-scale public companies in Turkey generally adhere to the principles of transparency and reliability in their financial reporting processes.
Originality and value: The study makes significant contributions to understanding the impact of earnings management practices on firm-level financial decision processes in an environment of economic uncertainty and provides valuable information to the literature.

Key words: Earnings management, Kothari Method, BIST100 companies
Jel Codes: A10, B26, G00,

1. Introduction

Economic uncertainties, particularly risks stemming from political factors, are among the factors that significantly impact business operations. Such uncertainties drive business managers to develop strategies to minimize the financial risks they face, prevent losses, and consistently increase their businesses' profits. In particular, the adjustments managers make to financial statements to increase their earnings and performance are referred to in the literature as "earnings management." Earnings management practices are accounting strategies implemented by managers to intentionally shape financial results to maximize company value and their incentives.

This study aims to identify the earnings management practices of BIST 100 companies in Turkey. Determining whether companies in Turkey practice earnings management is crucial both for contributing to the academic literature and for providing important information for practitioners.

The study sample consists of companies selected from various sectors included in the Borsa Istanbul (BIST) 100 index, which includes Turkey's largest and most liquid companies. It is assumed that publicly traded companies' financial statements directly influence investor decisions and therefore resort to earnings management more frequently. Interventions in financial indicators are aimed at managing investor perception and maintaining or increasing

market value. However, such interventions can have negative effects on the transparency and reliability of financial reporting.

Sectoral differences can influence the intensity and form of earnings management practices. Therefore, to ensure the comparability of financial reporting among companies in the BIST 100 index and to ensure the timeliness and accessibility of data, it was deemed appropriate to include a 14-year period covering 2010-2023 in the analysis. The study analyzed companies using the accrual-based Kothari method, which is well-known in the literature. During the analysis, accruals were first calculated for each company and then separated into normal and abnormal parts using the model. Abnormal accruals were considered an indicator of potential earnings management. This assessment yielded metrics that could provide clues as to whether companies were manipulating earnings. The study found no strong evidence that the 70 companies included in the BIST 100 index engaged in significant and consistent earnings manipulation regarding their earnings management behaviors.

In conclusion, this study aims to make a significant contribution to understanding the impact of earnings management on firm-level financial decision-making processes and how managers utilize earnings management strategies.

2. Earnings Management

The earnings management literature encompasses studies aimed at understanding why managers employ this practice, the techniques they employ, and the consequences of these practices (McNichols, 2000, p. 313). Earnings management is the practice of presenting companies' financial statements with misleading data. Financial reports of companies that employ earnings management lack credibility. When such practices are identified and prevented, confidence in a company's financial statements increases. Therefore, accurately identifying earnings management is crucial.

2.1. Measuring Earnings Management

Measuring earnings management aims to understand which managers manipulate a company's profits or losses for their own benefit and the techniques they use to implement these changes. It is also necessary to examine the results and impacts of these manipulations (McNichols, 2000, p. 313). However, determining whether a manager is practicing earnings management is quite difficult at first glance, as earnings management can be implemented using many different techniques and methods.

Different measurement models have been developed to identify earnings management. These models are classified as accrual-based models, mixed models, and alternative models. Accrual-based models include the DeAngelo Model, the Healy Model, the Jones Model, the Modified Jones Model, and the Kothari Model. Mixed models include the Beneish (1997) Model, the Beneish (1999) Model, the Spathis Model, the Roychowdhury Model, the Logit, and the Probit Models. Alternative models include: These models are the Decision Tree Model, Artificial Neural Networks, Genetic Algorithm, Regression Model, and Discriminant Analysis.

A review of the literature on measuring earnings management reveals that earnings management is mostly measured using accruals (Beneish, 2001, p. 3). This is because earnings management occurs on the accrual side of earnings, rather than the cash side, making it easier to manage earnings than cash flows (Jones, 1991, p. 211).

The first study to measure earnings management based on total accruals was Healy (1985). The models used to determine earnings management are described below.

2.2.1. Accrual-Based Models Used in Measuring Earnings Management

Financial statements are prepared on the accrual basis to provide necessary data to financial information users. The primary purpose of these statements is to provide users with information about the company's liabilities, equity, assets, revenues, and expenses, thus providing them with

useful financial information about the company (Public Oversight Accounting and Auditing Standards Authority). Accrual-based financial statements may exhibit certain differences compared to those prepared under the cash basis. These differences reflect time-related differences. In accrual-based financial statements, the effects of transactions are reported at the time the transaction occurs, rather than when cash or cash equivalents are received or paid. This ensures that the difference between total accruals and cash balances does not arise during the company's operating life. However, due to the periodicity principle of accounting, differences between revenues and expenses under the accrual basis and those under the cash basis may occur in the short term. This characteristic of the accrual method causes a company's earnings to differ from its cash flows and can facilitate manipulation of earnings (Yaşar, 2011, p. 148).

A company's earnings or profit for the period consists of the sum of accruals and cash flows from operating activities.

E t = TAt – CFt

Period Profit = Total Accruals + Cash Flows from Operating Activities
The difference between accruals and cash flows changes over time. There is no difference between a company's accruals and cash flows throughout its operating period (Jones, 1991, p. 211). However, higher than normal accruals for a given period may indicate an overstatement of earnings. Therefore, higher than normal accruals may signal an overstatement of earnings (Yükseltürk, 2006, p. 142).

Most studies analyzing earnings management use total accruals. Total accruals are calculated as follows:

TA = NDA + DA

Total Accruals = Discretionary Accruals + Non-Discretionary Accruals

As can be seen from this equation, total accruals consist of discretionary and non-discretionary accruals. Discretionary accruals are accounting transactions that arise at the discretion of managers and are carried out for earnings management purposes. Non-discretionary accruals, on the other hand, are accruals made in the current period due to industry agreements or macroeconomic factors. Discretionary accruals are considered an indicator of earnings management. However, calculating discretionary accruals directly is difficult. First, non-discretionary accruals are calculated and subtracted from total accruals. The remaining figure represents discretionary accruals, which are an indicator of earnings management.

DA = TA − NDA

Studies in the literature measuring earnings management have mostly calculated total accruals. These calculations are made using two different methods: the balance sheet approach and the cash flow statement approach.

In studies based on the balance sheet approach, total accruals are calculated as follows:

TAi,t = ΔCAi,t - ΔCashi,t - ΔCLi,t + ΔSTDi,t – DEPi,t

TA: Total accruals,

CA: Current assets,

Cash: Cash and cash equivalents,

CL: Current liabilities,

STD: Debt transferred from long-term liabilities to current liabilities,

DEP: Depreciation expenses,

Δ: Change between t and t-1,

t: Time indicator,

i: Company indicator.

Another method used to calculate total accruals is the cash flow approach. According to this method, total accruals are generally calculated as follows:

TAt = Et − CFt

Total Accruals = Operating Profit − Cash Flows from Operating Activities

Hribar and Collins (2002) compared the balance sheet and cash flow approaches for calculating total accruals. In this comparison, conducted under the same conditions, they found that total accruals based on the cash flow approach yielded more reliable results, while calculations based on the balance sheet approach produced more inaccurate results.

Below, models for determining accrual-based earnings management are examined.

2.2.1.2. Healy Model (1985)

The Healy model, the first model in the literature used to estimate discretionary accruals, has been described as a simple model (Tekin & Kabadayı, 2011, p. 145). Healy (1985) focused on incentive bonuses awarded to company executives based on company performance. According to Healy (1985), he tested the hypothesis that executives seeking to increase incentive bonuses would resort to accounting manipulation using total accruals (Küçüksözen, 2004, p. 252).

Executives may manipulate discretionary accrual items to maximize incentive bonuses during their tenure. According to Healy (1985), he identified three possible assumptions managers could make for the current and subsequent periods. The three possible assumptions in the study are as follows (Healy, 1985, p. 90):

Assumption I: In the first case, if the manager understands that she cannot exceed the lower limit set by the company for income even if she manipulates financial information, then the manager will try to maximize the incentive bonus she will receive in the next period by reducing the discretionary accruals in this period.

Assumption II: The second assumption arises when the manager realizes that they will exceed the lower limit for their incentive bonus but not the upper limit. The manager aims to maximize their bonus by increasing discretionary accruals to receive the proportionately determined incentive bonus.

Assumption III: In the third scenario, when the manager exceeds the upper limit for the incentive bonus, they will reduce discretionary accruals to maximize their return in the following period by reducing their income so that it does not fall below the upper limit.

Healy (1985) conducted a study to measure the three assumptions described above. He examined 94 companies listed in Fortune magazine's top 250 between 1930 and 1980, for which data was readily available. The study generated 1,527 company-year data for these 94 companies (Küçüksözen, 2004, p. 255). Helay (1985) used the following model to measure discretionary accruals, which are indicators of earnings management:

NDAt = 1/nΣt(TAt / At -1)

NDA = Non-discretionary accruals
TA = Total accruals
At -1 = Total assets in the previous year
n = Number of years in the estimation period
t = Indicator representing the years in the observation period

The fundamental difference between the Healy (1985) model and other models is that it is based on the principle that managers manipulate financial information in each period (Dechow, Sloan, & Sweeney, 1995, p. 197).

2.2.1.3. DeAngelo Model (1986)

DeAngelo (1986) examined the process in which publicly traded companies buy back their outstanding shares in order to become private. He developed a model to test whether managers manipulate financial information during this process (Zor & Yanya, 2023, p. 74).

According to DeAngelo (1986), the change in total accruals should normally be zero, but if total accruals are significantly negative during the share buyback period, the manager resorts to earnings management. Therefore, he measured total accruals and the change in total accruals with the following model (DeAngelo, 1986, pp. 408-409):

$$AC1 = DA1 + NA1$$

$$(AC1 - AC0) = (DA1 - DA0) + (NA1 - NA0)$$

AC: Total Accruals
DA: Discretionary Accruals
NA: Non-Discretionary Accruals

In this study, discretionary accruals were calculated by dividing the change in total accruals compared to the previous period by total assets. According to DeAngelo (1986), the model for calculating discretionary accruals is as follows:

$$DAt = (TAt - TAt{-}1) / At{-}1$$

DA = Discretionary accruals

TA = Total accruals

A = Total assets

In both the DeAngelo (1986) and Healy (1985) models, nondiscretionary accruals are assumed to be constant. However, given the economic conditions, the assumption that the firm remains unchanged and nondiscretionary accruals are constant is not a strong argument (Dechow, Sloan, & Sweeney, 1995, p. 198)

2.2.1.4. Jones Model (1991)

The Jones (1991) model differs from the previously described Healy and DeAngelo models. Instead of discretionary accruals, which are considered a specific accrual account and are claimed to be an indicator of earnings management, this model uses the discretionary component of total accruals. According to Jones (1991), the ITC's pre-tax profit analysis made the use of the discretionary component of total accruals more important (Jones, 1991, p. 194).

Jones (1991) added two variables to the model to identify changes in companies due to economic reasons. These two variables are changes in sales and gross tangible assets. Jones (1991) calculated total accruals using the following model (Umut & Özer, 2020, p. 103):

$$TAit / Ait\text{-}1 = \alpha i \left[1/Ait\text{-}1 \right] + \beta 1i \left[\Delta REVit / Ait\text{-}1 \right] + \beta 2i \left[PPEit / Ait\text{-}1 \right] + \varepsilon it$$

TAit = Total accruals of firm i in year t
ΔREVit = Revenues of firm i in year t – Revenues of firm i in year t-1
PPEit = Gross tangible fixed assets of firm i in year t
εit = Error term of firm i in year t

αi, β1i, β2i = Firm-specific parameters

To calculate the firm-specific parameters, denoted as αi, β1i, and β2i in the formula above, the least squares method must be used. According to Jones (1991), εit, which represents total estimated discretionary accruals, is calculated using the following formula:

εit = TAit / Ait-1 – (αi ［ 1/Ait-1］ + β1i ［ ΔREVİt /Ait-1］ + β2i ［ PPEit /Ait-1］)

2.2.1.5. Endüstri Model (1991)

The Industry Model (1991) is a model used by Dechow and Sloan (1991). The model is similar to the Jones (1991) model. Furthermore, in line with the Jones (1991) model, the model relaxes the assumption that nondiscretionary accruals are constant over time. The Industry Model (1991) does not directly model the determinants of discretionary accruals. Instead, it is based on the assumption that changes in the determinants of discretionary accruals are the same across all firms in the same industries (Dechow, Sloan, & Sweeney, 1995, p. 199). The model is calculated as follows (Dechow, Sloan, & Sweeney, 1995, p. 199):

NDAt = γ1+ γ2 medyan j (TAt / At-1)

NDAt = unforeseen discretionary accruals
TAt = total accruals

Median (TAt / At-1) = median value of total accruals deflated by total assets for firms in the same industry

γ1 and γ2 = firm-specific parameters

NDAt in the model above is calculated using the total accruals expressed in the Healy (1995) model. Median (TAt / At-1) represents the median values of total accrual ratios calculated based on the assumption that, in addition to the companies selected for analysis, companies in the same industry are also scalable by asset size. The firm-specific parameters γ1 and γ2 represent the values measured by applying the least squares method to observations during the estimation period (Dechow, Sloan, & Sweeney, 1995, p. 200).

2.2.1.6. Modified Jones Model (1995)

In the new model revised by Dechow et al. (1995), unlike the Jones (1991) model, the model was adjusted by subtracting the change in revenue from the net change in receivables, rather than relying solely on the change in revenue (Dechow, Sloan, & Sweeney, 1995, p. 199). According to the authors, the model formula to be used to calculate non-discretionary accruals is as follows (Kara & Toraman, 2023, p. 134):

TAit / Ait-1 = α1 ［ 1/At-1］ + α2 ［ (ΔREVt - ΔARt)/ / At-1 ］ + α3 ［ PPEt / At-1］ + εit

TAit = Total accruals for firm i in year t

ΔREVit = Sales revenues of firm i in year t – Revenues of firm i in year t-1

ΔARt = Trade receivables of firm i in year t – Trade receivables of firm i in year t-1

PPEİt = Gross tangible fixed assets of firm i in year t

Ait-1 = Total assets of firm i in year t-1

αi = Company-specific parameters

Parameters α1, α2, and α3 in the above formula are company-specific parameters. To calculate these parameters, the least squares method must be applied (Umut & Özer, 2020, p. 104).

2.2.1.7. Kothari Model (2005)

Kothari, Leone, and Wasley made some modifications based on the Jones and Modified Jones models in their 2005 study (Kara & Tuna, 2018, p. 101). However, the difference between the Kothari model and the Jones and Modified Jones models is that they added a constant term, called σ 0, and the ROA (return on assets) variable to the model. Thus, a performance measure was added to the model, allowing comparison of performance effectiveness (Zor & Yanya, 2023, p. 74). The formula for the model developed by Kothari et al. is as follows (Umut & Özer, 2020, p. 104):

TAit = σ0 + σ1 ［ 1/Ait-1］ +σ2 ［ ΔSALESit］ +σ3 ［ PPEit ］ +σ4 ［ ROAit(or it-1) ］ + νit

TAit = total accruals for firm i in year t

ΔSALESit = sales revenues of firm i in year t – sales revenues of firm i in year t-1

PPEit = net tangible fixed assets of firm i in year t

ROAit(or it-1) = return on assets of firm i in year t or t-1

νit = error term (discretionary accruals) of firm i in year t

σ0,σ1,σ2,σ3,σ4 = firm-specific parameters

The authors tried to make the distribution in the model more symmetric by adding the σ0 variable to the model. In the Model, the least squares method was used in the calculations of the parameters σ0, σ1, σ2, σ3, σ4, just like in the Jones Model and Modified Jones Model (Umut & Özer, 2020, p. 104).

3. Literature Review

Uysal and Yanya (2024) examined the relationship between dividend distribution policy and earnings management using 2015-2021 data from 35 companies included in the BIST Industrial Index. The results of the adjusted Jones and Kothari models indicate a negative and significant relationship between discretionary accruals and dividend distribution policy. The findings reveal the restrictive role of legal regulations in earnings management and the unsustainability of profits achieved through earnings management.

Çetenak (2022) used the adjusted Jones model to identify earnings management practices in his study. The analyses revealed that earnings management practices were less frequently employed in firms with large business groups or foreign-owned controlling shareholders during the period, while earnings management practices were more prevalent in independent firms.

Sarıtaş and Bekçi (2024) examined the effectiveness of the DeAngelo Model (1986) in identifying earnings management. The applicability of the model was evaluated by analyzing the financial statements of companies operating in the Turkish manufacturing sector for the 2019-2023 period, aiming to provide guidance for financial statement users and auditors regarding the implementation process.

Kara (2022) examined the relationship between companies' earnings management practices and liquidity ratios using linear regression analysis. SPSS 22 and STATA 16 statistical packages were used in the data analysis. The results of the study revealed a positive relationship between earnings management and the current ratio at the 1% significance level, while a negative relationship existed between earnings management and the cash ratio. Furthermore, the relationship between liquidity ratio and earnings management was negative and found to be

significant at the 5% level.

Kurt (2023) examined the relationship between earnings management and intellectual capital in insurance companies listed on the Borsa Istanbul. Using data from 2014Q2–2022Q2, intellectual capital was measured using the "intellectual value added coefficient," and earnings management was measured using the "Healy Model." The findings indicate a negative and significant relationship at the 1% level between earnings management and structural capital efficiency, while no significant relationship exists between capital employed and human capital efficiency.

In their study, Kara et al. (2019) first attempted to determine whether companies traded on the Borsa Istanbul employed earnings management using the Beneish model. Then, the relationship between companies considered to employ earnings management and their management characteristics was investigated. Using the companies' financial data from 2014 to 2017, the management characteristics affecting earnings management were examined using logistic regression analysis. The analysis results concluded that the management characteristics of Top Management Dilemma, Independent Auditor Opinion, Number of Board Members, and Percentage of Foreign Investors in the Shareholding Structure were variables vulnerable to manipulation in companies.

Umut and Özer (2022) This study examined the statistical significance of the Jones, Modified Jones, and Kothari models, which are frequently used in determining earnings management, on a sectoral basis. Using data from the COMPUSTAT database for the period 1999-2020, companies operating in 26 European Union member countries and the United Kingdom were categorized by sector according to the GIC-SECTOR classification and analyzed using 28,962 observations. The findings indicate that the models in the Healthcare and Communications sectors were insignificant, while in the other sectors, at least one model was statistically significant in detecting earnings management.

Sakarya and Koçak (2016) used multiple regression analysis to examine the impact of earnings quality and earnings management on the financial performance of companies. The analysis determined that earnings management was present in ISO 500 companies.

Suadiye (2021) examined the accrual quality and accrual-based earnings management practices of BIST companies during the 2005-2016 period. Accrual quality was measured using the Dechow & Dichev (2002) and McNichols (2002) models, while discretionary accruals were measured using the Kothari et al. (2005) model. The findings indicate that accrual and earnings quality are low, while discretionary accruals are high in BIST companies.

Ruwanti et al. (2019) analyzed data on firms using Moderated Regression Analysis (MRA). The results showed that firm size has a positive effect on earnings management, while leverage ratio has a positive effect on earnings management. However, the role of corporate governance in relation to firm size and leverage demonstrates a negative relationship with earnings management. In other words, large companies with good corporate governance Companies with high leverage and high stock prices will not tend to engage in earnings management or manipulate their reported profits.

4. Materials and Method

The primary objective of this study is to reveal the earnings management behaviors of companies listed in the Borsa Istanbul 100 (BIST 100) index and to obtain empirical evidence to understand whether these companies engage in accounting manipulation. The study examines a time period spanning the years 2010-2023, and a total of 70 companies were included in the analysis. In determining the scope of the study, firms such as banks, holding companies, and real estate investment trusts (REITs) that differ significantly from other firms in terms of their financial structure and field of activity were excluded from the analysis. Only enterprises engaged in production and commercial activities were selected for analysis. This choice was made to ensure that the findings obtained from the analysis were more consistent and reflective.

Data were obtained from the Public Disclosure Platform (KAP) and the companies' official websites. A rigorous data set was created by meticulously examining company financials and activity reports. The Kothari (2005) model, commonly used in the literature, was used to identify earnings management behaviors. The primary reason for choosing the Kothari (2005) model is its structure, which takes firm performance into account in earnings management measurements. Other accrual models in the literature (e.g., Jones, Modified Jones) often only consider variables such as changes in sales and tangible fixed assets, but do not directly account for the impact of firm performance on earnings management. However, the Kothari model, thanks to its ability to make performance-adjusted accrual estimates, both prevents false positives and allows for more reliable results in earnings management measurements. This feature increases the model's applicability and validity, particularly in heterogeneous samples such as the BIST 100 index, which includes firms from different sectors and with varying profitability levels. Furthermore, the model's frequent use in empirical studies ensures that the findings are comparable to the literature.

In the analysis phase, accruals were first calculated for each firm, and then these accruals were divided into normal and abnormal parts using the model. Abnormal accruals were considered as an indicator of potential earnings management. As a result of this assessment, metrics were obtained that could provide clues as to whether companies were manipulating earnings. The variables used in calculating earnings management were as follows:

$$\mathbf{TAit = \sigma0 + \sigma1\ [\ 1/Ait\text{-}1]\ +\sigma2\ [\ \Delta SALESit]\ +\sigma3\ [\ PPEit\ ]\ +\sigma4\ [\ ROAit(or\ it\text{-}1)\ ] + \upsilon it}$$

TAit = total accruals for firm i in year t

ΔSALESit = firm i's sales revenue in year t – firm i's sales revenue in year t-1

PPEit = firm i's net tangible fixed assets in year t

ROAit(or it-1) = firm i's return on assets in year t or t-1

υit = firm i's error term (discretionary accruals) in year t

σ0,σ1,σ2,σ3,σ4 = firm-specific parameters

5. Results, Limitations, and Future Directions

This study analyzed the earnings management trends of companies listed in the Borsa Istanbul (BIST) 100 index and operating in the manufacturing industry, based on financial data for the period 2010-2023. Companies operating in banking, finance, insurance, real estate investment trusts, holdings, and similar sectors were excluded from the study, and only 70 companies engaged in manufacturing activities in the real sector were included in the analysis. The analysis used the Kothari model to calculate total accruals, discretionary and non-discretionary accruals, and to measure the extent to which companies employ earnings management.

The study found no strong evidence that the 70 companies listed in the BIST 100 index and included in the analysis engaged in earnings management behaviors in a meaningful and consistent manner. The lack of a statistically significant relationship between abnormal accruals and firm performance suggests that companies employ earnings management practices to a limited extent. This suggests that companies listed on the Borsa Istanbul and operating in production or trade generally adopt a more transparent and ethical approach to financial reporting.

The findings reveal that company management focuses on long-term strategic goals and is diligent in maintaining investor confidence. However, it should be noted that earnings management practices can be affected by variables such as sectoral differences, firm size, and management structure. Therefore, in future studies, using broader data sets, performing sectoral disaggregations, and conducting comparative analyses with other earnings management models will contribute to a more in-depth understanding of the subject.

Furthermore, it should be noted that external factors such as economic fluctuations, sectoral differences, and changes in regulatory frameworks may have an impact on companies' financial reporting behaviors over the long time period covered by the study. Therefore, the lack of homogeneous emergence of earnings management practices within the sector can be considered a natural consequence of these factors.

The findings reveal that the companies examined during the relevant period did not exhibit a clear and systematic pattern regarding their earnings management practices. In other words, earnings management practices were found to be limited or not exhibit a statistically significant trend in the vast majority of the companies analyzed. This result may indicate that manufacturing companies operating in the capital markets in Turkey during the period under study adopted a relatively more transparent and honest approach to their financial reporting processes, but it also suggests that the method used may be limited in detecting such behavior.

The fact that the research was limited to data obtained solely from financial statements limits the ability to gain detailed insight into internal business practices. This also highlights the need for qualitative data to gain a more in-depth understanding of earnings management behaviors. Furthermore, the Kothari model's analysis of accruals based solely on accounting-based measures may present some shortcomings in detecting managerial intent or strategic manipulation.

This study has several limitations. First, only 70 firms listed in the Borsa Istanbul (BIST) 100 index and operating in non-financial sectors were included in the research scope. This makes the findings valid only within this sample and limits the generalizability of the results to different sectors or broader samples. Furthermore, only the Kothari model was used to measure earnings management. Using alternative models or multiple measurement methods may yield different results. Furthermore, the data used in the study covers the period 2010-2023. This time period pertains to a specific economic, political, and financial context, and analyses conducted over different periods may yield different findings. The Public Disclosure Platform (KAP) and companies' websites were used as data sources, but some companies experienced data omissions and reporting discrepancies. This could partially affect the accuracy and comparability of the measurements.

Future studies are recommended to expand the sample size to include different sectors, small and medium-sized enterprises, or different country markets. Furthermore, using different models and methods in identifying earnings management can increase the robustness of the findings. Finally, using qualitative data collection techniques (e.g., executive interviews or surveys) in conjunction with quantitative analyses can contribute to a deeper understanding of the motivations behind earnings management behaviors and firm strategies. Thus, broader implications can be drawn for both the literature and practice.

In conclusion, this study aimed to provide a general framework for the earnings management behaviors of enterprises operating in the real sector, and the findings obtained within this framework revealed a low level of earnings management tendency across the sector. This situation bodes well for the maturation of Türkiye's corporate governance structure, the functioning of audit mechanisms, and increased investor confidence. However, to achieve more comprehensive results, it is crucial to conduct advanced studies that compare different methods and provide sectoral and periodic analysis.

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‘’The Muqaddimah’’ in The Context of Trade, Sales ande Marketing Concepts

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Abstract

The economic systems of societies have historically played a decisive role in shaping social relations and cultural values. While modern economic literature dominates the field, the roots of fundamental approaches extend to classical Islamic thought. This study examines the *Muqaddimah* by the 14th-century scholar Ibn Khaldun, a valuable source for its holistic treatment of the relationship between economic activities and social structure. Ibn Khaldun provides an in-depth analysis of production-consumption, division of labor, and the impact of trade on civilization. His theory of “asabiyyah” offers a theoretical basis for understanding economic solidarity. This study aims to examine trade, sales, and marketing in the *Muqaddimah* to understand the economic logic of classical Islamic societies and provide a perspective on contemporary marketing.

Introduction Throughout history, trade, sales, and marketing activities have held a decisive position in shaping the economic and political structures of societies. Ibn Khaldun, a prominent figure in the history of thought, established a unique bridge between historiography and sociology through his masterpiece, the *Muqaddimah*. He comprehensively explained how the economy and trade were perceived, managed, and grounded on moral foundations within the classical Islamic world. Although initially regarded as a historical methodology, the work reveals a universal atlas of thought intersecting with economics and ethics, offering observations on labor-value relationships and supply-demand mechanisms that remain relevant today.

Aim The primary purpose of this study is to analyze the concepts of trade, sales, and marketing found in the *Muqaddimah* from historical, sociological, and economic perspectives, revealing their contribution to modern theories. Although developed in the pre-classical period, Ibn Khaldun's economics bear parallels with modern concepts like labor-based value theory and fair profit. The specific objectives are:

1. To explain the relationship between economics, society, and ethics in a historical context.
2. To interpret sales and marketing through an interdisciplinary approach.
3. To compare Ibn Khaldun's ideas (e.g., supply-demand balance) with contemporary economics.
4. To position the *Muqaddimah* as an “economic thought system” relevant to today's discussions on sustainability.

Method This study employs qualitative methods, specifically document analysis and comparative text analysis. The methodological framework includes:

Primary Source Analysis: Examining the *Muqaddimah* directly. Thematic Coding: Classifying concepts such as “trade,” “profit,” and “justice” along an “economics-sociology-ethics” axis. Comparative Analysis: Comparing Khaldun’s observations with thinkers like Adam Smith, Karl Marx, and Philip Kotler. Historical-Interpretive Approach: Contextualizing ideas within the 14th-century Islamic world.

Findings Research indicates the *Muqaddimah* is a foundational precursor to modern business science. Key findings include:

Social Foundations: Production and consumption require collective organization (division of labor). Sales and Ethics: Profit legitimacy relies on mutual consent and social benefit, aligning with “business ethics”. Marketing Dynamics: Prices are determined by supply and demand

(scarcity vs. abundance), an intuitive precursor to price equilibrium models. Role of the State: State intervention should be limited to justice; direct involvement in trade accelerates economic collapse. Public Integrity: Corruption among officials leads to the deterioration of trade. Luxury & Cycle: Excessive luxury consumption signals the decline of civilization.
Conclusion and Originality The *Muqaddimah* serves as an interdisciplinary text linking human behavior to economic processes via principles of labor-value, fair earnings, and regulatory justice . The study is original in its synthesis of history and economics, reinterpreting *asabiyyah* as "social capital," and identifying precursors to modern marketing (consumer behavior, brand trust) in a 14th-century text . It builds an intellectual bridge, showing Ibn Khaldun's ideas as an early form of universal social science theory

Key words: Ibn Khaldun, Muqaddimah, Commerce, Marketing, Sales, Economic Thought, Social Structure, Islamic Economics, Economic History
Jel Codes: M31, B15, K20, N25

1. Introduction

Al-Muqaddimah, one of the most original and profound works in the history of Islamic thought, was written by the 14th-century thinker Ibn Khaldun and is considered a foundational text in the social sciences. Originally serving as the introduction to his comprehensive historical book Kitābu'l-'Ibar, the Muqaddimah eventually became an independent work, introducing a new methodology to historiography. In this work, Ibn Khaldun emphasizes that "history is not merely the narration of events but also the art of investigating their causes," demonstrating his analytical and causality-based approach to history (Ibn Khaldun, 2004, p. 4).

Beyond being a classical history book, the Muqaddimah is a holistic intellectual system offering in-depth analyses across sociology, economics, political science, and philosophy. Its primary aim is to explain the birth, development, and decline of human societies and to uncover the underlying dynamics of these processes. In this regard, Ibn Khaldun's approach is pioneering for modern social sciences. As he states, "Every civilization has a beginning, development, and demise. This is a natural process; human societies are also subject to the laws of nature" (Ibn Khaldun, 2004, p. 108).

One of the central concepts in the Muqaddimah is asabiyyah, referring to the strong social cohesion individuals form with their community. This concept is considered fundamental for ensuring the political and social unity of societies. According to Ibn Khaldun, "People unite through the power of asabiyyah, achieve great deeds, and establish states" (Ibn Khaldun, 2004, p. 155). However, when this cohesion weakens, the process of state disintegration begins—a cyclical understanding of history forming a cornerstone of his social theory.

The work also provides profound analyses of the relationship between economic life and social structure. Ibn Khaldun intuitively understood the labor-value relationship, stating, "Without human labor, wealth cannot be acquired; the source of wealth is production and work" (Ibn Khaldun, 2004, p. 292). Similarly, he emphasized the link between trade and social stability: "The order of commerce depends on the justice of the state. When oppression increases, neither the people nor merchants can safeguard their gains" (Ibn Khaldun, 2004, p. 328).

Other economic topics, such as market functioning, price determination, public revenue, taxation policies, and consumption habits, are also thoroughly addressed. His analyses of state fiscal policies are considered early contributions to public finance. Ibn Khaldun notes: "If state revenues rise while the people's income declines, this balance cannot be sustained for long" (Ibn Khaldun, 2004, p. 334), pointing to the historical roots of concepts like "fiscal balance" and "tax justice."

Additionally, social factors such as education, language, culture, geography, and climate's effect on human character are examined. The classification of sciences, the psychological and social conditions of learning, and the development of art and culture reflect Ibn Khaldun's intellectual

versatility. He emphasizes, “Knowledge mirrors the development of society. Where knowledge advances, that society rises” (Ibn Khaldun, 2004, p. 402), highlighting the direct link between knowledge production and political and economic progress. 1.1 Important Fıgures In The Muqaddımah

Ibn Khaldun’s Muqaddimah evaluates not only historical events and social processes but also the thinkers, scholars, and leaders who played a significant role in shaping these processes. This approach allows reading human history through individuals while analyzing their influence on social structures. Ibn Khaldun treats names not as objects of veneration but as reflections of their historical conditions.

1.1. Aristotle

Ibn Khaldun gives special attention to Aristotle (384–322 BCE), recognizing his influence on logic, political philosophy, and natural sciences. He notes that Aristotle’s ideas were transmitted to the Islamic world through “Peripatetic philosophers.” Ibn Khaldun states: “Aristotle laid the foundation of logic so firmly that all philosophers who came after him followed the path he outlined” (Ibn Khaldun, 2004, p. 536).

1.2 Avicenna (Ibn Sina)

Ibn Khaldun critiques Ibn Sina (980–1037), acknowledging his contributions to medicine, natural sciences, and logic while noting that his philosophy leans heavily on abstract metaphysical concepts. He observes, “Ibn Sina’s philosophy is the pinnacle of Islamic rational sciences; however, it is distant from the realities of the people” (Ibn Khaldun, 2004, p. 537).

1.3 Al-Farabi

Al-Farabi (872–950) is recognized for his political theory and vision of the “virtuous city.” Ibn Khaldun appreciates Farabi’s ideas but notes their utopian nature: “Farabi’s theories stretch the limits of wisdom but do not fully account for the realities of society” (Ibn Khaldun, 2004, p. 540).

1.4 Al-Ghazali

Al-Ghazali (1058–1111) is praised for balancing religious thought with philosophy. Ibn Khaldun states, “Ghazali preserved the wisdom of Sharia and defended the faith of the people. He challenged philosophy without entirely rejecting it” (Ibn Khaldun, 2004, p. 542).

1.5 Socrates and Plato

Ibn Khaldun references Socrates and Plato, acknowledging their search for knowledge and ethics while viewing their ideal city concepts as unrealistic: “Plato’s ideal state is an arrangement not seen in history” (Ibn Khaldun, 2004, p. 539).

1.6 Averroes (Ibn Rushd)

Ibn Rushd (1126–1198) is both praised and critiqued, especially for his Aristotelian interpretations. Ibn Khaldun finds his philosophical communication elitist: “Ibn Rushd remained in Aristotle’s shadow, keeping wisdom distant from the people’s understanding” (Ibn Khaldun, 2004, p. 545).

2. General Topıcs In The Muqaddımah

The Muqaddimah is not just a historical methodology text but a pioneering manifesto containing observations on sociology, politics, economics, religion, culture, education, and human nature. Written in the 14th-century intellectual climate, it transcends its period with universal insights. Ibn Khaldun analyzes societies in terms of birth, growth, and decline, examining the underlying cause-and-effect relationships. In this sense, it serves as both a philosophy of history and a social science work.

2.1 Ilm al-Umran (Science of Civilization/Social Science)

Ibn Khaldun systematically defines ilm al-umran as a discipline investigating the causes of social events and understanding human behavior historically: “The structure, organization, lifestyle, and habits of societies must be known for a correct understanding of history. Ilm al-Umran is therefore the spirit of history” (Ibn Khaldun, 2004, p. 45).

2.2 Asabiyyah Theory (Social Cohesion and Solidarity)

Asabiyyah is key to understanding the rise and fall of societies. Strong in nomadic groups, it weakens in settled life, leading to state decline: “When asabiyyah, the foundation of government, weakens, the state’s life also begins to end” (Ibn Khaldun, 2004, p. 104).

2.3 Birth, Rise, and Decline of States

Ibn Khaldun likens states to human life: they are born, mature, and eventually decline, typically over roughly two centuries (Ibn Khaldun, 2004, p. 106).

2.4 Economy, Labor, and Means of Subsistence

Production is the source of wealth, but equitable distribution is crucial for social stability: “As wealth increases, luxury and indulgence rise, which causes societal disintegration” (Ibn Khaldun, 2004, p. 165).

2.5 Education and Knowledge

Knowledge should be experiential rather than rote; education must progress according to students’ mental capacity: “Success in knowledge depends on the student’s ability and the teacher’s method” (Ibn Khaldun, 2004, p. 302).

2.6 Religion and Politics

Religion plays a role in social order, but political authority should not be limited to religious legitimacy: “Sharia is the spirit of politics; however, it is reason that sustains it” (Ibn Khaldun, 2004, p. 221).

3. Significance Of The Muqaddımah

Written in 1377, the Muqaddimah influenced not only its contemporary world but also later centuries. It introduced an analytical historiographical methodology examining the social, political, and economic dynamics behind events. It anticipates modern sociology, political science, and economic theories in intuitive ways.

3.1 Pioneer of Sociology and Philosophy of History

Ibn Khaldun studied society scientifically, analyzing the nature, evolution, and decline of human groups: “History is not merely the narration of events; rather, it investigates their causes and effects and the ways people live” (Ibn Khaldun, 2004, p. 27).

3.2 Social Analysis and Asabiyyah Theory

The asabiyyah theory explains social cohesion, leadership, and state formation: “The strength of asabiyyah determines a group’s potential to govern; when it weakens, the state’s end approaches” (Ibn Khaldun, 2004, p. 103).

3.3 Scientific and Critical Thinking Tradition

The Muqaddimah relies on observation and experience, critiquing past historians: “Many historians exaggerate or hide events out of admiration or hostility. Writing history must prioritize reason and experience” (Ibn Khaldun, 2004, p. 41).

3.4 Influence on Western Thought Translated into Latin in the 19th century by Franz Rosenthal, the work influenced European scholars such as Arnold Toynbee, Albert Hourani, and Fernand Braudel. Toynbee remarked: “Ibn Khaldun is the greatest philosopher of history who has ever lived” (as cited in Rosenthal, 1958, p. xvii).

3.5 Contribution to Modern Social Sciences

Concepts such as cyclical state development, corruption, economic inequality, social justice, and governance resonate with contemporary theories, making the Muqaddimah a dynamic and current intellectual resource.

4. SALES, MARKETING, AND TRADE IN THE MUQADDIMAH

Ibn Khaldun's Muqaddimah is also a pioneering text in economics, trade, and production. Economic organization, production-consumption balance, division of labor, and commerce's impact on politics are analyzed. Economic activity is seen as central to a society's survival, giving sales, marketing, and trade a sociological and moral dimension.

4.1.1 Economic Foundations: Division of Labor and Livelihoods

Humans are social beings who cannot sustain themselves alone: "Humankind is civilized (social); therefore, it cannot provide for itself. It must rely on others" (Ibn Khaldun, 2004, p. 72). Division of labor organizes the economic interactions among artisans, merchants, farmers, soldiers, and rulers.

4.1.2 Sales and Consumption: Fair Profit

Trade and sales are not only transactions but legal and ethical matters. Justice and mutual consent are central: "Profit is legitimate; however, it should be limited to facilitate livelihood. Greed and hoarding corrupt society" (Ibn Khaldun, 2004, p. 131).

4.1.3 Early Definition of Marketing

While not using the modern term, Ibn Khaldun emphasizes connecting products to the right people, balancing supply and demand, and organizing cities and marketplaces: "Trade flourishes in advanced cities because demand rises, products diversify, and competition emerges" (Ibn Khaldun, 2004, p. 205).

4.1.4 Trade and the State: Political Impact of Economic Power

Trade must be supported by the state, under principles of fair taxation, property protection, and safe transportation: "If the merchant's rights are not protected or goods are smuggled, production declines, weakening the state" (Ibn Khaldun, 2004, p. 217).

4.1.5 Economic Cycles and Critique of Luxury Consumption

Societies and states experience economic cycles. Initial simplicity and productivity give way to wealth, luxury, and eventual decline: "In the state's final period, people live in abundance, but this wealth leads to laziness and extravagance" (Ibn Khaldun, 2004, p. 289). This cyclical view parallels modern economic crisis theories.

Table 1: The Treatment of Economic Concepts in Muqaddimah and Their Comparison with Modern Approaches

Concept in Muqaddimah	Explanation	Modern Equivalent
Division of Labor and Social Livelihood	Economic division of labor is necessary because individuals cannot sustain themselves alone.	Labor economy, production chain, collective production models
Justice and Mutual Consent in Sales	Legitimate profit is important in trade; buying and selling must be based on moral values.	Consumer rights, ethical trade, fair pricing

Relationship Between Trade and the State	For trade to flourish, the state must ensure security, justice, and protection of property rights.	Economic stability policies, rule of law, investment incentives
Wealth Increase Through Market Development	Urbanization and the growth of marketplaces strengthen the economy through product diversity and increased demand.	Urban marketing, supply-demand balance, economic clustering theories
Critique of Hoarding and Price Gouging	Stockpiling and opportunism disrupt social order and create unjust profits.	Competition law, market regulation, anti-monopoly legislation
Economic Cycles and Collapse Process	After periods of prosperity, states turn to luxury, which initiates decline.	Economic cycle theories, crisis economics, sustainable growth discussions
Relationship Between Morality and Economy	If economic life is not based on moral principles, social corruption is inevitable.	Social responsibility, sustainable development, ESG (environmental-social-governance) principles

Source: Ibn Khaldun. (2010). The Muqaddimah (S. Uludağ, Trans.). Dergâh Publishing. (Original work written in 1377)

4.2 Sales Topics and Their Treatment in the Muqaddimah

Ibn Khaldun's Muqaddimah is not only an explanation of the cause-and-effect relationships of historical events but also a comprehensive work containing striking analyses of social, economic, and political structures. In the economic sections of the work, the concept of sales and its role within social order is examined in detail. Ibn Khaldun views sales not merely as the exchange of goods but as a functional tool for maintaining social balance.

When discussing sales, Ibn Khaldun emphasizes that sales are necessary for individual labor and production to enter societal circulation. According to him, people depend on each other's labor, and this need must be met through a system of exchange—most prominently, through "sales." He states: "Man is by nature civilized (a social being) and requires the help of others. This mutual assistance occurs through trade and sales" (Ibn Khaldun, 2010, p. 358).

While evaluating the act of selling, Ibn Khaldun frequently stresses principles such as honesty, justice, price balance, and fair compensation for labor. He argues that it is natural for a seller to seek profit, but such profit should not become unjust gain. Otherwise, moral decay emerges within society. Unjust gain, especially when achieved by artificially inflating prices or misleading buyers about the value of a product, constitutes harm not only to individuals but also to society. In this regard, Ibn Khaldun asserts: "Merchants must obtain their earnings through legitimate means and avoid practices that disrupt social justice and disregard the consent of the people" (Ibn Khaldun, 2010, p. 371).

The Muqaddimah also provides detailed discussions of the activities of sellers and artisans. Craft production and the subsequent marketing of these products are considered fundamental factors in the development of civilization. According to Ibn Khaldun, the more advanced craft production is in a city, the more diverse and robust the sales opportunities will be. In this context, economic vitality depends not only on the production of goods but also on their equitable presentation in the market.Furthermore, Ibn Khaldun emphasizes the regulatory role of the state over sales and trade. He argues that the state should oversee market conditions, prevent

speculative activities, and maintain price stability. “The state must assume a regulatory role over trade and sales because unregulated sales increase opportunism and unrest in society” (Ibn Khaldun, 2010, p. 412).

This approach of Ibn Khaldun aligns with modern concepts such as ethical selling, price regulation, consumer rights, and government intervention. These principles, embedded within contemporary economic systems, demonstrate that Ibn Khaldun viewed sales not only as an economic activity but also as a moral one.

Table 2: Main Principles of Sales in the Muqaddimah

Principle	Explanation	Modern Equivalent
Honesty	The seller must not deceive the buyer and should accurately state the quality of the product	Ethical sales, honest marketing
Fair Profit	Profit should be earned justly without disturbing social balance	Reasonable pricing
Government Oversight	State control to maintain price stability and prevent speculation	Competition authority, public regulations
Production-Sales Relationship	Handicraft and production contribute to society through sales	Supply chain management
Social Benefit	Sales should consider not only individual but also public welfare	Social responsibility

Source: İbn Haldun. (2010). Mukaddime (S. Uludağ, Trans.). Istanbul: Dergâh Yayınları. (Original work written in 1377)

4.3 Marketing Concepts and Their Treatment in the Mukaddime

Ibn Khaldun’s Mukaddime, written in the 14th century, contains significant insights not only in the fields of history and sociology but also in economics and marketing. Possessing a perspective ahead of his time, Ibn Khaldun addresses core topics of modern marketing theory, including production, trade, labor, prices, and consumption. In this regard, the Mukaddime is a unique source for exploring the historical roots of contemporary marketing thought.

4.3.1 The Concept of Consumption and Needs

According to Ibn Khaldun, societies, after meeting their basic needs, tend to pursue luxury. This tendency plays a critical role in understanding supply-demand relationships and consumer behavior from a marketing perspective. The idea of the “limitlessness of needs” is expressed in his work as follows:

"Human needs are not limited; when one need is satisfied, another arises in its place" (Ibn Khaldun, 2004, p. 382).

This view parallels Abraham Maslow’s hierarchy of needs in modern marketing theory. Maslow’s model, progressing from physiological needs to self-actualization, aligns with Ibn Khaldun’s observation that human needs evolve progressively.

4.3.2 Production and Value Creation

Ibn Khaldun emphasizes that production involves not only physical labor but also knowledge and organization. Accordingly, the value of products is determined not only by raw materials but

also by craftsmanship and the skill level in the production process: "Labor is the fundamental element that increases the value of a good" (Ibn Khaldun, 2004, p. 380).

This statement represents an early form of the modern marketing concept of "value creation." In marketing management, it highlights that value is not only in the production of a product but also in how it is positioned in the market.

4.3.3 The Role of Trade and Market Dynamics

The Mukaddime examines in detail the impact of trade on social structures. Ibn Khaldun notes that trade gains importance alongside urbanization and economic prosperity. From a marketing perspective, this relates to market size and the diversity of consumer segments: "Trade arises from people's mutual needs, for it is impossible for everyone to produce everything" (Ibn Khaldun, 2004, p. 374).

This idea explains the marketing processes based on specialization and exchange relationships, which are foundational in marketing science.

4.3.4 Price Mechanism and Supply-Demand Balance

Price formation occupies an important place in Ibn Khaldun's economic thought. He argues that prices are influenced by production costs, labor input, and market conditions. Excessive increases or decreases in prices can threaten both economic and social balance: "If there is scarcity in a country, prices rise; if there is abundance, they fall. This is the law of nature" (Ibn Khaldun, 2004, p. 385).

This approach represents an early expression of the law of supply and demand, laying the groundwork for modern microeconomic and marketing pricing strategies.

4.3.5 The Impact of Consumption Habits on Social Change

Ibn Khaldun observes that as societies become more prosperous, they tend to consume more. These consumption habits gradually normalize luxury consumption, necessitating new marketing strategies. He states:

"As prosperity increases, people tend to spend more, pursue display and luxury. This also contributes to the society's decline" (Ibn Khaldun, 2004, p. 389).

This view provides an early critique of concepts like "consumer culture" and "consumer society" in contemporary marketing. From an ethical marketing perspective, it also serves as a warning that societies should develop balanced consumption habits.

4.3.6 Early Representation of Brand and Image

In his analysis of trading societies, Ibn Khaldun emphasizes the reputation of a merchant or product, akin to today's concept of brand image. Merchants who offer quality products, build trust, and ensure consistency attract more customers:

"People tend to buy from merchants they know and trust" (Ibn Khaldun, 2004, p. 377).

This idea underscores the importance of brand loyalty and trust-based customer relationships in modern marketing.

Table 3: Marketing-Related Topics in the Mukaddime and Their Frequency of Discussion

Sections / Themes	Classification by Topics	Frequency of Discussion
Sections on Consumer Behavior	Stages of Needs and Inclination to Luxury Consumption	3

Sections on Production and Economy	Labor, Production, and Value Creation	4
Trade and Market Structure	Formation of Markets, Development of Trade	3
Supply-Demand Balance and Price Mechanism	Price Determination, Effects of Scarcity and Abundance	2
Corporate Trust and Brand Perception	Merchant Reputation, Reliability, and Customer Preference	2
Critiques of Social Consumption	Conspicuous Consumption and Moral Decline	2
Influence of Economic Structure on Social Structure	Consumption – Prosperity – Decline Relationship	3
Total		19

Source: Ibn Khaldun. (2004). The Muqaddimah (Z. Gündüz, Trans.). Dergah Publishing. (Original work written in 1377).

4.4 Trade Topics and Their Treatment in the Muqaddimah

Ibn Khaldun's Muqaddimah contains significant analyses not only in sociology, economics, and state administration but also in the field of trade. Although it was written under the conditions of the 14th century, his observations on trade are surprisingly compatible with today's economic and marketing thought. Trade is one of the main axes through which Ibn Khaldun analyzes the structure of society. According to him, not only production but also the circulation and exchange of goods—that is, trade—constitutes a fundamental indicator of a society's level of development.

4.4.1 The Social Function of Trade

Ibn Khaldun clearly expresses the structural role of trade in the economic life of societies. According to him, human beings by nature cannot meet all their needs alone; therefore, division of labor and exchange relations develop. This idea shows that trade arises from a social necessity:

"By his very nature, man is obliged to live in society. No one can do everything alone. People are dependent on each other's work. This dependency makes trade necessary." (Ibn Khaldun, 2004, p. 282)

This notion formulates, at a remarkably early stage, the relationship between needs – exchange – value that forms the basis of modern marketing.

4.4.2 The Relationship Between Trade, Urbanization, and Civilization

According to Ibn Khaldun, cities and civilizations develop in parallel with the progress of trade. Cities emerge at the intersections of trade routes, through which knowledge, goods, and culture are transmitted. In this sense, trade serves not only an economic but also a sociocultural function:

"Wherever trade is developed, that place is surely populous; for trade is the result of civilization and settlement." (Ibn Khaldun, 2004, p. 286)

This observation corresponds today to concepts such as market size, target market selection, and location strategies.

4.4.3 The Merchant and Commercial Ethics

Ibn Khaldun attaches great importance to trust and the moral qualities of the merchant for the sustainability of trade. He states that deceit, speculation, and unjust gain lead to both economic and moral decline within society. According to him, the merchant must be trustworthy, honest, and fair:

"The merchant must be among the most reliable people, for goods and wealth are entrusted to him. Deception causes great harm in society." (Ibn Khaldun, 2004, p. 290)

This view aligns closely with modern marketing concepts such as ethical marketing, brand reputation, and customer trust.

4.4.4 State Intervention in Trade and Its Effects

Ibn Khaldun is extremely cautious about state intervention in trade. According to him, direct interference by the state in markets—particularly through forced purchases or excessive taxation—destroys commerce, discourages merchants, and reduces production:

"When the state interferes in trade, the merchant suffers losses and abandons his work. Thus, production decreases and livelihood becomes difficult." (Ibn Khaldun, 2004, p. 294)

This statement can be seen as a precursor to modern economic approaches that advocate for the encouragement of the private sector and the defense of free-market principles against state interventionism.

4.4.5 International Trade and Economic Interaction

Ibn Khaldun's understanding of trade is not limited to local production and exchange. He also seeks to comprehend interregional and even international trade. Even before the Age of Discovery, he analyzed the transport of goods to distant markets, competition between markets, and differences in quality:

"Some countries are skilled in producing certain goods. These goods are carried to other regions and distributed through exchange." (Ibn Khaldun, 2004, p. 288)

These insights present an early reflection of today's international marketing strategies and the concept of the global value chain.

Table 4: Trade Topics Discussed in the Muqaddimah and Their Levels of Emphasis

Thematic Headings	Classification by Topics	Level of Emphasis
Social Foundations of Trade	Meeting Needs, Division of Labor, Barter System	3
Contribution of Trade to Civilization and Urbanization	Trade Routes, Market Development, Growth of Cities through Trade	3
The Moral Role of the Merchant and the Element of Trust	Commercial Ethics, Reliability, Honesty, Warnings against Fraud	2
Relationship between the State and Trade	Taxation, Forced Purchases, State Intervention, Market Distortions	3
Regional and International Trade	Product Differentiation, Inter-Route Exchange, Distant Markets	2

Thematic Headings	Classification by Topics	Level of Emphasis
Social Consequences of Trade	Relationship between Prosperity and Decline, Connection between Consumption and Ostentation	2
Total		15

Source: Ibn Khaldun. (2004). The Muqaddimah (Trans. Z. Gündüz). Dergah Publishing. (Original work published 1377)

4.5 The Relationship Between Public Officials, Sales, Marketing, and Trade in the Muqaddimah

Ibn Khaldun's Muqaddimah contains pioneering insights not only in sociology and history but also in public administration and economics. In the work, the role of public officials is not limited to political and bureaucratic functions; it is also discussed in terms of regulating the economic structure, ensuring the security of trade, and maintaining the healthy functioning of markets.

4.5.1 The Role of Public Officials in the Economic Order

According to Ibn Khaldun, the survival of a state depends not only on its political authority but also on the justice, productivity, and sustainability of its fiscal system. At this point, public officials are not merely administrators but also guardians of the economy:

"The honesty of public officials ensures that trade is conducted safely. Otherwise, merchants become fearful, markets stagnate, and production halts." (Ibn Khaldun, 2004, p. 294)

In this context, the public official directly determines the fundamental marketing principles of trust, transparency, and stability.

4.5.2 State Intervention and Commercial Balance

Ibn Khaldun views direct state intervention in economic activities as harmful. In particular, when public officials begin to act like merchants—that is, when the state itself enters the marketplace—it disrupts the balance of marketing:

"When the government buys and sells goods in the market, it undermines private trade. Merchants incur losses, and bazaars become deserted." (Ibn Khaldun, 2004, p. 295)

This view represents an early expression of the modern economic defense of the free market against the "commercialization of the state."

4.5.3 Public Officials and Marketing Ethics

Ibn Khaldun argues that public officials should be fair, trustworthy, and lead modest lives in their economic relations with the public. Otherwise, they undermine public trust, leading to instability in sales and trade relations:

"The greed of officials, their pursuit of unjust gains, and their desire for enrichment corrupt the commercial structure." (Ibn Khaldun, 2004, p. 296)

Here, the point directly linked to the concept of marketing is the market confidence generated by public authority. The absence of such trust causes marketing channels to become obstructed.

4.5.4 The Relationship Between Public Officials and Merchants

Ibn Khaldun considers the involvement of state officials in private commercial activities and their establishment of interest-based relationships with merchants as one of the main causes of

social corruption:

"A public official who becomes a merchant's partner performs both his own duties and those of the state poorly. This mixture is disastrous." (Ibn Khaldun, 2004, p. 297)

This analysis serves as an early warning regarding issues that remain significant in modern public administration, such as conflict of interest, unethical public–private sector relations, and abuse of office.

Table 5: The Relationship Between Public Officials, Sales, Marketing, and Trade in the Muqaddimah

Thematic Headings	Explanation by Topics	Level of Emphasis
The Role of Public Officials in Economic Functioning	Ensuring trust, maintaining a fair order	3
State Intervention in the Market	Interference in buying and selling, direct state involvement in trade	3
Ethical and Moral Responsibility of Public Officials	Abuse of duty, pursuit of personal gain, social impact of ostentatious lifestyles	2
Public–Merchant Relations	Partnerships between officials and merchants, conflicts of interest	2
The Impact of Public Power on Marketing Dynamics	Ensuring or disrupting trust and stability in trade through state authority	2
Total		12

Source: Ibn Khaldun. (2004). The Muqaddimah (Z. Gündüz, Trans.). Dergah Publishing. (Original work published 1377)

5.CONCLUSION

Ibn Khaldun's Muqaddimah stands out not only for its historical and sociological analyses but also for its pioneering interpretations in the fields of economics, trade, and marketing. Although written in the 14th century, it presents many conceptual frameworks that remain relevant today. In this study, Ibn Khaldun's approaches to marketing, trade, and public officials were examined through thematic classifications and intensity analyses, providing a detailed evaluation of how he addressed these concepts.

First and foremost, marketing appears in Ibn Khaldun's economic thought indirectly yet in a highly multilayered way. His discussions on how the exchange of goods occurs within the chain of production, distribution, and consumption; the relationship between societal welfare and consumption habits; and his warnings that luxury consumption accelerates the decline of civilizations—all form the moral and sociological foundations of his understanding of marketing. According to Ibn Khaldun, economic vitality is not determined solely by the balance of supply and demand but is also directly related to people's needs, lifestyles, and cultural values. Therefore, his approach represents an early parallel to the psychological and sociological dimensions emphasized in modern marketing theories.

Trade, on the other hand, is addressed in a more direct manner in the Muqaddimah. Ibn Khaldun identifies the development of division of labor, urbanization, and economic growth as key dynamics of trade. However, for this development to be sustainable, political and social stability

are essential. The security of trade routes, respect for merchants' labor, fair taxation, and the non-intervention of public officials in the market are cited as prerequisites for the proper functioning of commerce. In this respect, Ibn Khaldun advocates for the idea of a free market while emphasizing that public authority should remain in a supervisory and regulatory position. The development of trade leads to increased prosperity; yet, when that prosperity turns into ostentation and luxury, society begins to weaken. This paradoxical relationship forms the economic dimension of his theory of cyclical social development.

The relationship between public officials, trade, and marketing constitutes one of Ibn Khaldun's most striking insights. According to him, public officials, while representing state authority, also shape the ethical foundations of market order. When officials tend toward bribery, force citizens into selling goods, or engage in mutual interest with merchants, they not only undermine economic trust but also the legitimacy of the state itself. Direct state intervention in the market leads to the collapse of trade, a decline in production, and ultimately social disintegration. Thus, Ibn Khaldun emphasizes that public officials must act justly, uphold financial morality, and maintain transparency in their commercial relations with the public. This assessment aligns closely with the principles of modern public economics and ethical governance.

In conclusion, Ibn Khaldun's Muqaddimah serves as a foundational text in understanding the historical roots of marketing, trade, and public–private sector relations. The principles he articulated remain highly relevant for grasping the origins of modern public administration, market regulation, and commercial ethics. By demonstrating that economic behaviors are directly linked to social decline and development, Ibn Khaldun emerges not only as a philosopher of history but also as a pioneering thinker in economics and governance. In this sense, the Muqaddimah is not merely a work for understanding the past but also a powerful reference for approaching contemporary problems through a historical lens.

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The Concepts of Trade, Sales, and Marketing in the Context of Kutadgu Bilig

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Abstract

This study comprehensively examines the historical evolution of trade, sales, and marketing through the lens of the 11th-century masterpiece *Kutadgu Bilig*, written by Yusuf Has Hacib. While these concepts are often viewed as products of modern digitalization and global economies, the text demonstrates that they have historically served as vital pillars for maintaining social structure and public welfare. The study concludes that *Kutadgu Bilig* offers a forward-thinking, universal approach that seeks to balance personal interest with the public good, shedding light on contemporary economic ethics.

Introduction Throughout history, the development of societies has been directly related not only to political or military achievements but also to the strength of their economic structures. As humanity transitioned from simple barter systems to complex social structures, economic relations evolved within specific ethical frameworks. In this context, *Kutadgu Bilig* (meaning "The Wisdom That Brings Happiness"), written during the Karakhanid period, stands out as a significant work.

Aim The primary objective of this study is to examine the historical development of trade, sales, and marketing and to comprehensively reveal how these concepts are addressed in *Kutadgu Bilig*. The study aims to evaluate this classic Turkish-Islamic text as a guide to ethical economics, public interest, and governance, emphasizing that economic behavior should be evaluated through the concepts of virtue, truth, and justice. Furthermore, it seeks to establish an interdisciplinary bridge by relating 11th-century insights to contemporary concepts such as ethical marketing, sustainable development, and public administration ethics.

Methodology This research relies on qualitative research methods, specifically utilizing descriptive analysis and thematic content analysis. Based on R. R. Arat's 2008 edition, the entire text was examined, and verses were divided into specific thematic categories including "the moral basis of trade," "honesty in sales," "trust in marketing," "state economic control," "public interest," and "wisdom and virtue". The study also applied text-based data analysis to examine the frequency and contextual meaning of concepts, allowing *Kutadgu Bilig* to be evaluated as a "system of values" combining philological analysis with modern social scientific analysis.

Key Findings Ethical Trade: Trade is a means of maintaining peace; "fair weights and measures" are emphasized as prerequisites for social welfare. Honesty in Sales: Sales are an ethical arena where a seller's word must be as accurate as their scales, paralleling modern "value-based sales". Marketing Ethics: The text advocates for "speaking sweetly" and "smiling" to win hearts, aligning with modern relationship-based marketing. State Responsibility: Public authority is the guardian of economic order, responsible for ensuring justice and protecting property. Wisdom: Economic foresight is praised; a wise trader knows "when to buy and when to sell," corresponding to modern risk management.

Conclusion *Kutadgu Bilig* systematizes economic ethics, viewing the individual not just as a producer or consumer, but as an ethical subject. The results show that trade is an ethical system for social stability, sales is a form of individual responsibility, and public officials are the guardians of economic balance. The work anticipates fundamental principles of modern social sciences, asserting that virtue and justice are the foundations of stability. It remains a universal resource, with its moral grounding aligning directly with contemporary "ethical leadership" and "corporate social responsibility".

Originality and Value This study offers a unique perspective by approaching *Kutadgu Bilig*

from an interdisciplinary context, reinterpreting historical verses using modern scientific categories. Its value is summarized in four points: Interdisciplinary Connection: It interprets a classical text in contemporary scientific language, bridging history, philosophy, and economics. Ethical Dimension**:** It highlights that economic behavior is an area of moral responsibility, not just benefit. Modern Relevance: It links historical principles to concepts like "social entrepreneurship" and "sustainable economy". Thematic Classification: The analytical classification of verses increases the depth of qualitative analysis. Ultimately, the study demonstrates that Yusuf Has Hacib's "wisdom-based state" model forms the basis of contemporary justice-centered economy concepts.

Key words: Kutadgu Bilig, Yusuf Has Hacib, Ethical Trade, Public Good, Economic Justice, Political Economy, Governance, Turkish-Islamic Thought, Sustainability
Jel Codes : M31, B15, K20, N25

1. Introduction

Kutadgu Bilig, written by Yusuf Has Hâcib during the Karakhanid period in the 11th century, is one of the most significant works of the Turkic-Islamic cultural world. The work was begun in Balasagun and completed in Kashgar, where it was presented to the ruler of the time, Tabgaç Buğra Khan. The title *Kutadgu Bilig* translates to “The Wisdom That Brings Happiness” and carries the characteristics of a *mirror for princes* (*siyasetname*). It is built upon fundamental moral and political principles such as ensuring social order, maintaining justice in governance, and encouraging individuals to act with a sense of duty (Ergin, 2004).*Kutadgu Bilig* is not merely a book on politics and governance; it is a multifaceted work enriched with themes such as the relationship between the individual and the state, the importance of knowledge and virtue, moral principles, social justice, and public order. In this work, Yusuf Has Hâcib clearly expresses what kind of administrative approach should be adopted to achieve peace for both individuals and society (Atsız, 2010).

The period in which the work was written corresponds to a time when the Turks were beginning to embrace Islam and experiencing major cultural and political transformations. Kıran (2024) notes that this era witnessed the creation of key works in Turkish cultural history—such as *Dîvânu Lugâti’t-Türk*, *Kutadgu Bilig*, *Dîvân-ı Hikmet*, and *Atabetü’l-Hakayık*. He emphasizes that *Kutadgu Bilig*, composed during a period when oral culture was still dominant, belongs to the Karakhanid era—the most significant successor of the Old Turkic Period after the Göktürks and Uighurs (Kıran, p. 267).

Kutadgu Bilig was written in the *mesnevi* poetic form and consists of 6,645 couplets. Using an allegorical narrative style, the work represents the ideal order of the state through four main characters: Kün-Toğdı (the ruler, symbolizing justice), Ay-Toldı (the vizier, symbolizing fortune), Ögdülmiş (the vizier’s son, symbolizing wisdom), and Odgurmış (the sage, symbolizing contentment and fate). Through these figures, the work discusses how social order should be established while emphasizing the impact of individual behavior on state governance (Kafesoğlu, 1995).

In conclusion, *Kutadgu Bilig* is both a reflection of its socio-political era and a masterpiece containing universal principles of governance and ethics that remain relevant today. The work is not only a historical document but also an enduring guide illuminating the development of both the individual and society.

1.1 Important Characters In *Kutadgu Bılıg*

Kutadgu Bilig (*The Wisdom That Brings Happiness*), written in the 11th century by Yusuf Has Hâcib in Karakhanid Turkish, is a *mirror for princes* (*siyasetname*) that explores themes of governance, individual-society relations, morality, and virtue through four allegorical characters. Each character symbolizes an abstract concept and supports the didactic structure of the work. These figures collectively represent both the ideal model of governance and the ideal human

type. The four central characters are Kün Toğdı, Ay Toldı, Ögdülmiş, and Odgurmış.

1.1.1 Kün Toğdı (Justice – The Ruler)

Kün Toğdı is the central figure of *Kutadgu Bilig*, symbolizing justice and representing the ruler in the work. The name is derived from *Kün* (meaning "sun") and *Toğdı* (meaning "rose" or "was established"), together translating to "The Sun Has Risen" or "The Sun Has Found Its Place." This symbolizes the enlightening and order-bringing nature of justice in society.Yusuf Has Hâcib presents justice as the most fundamental principle a ruler must possess. In this context, Kün Toğdı declares:

"If a man is unjust, the state will collapse; if he is just, the state will endure." (*Yusuf Has Hâcib, 2008, p. 98*)

As the embodiment of the ideal ruler, Kün Toğdı represents a leader who holds governing power and works for the welfare, order, and peace of his people.

1.1.2 Ay Toldı (Fortune – The Vizier)

Ay Toldı symbolizes happiness and divine fortune (*kut*). In ancient Turkic belief, *kut* refers to a divine right to rule, bestowed upon the ruler by God. Ay Toldı, the vizier, is the practical embodiment of this divine grace. The term *Ay* means "moon" or "light," symbolizing guidance, while *Toldı* means "has matured" or "has become full."Ay Toldı's mission is to serve the ruler with loyalty and to assist him in governing the state with justice. According to Yusuf Has Hâcib:

"When fortune and justice unite, people become happy. Ay Toldı is the symbol of this union." (*Yusuf Has Hâcib, 2008, p. 115*)

Ay Toldı stands out for his wisdom in state affairs and serves as a bridge between the ruler and the people, fulfilling the role of a trusted advisor.

1.1.3 Ögdülmiş (Wisdom – The Vizier's Son)

Ögdülmiş represents reason and intellect. He is the son of Ay Toldı and is portrayed as a learned, thoughtful, and mature character. In the text, Ögdülmiş is recognized for his wisdom and insight. Yusuf Has Hâcib views intellect as humanity's greatest guide, presenting Ögdülmiş as the embodiment of this principle.

A notable statement by Ögdülmiş highlights this theme:

"Reason is a light that dispels darkness. A mindless head is a burden to the body." (*Yusuf Has Hâcib, 2008, p. 142*)

Through this character, the author emphasizes the importance of education, knowledge, and intellectual guidance for the advancement of society.

1.1.4 Odgurmış (Fate – The Dervish)

Odgurmış symbolizes fate, death, and spiritual awareness. He is depicted as a dervish whose name means "awakened" or "enlightened." Odgurmış reminds individuals of the transience of worldly life and guides them toward truth and the afterlife.

One of his most profound sayings expresses his mystical and contemplative perspective:

"This world is an inn where travelers arrive and depart. The true homeland lies in the hereafter." (*Yusuf Has Hâcib, 2008, p. 165*)

Odgurmış adds a deep philosophical and mystical dimension to the work. Through him, Yusuf Has Hâcib emphasizes that individuals should prepare not only for worldly life but also for the eternal one beyond.

Table 1. Themes Addressed in *Kutadgu Bilig* and Their Frequency of Emphasis

Sections	Classification by Theme	Number of Sections (Approximate)
General Values and Philosophical Foundations	Happiness, Justice, Concept of Kut	5
Advice for the Ruler	Just Governance, Public Relations, Royal Ethics	10
Sections on Vizierate and Bureaucracy	Wisdom, Counsel, Use of Reason	8
Moral Values and Virtues	Honesty, Patience, Generosity, Moderation	7
Mystical and Religious Content	Renunciation of the World, Death, Awareness of the Hereafter	6
Themes on Education and Knowledge	Importance of Knowledge, Intellect, and Wisdom	5
Society and Human Relations	Friendship, Use of Language, Family and Social Norms	6
State Structure and Administrative Regulations	Functioning of the State, Division of Duties, Loyalty	4
Total		51

Source: Prepared through a thematic analysis of Yusuf Has Hâcib's work *Kutadgu Bilig*.

1.2 General Themes Addressed in *Kutadgu Bilig*

Kutadgu Bilig, written by Yusuf Has Hâcib in the 11th century, is not only a *siyasetname* or governance guide but also a multi-dimensional source reflecting the social, cultural, and economic structure of its time. Its primary goal is to demonstrate how justice, wisdom, happiness, and order can be maintained in a hierarchical structure extending from the individual to society and from society to the state. In this context, the work provides guidance not only on state administration but also on cultural and social norms affecting everyday life.

One notable aspect is the principle of mutual responsibility and harmony between the state and society. The ruler must be just and virtuous, while the people are expected to comply with this order to ensure societal sustainability. Yusuf Has Hâcib conveys this ideal order through four symbolic characters: Kün Toğdı (justice), Ay Toldı (happiness), Ögdülmiş (intellect), and Odgurmış (contentment), presented in an allegorical manner.

The work also addresses daily life and social norms, emphasizing family life, domestic order, and child-rearing. Values such as etiquette, mutual respect, generosity, and moderation are frequently highlighted, showing that the family, as the smallest societal unit, forms the foundation of the state.

Yusuf Has Hâcib also underscores the importance of laws and customary codes. Considering the society of the time, where traditions and customs were decisive, *Kutadgu Bilig* serves as a written guide for social norms. Details about ceremonies, feasts, table manners, hospitality, and religious or traditional celebrations provide valuable cultural and anthropological insights.

Other subjects in the text include divination, dream interpretation, health knowledge, hunting techniques, agriculture, animal husbandry, crafts, and folk practices, positioning the work as a primary source not only for governance models but also for folklore and cultural studies (Aça, 2017, p. 105).

Regarding economic life, *Kutadgu Bilig* contains significant guidance. Topics such as the

importance of trade, honesty in transactions, and the relationship between labor and production align with modern concepts of economic ethics. The author treats economic activity not merely as a source of income but as a tool to ensure societal justice. This approach, resonating with modern "social state" principles, reflects the work's visionary outlook.

1.3 The Importance of *Kutadgu Bilig*

Kutadgu Bilig is more than a philosophy of state or management manual; it guides individuals in the search for meaning, societal peace, and moral development. Presented to Karakhanid ruler Tabgaç Buğra Han in 1069–1070, it is one of the earliest comprehensive texts on politics, ethics, and wisdom in Turkish-Islamic culture.

1.3.1 Timeless Universal Wisdom

The importance of *Kutadgu Bilig* extends beyond its historical context. The work acts as a mirror for both contemporary rulers and modern readers to understand themselves and their society. Yusuf Has Hâcib presents wisdom as a responsibility not only for rulers but for every individual. In this sense, the text serves not only as a *siyasetname* but also as a guide on "the art of being human."

The text emphasizes that the ideal individual and the ideal state are interdependent, morally and intellectually. This concept parallels modern notions such as ethical leadership, responsible citizenship, and human-centered development (Demirtaş, 2017, p. 141). For example, the verse:

"If a person can govern himself, he is virtuous; if he cannot, what good is the land?" (KB, 2260) underscores self-discipline as a prerequisite for positively influencing society, aligning with contemporary values of individual awareness and public service.

1.3.2 The Triadic Relationship of State, Individual, and Morality

Yusuf Has Hâcib places justice at the foundation of the state, intellect in the ruler's guidance, and contentment in the people's happiness. This is not merely a governance model but a life philosophy. The four allegorical characters—Kün Toğdı (justice), Ay Toldı (happiness), Ögdülmiş (intellect), and Odgurmış (contentment)—form the pillars of this philosophy, resonating with modern principles of sustainable development, social justice, and ethical governance.

The following line exemplifies this multifaceted approach:

"Through knowledge, one becomes a ruler; through knowledge, one becomes a noble; through knowledge, every task is easy." (KB, 1310).
Here, knowledge is defined as both a political and social tool, anticipating contemporary understandings of the knowledge society.

1.3.3 Importance in Language, Culture, and Identity

Kutadgu Bilig also played a crucial role in institutionalizing written Turkish as a literary language. Written in the Uyghur script, the text demonstrates the literary richness and expressive power of Karakhanid Turkish. Thus, it represents a milestone in the development of the Turkish language (Aydın, 2020, p. 85).

As one of the earliest major Turkish texts after the adoption of Islam, it bridges Islamic culture and Turkish intellectual heritage, serving as a guide to familiarize society with religious and moral values (Erdoğan, 2016, p. 102).

1.3.4 Contemporary Value

Even in today's complex world, *Kutadgu Bilig* remains relevant. It teaches that rulers must be not only strong but also virtuous, just, and knowledgeable, while citizens should take responsibility to sustain social harmony. Modern democracies can trace the roots of ethical politics, civic consciousness, and public interest to this text.

2. The Treatment of Sales, Marketing, and Trade in *Kutadgu Bilig*

Yusuf Has Hâcib's work addresses not only political and ethical teachings but also economic principles. Concepts such as sales, marketing, and trade are presented within the framework of individual virtue and societal welfare, offering a pioneering perspective on integrating modern economic and business concepts into an ethical context.

2.1 Social Function and Moral Dimension of Trade

Trade is not merely the exchange of goods and services; it is also a mechanism to maintain societal peace and stability. Yusuf Has Hâcib emphasizes that merchants are foundational pillars of society, who must be trustworthy, honest, and careful in measurements. This approach reflects early notions of ethical trade, consumer trust, and brand reputation.

"When buying and selling, measure correctly; work with honesty, be virtuous, and earn *kut*." (KB, 3260)
Here, the merchant's attainment of *kut* (happiness and divine favor) is directly linked to honesty and fairness, paralleling modern concepts of ethical marketing and responsible supply chains.

2.2 Marketing and Customer Orientation

Although the term "marketing" is not explicitly used, principles of customer satisfaction, appropriate product offerings, and quality service are evident. Verses highlight the importance of maintaining good relationships with society:

"Speak sweetly, smile; if one serves the people with a cheerful face, they will wholeheartedly support him." (KB, 1835). This reflects early expressions of customer experience, service quality, and loyalty, emphasizing that marketing involves emotional and social connections, not just material exchange.

2.3 Wisdom and Risk Management in Trade

The work stresses the importance of knowledge, foresight, patience, and timing for merchants. Yusuf Has Hâcib views not only business acumen but also prudence and strategic timing as essential for successful trade:

"The merchant is wise; he knows the right time to buy and sell." (KB, 2742)
This parallels modern concepts of market analysis, timing strategy, pricing, and risk management, highlighting the importance of planning and financial foresight.

2.4 Economic Activity and Societal Welfare

Kutadgu Bilig advocates an economic understanding that prioritizes public benefit over personal gain. Merchants and producers are responsible not only for profit but also for maintaining societal order and trust. This approach anticipates modern concepts like social entrepreneurship, community-focused business, and inclusive economy:"If the people's hearts are broken, the state suffers; win the people's favor, and this is the way of trade and order." (KB, 2650)
This statement underscores both economic and social responsibility, emphasizing that business activities should align with the welfare of society.

Table 2. Classification and Coverage Intensity of Sales, Marketing, and Trade-Related Topics in Kutadgu Bilig

Sections / Thematic Areas	Classification by Topics	Number of Sections / Intensity
Economic Morality and Trade Ethics	Honesty, Fair Measurement and Weighing, Trustworthy Merchant	6
Social Responsibility in Commercial Relations	Considering Public Benefit, Customer Satisfaction	5

Wisdom in Leaders and Merchants	Decision-Making Based on Knowledge, Timing and Foresight in Trade	4
Marketing Approaches	Persuasion, Eloquent Speech, Art of Communication	3
Relationship Between Welfare and Economic Justice	Economic Balance and Income Justice for Social Peace	4
Work Ethics and Productivity	Sweat of the Brow, Earnings Through Labor, Avoiding Waste	5
State Administration and Financial Order	Public Finance, Competence and Merit of Officials	3
Total	—	30

Source: Yusuf Has Hâcib, *Kutadgu Bilig* (ed. R. R. Arat), Turkish Language Association Publications, 2008; Açа, 2017, pp. 107–112; Karahan, 2010, pp. 88–92; Yüce, 2018, pp. 65–80.

3. Sales Topics and Their Treatment in Kutadgu Bilig

Kutadgu Bilig is not merely a political treatise; it is a comprehensive advisory work that examines the relationships between individuals, society, and the state while evaluating economic activities from a moral perspective. Composed by Yusuf Has Hâcib in the 11th century in Balasagun, the work reflects the intellectual landscape of its era on matters ranging from state administration to social life, societal justice, and individual responsibility. In this respect, *Kutadgu Bilig* functions not only as a guide for governance but also as a moral compass shaping economic behavior.

In the text, sales are treated not merely as economic transactions but also as reflections of social trust, personal ethics, and religious responsibility. The seller is depicted as a person entrusted with the community's confidence. The essence of trade involves avoiding deception, earning a lawful living, and respecting labor. Yusuf Has Hâcib emphasizes:

"A person must place their heart on the scale when buying and selling; their word should be as true as their measure." (Kutadgu Bilig, Verse 2610)

This verse illustrates that sales carry not only material but also spiritual responsibility. Principles frequently emphasized in modern marketing ethics—such as honesty, transparency, and customer satisfaction—are similarly framed through moral values in *Kutadgu Bilig*. Contemporary value-based selling approaches find their historical roots in works like this (Kotler & Keller, 2016).

According to Yusuf Has Hâcib, sales are not merely a means of profit but also a stage for displaying one’s character. This perspective highlights the close relationship between personal ethics and economic behavior. The text stresses that a seller must be patient, trustworthy, fair, and considerate of societal welfare. These moral imperatives resonate with today’s socially responsible entrepreneurship principles:

"Be truthful in speech, do not tilt the scale; give what you receive with your heart, so that your gain may be blessed." (Kutadgu Bilig, Verse 3274)

Here, *Kutadgu Bilig* draws attention not only to sales techniques but also to the interpersonal dimension of selling. The trust between buyer and seller is regarded as a fundamental societal dynamic, as economic structures collapse in environments lacking mutual confidence. This approach aligns with modern concepts of corporate trust and ethical consumption.

The role assigned to the seller in the text parallels contemporary understandings of ethical professionalism. The approach encourages consideration of societal benefit alongside profit. Yusuf Has Hâcib asserts that the merchant must act justly, warning that deceit and fraud harm

not only the individual but society as a whole:

"One cannot swallow the bread earned through deception; the scale of one who takes the people's resentment goes awry." (Kutadgu Bilig, Verse 2681)

Thus, sales are viewed not only as a worldly source of income but also as an action carrying responsibility in the afterlife. The notion that trade must align with Islamic principles underpins the concept of lawful earning. In this way, the work presents an economic vision rooted in the moral and social codes of its time.

The moral and social framing of sales topics in *Kutadgu Bilig* elevates the work beyond a mere manual of governance. It becomes a literary expression of a society structured around economic ethics. Therefore, the text can serve as a significant reference for contemporary business practice and marketing ethics studies.

Table 3. Classification and Frequency of Economic and Sales-Related Topics in Kutadgu Bilig

Sections	Classification by Topics	Number of Sections / Approximate Number of Verses
General Moral and Social Topics	Ethical Trade, Halal Income Approach	6
Sections Related to Governance	Just Ruler, Justice and Economic Balance	5
Individual Morality and Virtue Topics	Truthfulness, Generosity, Contentment, and Sanctity of Labor	8
Sections Related to Public Welfare	People's Livelihood, Moral Rules in Buying and Selling	4
Direct Topics on Trade and Sales	Honesty in Transactions, Responsibility of the Seller	7
Administrative-Economic Warnings	Treasury, Taxes, Responsibilities Over Public Property	3
Total	—	33 (approx.)

Source: Yusuf Has Hâcib, *Kutadgu Bilig* (ed. R. R. Arat, 2008); Açа, 2017; Karaman, 2014. The numbers in the table are approximate, based on the thematic verses in the text.

3.1 Marketing Topics and Their Treatment in *Kutadgu Bilig*

Kutadgu Bilig, written by Yusuf Has Hâcib in the 11th century, is notable not only for its insights into political and administrative science but also for the principles it offers regarding the economic and social order of its time. Although the text does not contain a modern "marketing" theory per se, its emphasis on trade, the exchange of goods, respect for the consumer, and trust can be interpreted within a marketing context.

In particular, the character Ögdülmiş, who symbolizes knowledge and intellect, highlights the importance of performing beneficial and righteous deeds for society. This moral framework extends to the behaviors of producers and sellers. As one couplet states: "*Kişi mal kazanur, yemez halka berür; / Uda kişi tamgak bolur, halkka kerür*" (Arat, 2008, p. 475).
Here, it is expressed that earning wealth and sharing it with the community elevates the individual. This perspective positions a person not only as a producer or seller but also as an actor attentive to social benefit.

In *Kutadgu Bilig*, marketing topics are primarily addressed through moral principles. The essence of marketing is considered alongside concepts such as honesty, integrity, lawful

earnings, and societal welfare. Another couplet illustrates this: "*Kişi öz elin işine yiterse, / Anda ne mal ne de nam yiterse*" (Arat, 2008, p.213). This emphasizes that wealth and respect earned through one's own labor are both enduring and honorable. In the marketing process, the producer or seller should not focus solely on profit but must also earn society's trust and act according to ethical standards (Aça, 2017).

During Yusuf Has Hâcib's era, markets were largely urban-centered and based on small tradesmen. Accordingly, the seller's responsibilities toward customers are frequently highlighted in the text. Accurate measurement, fair pricing, and avoidance of deception are depicted as ethical marketing principles, paralleling the modern marketing emphasis on customer satisfaction and trust (Karaman, 2014).

Another notable aspect is that sales and marketing activities are linked not only to individual responsibility but also to public accountability. Ensuring societal welfare and enabling people to access fair and sufficient goods and services requires oversight by rulers. Yusuf Has Hâcib advises leaders to observe the marketplace, prevent opportunism, and maintain balance in economic interactions (Aça, 2017).

Table 4. Marketing-Related Topics and Their Treatment in *Kutadgu Bilig*

Thematic Sections	Classification of Topics	Treatment in Couplet Form / Number of Couplet Mentions
Ethics-Based Marketing	Honesty, Integrity, Halal Earnings	15
Social Responsibility and Fair Trade	Wealth Sharing, Public Benefit, Care for the Needy	10
Consumer Rights and Trust	Avoiding Deceptive Sales, Trust-Based Relationships	8
State Economic Oversight	Preventing Exploitation, Market Supervision, Fair Pricing Policies	6
Producer and Craftsman Ethics	Earning Through Labor, Justice and Measurement in Production	9
Marketing and Knowledge Relationship	Ensuring Fair Gains for the Knowledgeable Individual in Society	5
Marketing's Function for Society	Enhancing Welfare, Sustaining Social Order	4
Total	—	57

Source: The table was prepared by the authors using a thematic analysis method based on the *Kutadgu Bilig* text (Arat, 2008; Aça, 2017; Karaman, 2014).

3.2 Trade Topics and Their Treatment in *Kutadgu Bilig*

Yusuf Has Hâcib's *Kutadgu Bilig* goes beyond being a mere work on politics or ethics; it is a comprehensive text reflecting the social structure, economic relations, and value system of its time. In many sections, the work makes direct or indirect references to trade, production relations, the merchant and artisan classes, honesty in transactions, and the preservation of basic economic principles such as accurate measurement and fair trade. In this respect, *Kutadgu Bilig* serves not only as a guide for governance but also as a reference for normative principles guiding economic behavior (Arat, 2008).

Yusuf Has Hâcib does not view trade merely as a means of material gain. For him, commerce is essential for the peace and order of society. Halal earnings, respect for labor, and honesty should form the foundations of commercial life. In this context, the author depicts the merchant as an

ideal human type: truthful, careful with measurements, fair, and sharing profits justly. One couplet illustrates this perspective clearly:

"If the profit is halal, the person lives happily; he who accumulates wealth through lies ends up disgraced." (Kutadgu Bilig, Couplet no: 1341)

This couplet emphasizes that trade is not merely about material gain but is directly connected to one's morality. The author evaluates trade both individually and socially, highlighting the merchant's responsibility to society. Thus, trade in *Kutadgu Bilig* is considered a reflection of social ethics and a form of social control.

The work also stresses the importance of honesty in transactions. Warnings about accuracy in weights and measures shed light on common economic issues of the period. Yusuf Has Hâcib states:
"Keep your measures and scales accurate; set the balance straight; people will trust you, and blessings will increase." (Kutadgu Bilig, Couplet no: 2163)

This approach represents not only personal virtue but also the extension of the state's regulatory role. The state's intervention in commercial life is essential for both public justice and the preservation of trust. One of the responsibilities of the ruler, according to *Kutadgu Bilig*, is to guarantee this economic order.

Trade is also portrayed as shaping interactions among social classes. Yusuf Has Hâcib repeatedly emphasizes the responsibility of balancing the interests of rulers, the populace, and merchants. A society where trade is not conducted correctly will experience instability and loss of trust. Hence, the merchant is seen not merely as a seller but as a component of societal order.

In this sense, *Kutadgu Bilig* addresses trade from both moral and legal perspectives, making it a precursor to modern ethical trade principles. Trade is not merely a means to profit but a domain where societal harmony is maintained. Thus, trade becomes a field in which justice and equity are reflected in society (Aça, 2017).

3.3 Public Officials and the Relationship Between Sales, Marketing, and Trade in *Kutadgu Bilig*

Kutadgu Bilig is not only a political treatise but also a guide to public ethics, a manifesto for social order, and a rare text that examines public administration in its economic dimensions. In this respect, Yusuf Has Hâcib highlights that state officials bear direct or indirect responsibilities in sales, marketing, and trade relations, in addition to governance and justice.

The Role of Public Officials in Commerce: Supervising and Protecting
Public officials are depicted not merely as bureaucrats but as guardians of social harmony. The sustainability of trade, production, and public livelihood is linked directly to fair and transparent public authority. According to Yusuf Has Hâcib, a good public official must safeguard the economic well-being of the populace and ensure fairness in commercial transactions:
"Protect the people, safeguard their property, keep the measures right; act justly, and show mercy to the people." (Kutadgu Bilig, Couplet no: 2171)

The phrase "keep the measures right" implies commercial honesty and highlights the official's responsibility for economic regulation. Market supervision, price stability, and balance between producers and consumers fall within the public domain.

Economic Responsibility of Viziers, Advisors, and Envoys
In *Kutadgu Bilig*, the vizier represents wisdom and order. Responsible for the strategic operation of the state, these officials play a key role in maintaining economic stability. Policies managed by the vizier, security of trade routes, fair taxation, and facilitation for merchants are all interconnected (Aça, 2017). The author expresses this as:
"The vizier organizes affairs with wisdom; the people's wealth should not be wasted, and the treasury should remain full." (Kutadgu Bilig, Couplet no: 3211)

This illustrates how public duty is intertwined with economic oversight. Viziers are responsible for safeguarding both the treasury and the populace to ensure sustainable prosperity.

Envoys and advisors play important roles in promoting trade relations between states. In *Kutadgu Bilig*, envoys are depicted not only as political agents but also as economic representatives, overseeing foreign trade, market expansion, and promotion of new products. Marketing is not only about selling a product but also about offering value aligned with societal needs and values. In *Kutadgu Bilig*, this ethical dimension falls under the responsibility of public officials. The marketing process should avoid exaggeration, deceit, and misleading the public. Yusuf Has Hâcib advises that officials oversee this process to prevent public deception: *"It is wrong to deceive the people; can the state survive this way? Establish the market fairly, and keep the scale just."* (Kutadgu Bilig, Couplet no: 1655)

Here, the public official acts both as an ethical guardian and an economic regulator, since a corrupt market signals a corrupt society.State Wisdom as the Guarantee of Trade The vitality and security of commerce depend on the state's authority both domestically and internationally. Yusuf Has Hâcib advocates that the state encourages economic activity while combating unjust profit and opportunism. Public supervision, therefore, relies not only on legal but also moral and conscientious grounds.

In all these respects, *Kutadgu Bilig* strongly emphasizes that public officials, as well as individuals, carry economic responsibilities. This aligns closely with modern notions of "public economic ethics," illustrating the text's timeless relevance.

Table 5. Topics Concerning Public Officials, Sales, Marketing, and Trade and Their Frequency of Treatment in *Kutadgu Bilig*

Sections	Classification by Topics	Number of Sections
Ruler and Executive Profile	Just Governance, Trade for Public Benefit, and Social Welfare	6
Role of Viziers and Advisors	Rationality in Economic Decisions and Ethical Sales Principles	4
Public Relations and Official Reputation	Truthful Merchant, Responsibility Toward the Public	5
Training and Virtues of Public Officials	Honesty in Trade, Justice, Fair Earnings	7
Social Welfare Through Economic Activities	Relationship Between Trade and Social Order	3
Administrative Ethics and Socioeconomic Awareness	Compliance of Officials with Marketing Ethics	4
Total	—	29

Source: Yusuf Has Hâcib, *Kutadgu Bilig* (trans. T. Yıldırım, 2017); Arat, R. R. (2008). *Kutadgu Bilig: İnceleme-Metin-Sözlük*. Turkish Language Association Publications.

4.CONCLUSION

Kutadgu Bilig is not merely a political treatise or a book of advice; it is a unique work that provides a comprehensive perspective on the economic, social, and administrative structures of its time. Through this work, one can gain in-depth insights into the contemporary understanding of governance, the consciousness of public duty, and the functioning of societal structures. Particularly when examined through the relationship between public officials and commercial, sales, and marketing activities, it becomes clear that *Kutadgu Bilig* reflects an understanding that emphasizes both individual virtues and the public good.

The responsibilities assigned to public officials in the work are not limited to the execution of

state affairs. These individuals are also defined as key actors in maintaining social order, ensuring economic stability, and enhancing public welfare. In this context, public officials are positioned not only as part of the bureaucratic structure but also as morally responsible individuals. This approach is evident in areas such as marketing and commerce, which directly affect society.

In *Kutadgu Bilig*, trade is not evaluated solely as an economic activity; it is considered from moral, social, and administrative perspectives. Concepts such as honesty in trade, fairness in sales, and transparency in marketing form the core principles of the work. The adherence of public officials to these principles reinforces not only individual virtue but also the trust of the society they govern. Thus, a direct relationship is established between public virtue and economic ethics.Another significant aspect of the work is its approach to delineating the roles and responsibilities of public officials in sales and marketing processes, urging them to act responsibly. Compared to contemporary public administration principles, this approach presents a remarkably modern and sustainable governance model. It conveys a clear message that individuals in public service should be equipped not only with technical knowledge and skills but also with a sense of social responsibility and ethical sensitivity.

The communication between rulers and viziers with the public, their commitment to just governance, and their prioritization of social welfare necessitate that areas such as marketing and sales are also shaped within this ethical framework. In this regard, *Kutadgu Bilig* functions as a moral guide, reminding administrators of the importance of not only economic success but also societal harmony.

In conclusion, *Kutadgu Bilig* is one of the rare works in which public responsibility is examined intertwined with economic activities. It transcends its era, offering universal principles that can illuminate modern public administration, sales ethics, and marketing strategies. Positioning public officials not merely as lawmakers or regulators but also as guides, moral exemplars, and agents of social balance provides valuable contributions to contemporary governance understanding. In this respect, *Kutadgu Bilig* serves as a guide that goes far beyond being an ancient text, offering solid foundations for understanding modern human and societal relations.

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The Role of Television in Socio-Cultural Sustainability: Preservation and Promotion of Cultural Heritage

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Abstract

Introduction: Amid rapid globalization and digital change, preserving cultural heritage is vital to socio-cultural sustainability. As an accessible and influential medium, television plays a key role in transmitting cultural values and collective memory to wide audiences.
Aim: This study aims to examine how television contributes to the preservation and promotion of cultural heritage, and how it supports socio-cultural sustainability by maintaining and revitalizing cultural identity in both local and national contexts.
Method: The research adopts a qualitative content analysis approach. Selected television programs-including historical dramas, cultural documentaries, and regional content-are analyzed to identify their role in cultural transmission. In addition, secondary data from academic sources and policy documents are reviewed to contextualize the findings.
Findings: Television can effectively showcase both tangible and intangible cultural heritage. Well-crafted content promotes awareness and cultural identity, helping resist cultural homogenization. Yet, issues like commercialization and stereotyping hinder its full potential.
Conclusion: Television holds significant potential in fostering socio-cultural sustainability by preserving cultural narratives and making them accessible to diverse audiences. Nevertheless, realizing this potential requires responsible media policies, culturally sensitive content creation, and public broadcasting commitments.
Originality and value: This study provides a unique perspective by linking media studies with sustainability discourse. It highlights the strategic role of television not just as an entertainment tool but as a medium of cultural preservation, offering valuable insights for media professionals, cultural policymakers, and sustainability scholars.

Key words: cultural heritage, television, socio-cultural sustainability, media and identity, cultural preservation
Jel Codes: J18, J62, L82, M14

1. Introduction

The rapid transformation brought about by globalization, digitalization, and media technologies presents both threats and opportunities for the preservation of cultural diversity and the sustainability of social identities. As emphasized in international documents, cultural heritage is not merely a reflection of the past, but a dynamic resource through which societies construct their identities and transmit them to future generations (UNESCO, 2003). In this context, the preservation of cultural heritage is not limited to the conservation of physical structures or traditions; it also encompasses the reproduction of cultural values, narratives, and identity elements through media.

Television, as a powerful medium that serves both entertainment and public communication functions in modern societies, plays a central role in cultural transmission processes. While McQuail (2010) emphasizes television as a dominant medium in the construction of social values and identities, Hall (1997) draws attention to how media constructs identity through cultural representations. Television, particularly through historical dramas, documentaries, and local content, enables both tangible and intangible cultural heritage to be disseminated to broad

audiences, thereby contributing to the preservation of collective memory.

However, the impact of television on cultural heritage is not always positive. Some studies suggest that media content commercializes cultural values, leading to their superficial representation; and that through stereotyping and cultural reductionism, it distorts authentic narratives (Hesmondhalgh, 2013; Tomlinson, 1999). Therefore, in evaluating the impact of television on cultural heritage, it is essential to consider both the opportunities and the risks.

This study aims to examine the role of television in the preservation of cultural heritage and its contribution to supporting socio-cultural sustainability. It focuses on how television contributes to processes of cultural identity, social belonging, and memory construction; which types of content are most effective in this process; and what kind of media policies can support it. Thus, by exploring the intersection between media studies and cultural sustainability discourse, this research aims to provide strategic recommendations for media professionals and cultural policymakers.

2. Method

This study adopts a qualitative research design based on content analysis to explore the role of television in preserving and promoting cultural heritage. A purposive sampling method was used to select a range of television programs, including historical dramas, cultural documentaries, and regionally produced content, which are commonly recognized for their cultural significance. These programs were analyzed thematically to identify patterns related to cultural representation, identity construction, and heritage transmission. Additionally, secondary data-including academic literature, media reports, and cultural policy documents-were reviewed to support and contextualize the findings. This triangulated approach ensures a comprehensive understanding of how television contributes to socio-cultural sustainability through cultural mediation.

3. Theoretical and Conceptual Framework: Television, Cultural Heritage and Socio-Cultural Sustainability

Television operates as both a reflector and constructor of cultural heritage, functioning within a complex nexus of identity, memory, ideology, and socio-cultural sustainability. Stuart Hall's theory of representation underscores that media is not merely a passive conveyor of meaning, but actively constructs cultural narratives through encoding and decoding processes (Hall, 1997). In televisual practices, historical dramas and cultural documentaries do not simply depict cultural artifacts; they generate and negotiate collective identity-anchoring intangible heritage in shared symbolic forms.

Marshall McLuhan’s central tenet, “the medium is the message,” argues that the transformative power of television lies not in its content, but in the structural and sensory environment it creates (McLuhan, 1964). For instance, a cultural documentary may preserve heritage contentually, but the immersive temporal flow, the visual immediacy, and the broadcast rhythm shape how audiences collectively experience and internalize heritage. Thus, television reconfigures the social experience of memory, rendering cultural realism both immediate and mediated.

The political economy of media, as articulated by Hesmondhalgh (2013), highlights the commodification pressures within cultural industries. Television’s demand for profitability may incentivize simplified or sensationalized portrayals of heritage-potentially eroding authenticity and reinforcing homogenization. This underscores the tension between neoliberal media production logics and the mission of cultural preservation.

Benedict Anderson’s concept of “imagined communities” (1983) offers a pivotal framework: television contributes to the formation of national imaginaries by broadcasting shared symbols and stories that unify disparate audiences. A country’s historical series or festival coverage-though consumed in private-becomes a mass ceremony that reinforces a collective identity and shared temporal consciousness (Anderson, 1983).

Conversely, Uses and Gratifications Theory (Katz, Blumler & Gurevitch, 1974) frames

audiences as active agents selecting television content according to diverse needs-informational, emotional, identity-related, social, or escapist. When viewers seek heritage programming to reinforce cultural identity or obtain knowledge about their roots, such media engagement contributes intentionally to socio-cultural sustainability (Katz et al., 1974).

Henry Jenkins' participatory culture model expands this agency by revealing how audiences-particularly fans-transform television content into new cultural forms through fan fiction, meta-commentary, and community discourse. This active reinterpretation sustains heritage not merely as content but as an evolving living tradition (Jenkins, 1992).

From a media ecology perspective, television establishes environments in which culture is not only displayed but experienced. McLuhan's analysis suggests that the mere presence of television architectures-daily prime-time slots, communal viewing-reshapes temporal rhythms, collective attention spans, and cultural practices, thereby influencing how heritage is absorbed and valued (McLuhan, 1964).

On a historical-technological axis, McLuhan's "Gutenberg Galaxy" (1962) locates television within the transition to an electronic age, where print-based cultural hierarchies give way to audiovisual immediacy. In this new epoch, television becomes a primary mediator of cultural memory and identity, displacing earlier modes of heritage transmission embeddeddin text and ritual (McLuhan, 1962).

A concrete example: a nationally broadcast historical drama about cultural rituals can revitalize interest in endangered traditions by visualizing them in emotionally resonant narratives. Abstractly, this dramatization serves as a cultural mnemonic, aligning with Hall's concept of representation while also partaking in Anderson's communal imagination and Jenkins' participatory reinterpretation when viewers share and remix the themes online.

In contrast, repetitive reality shows with superficial cultural tropes illustrate Hesmondhalgh's concerns: when heritage is commodified without context, television contributes to cultural flattening rather than preservation.

Finally, this theoretical synthesis demonstrates that television's impact on socio-cultural sustainability is neither unidirectional nor stable. It is shaped by systemic structures (McLuhan, Hesmondhalgh), audience agency (Katz et al., Jenkins), and communal imaginaries (Anderson, Hall). Effective preservation, therefore, requires a deliberate alignment of media policy, creative production, and civic engagement to harness television's potential as a medium of cultural memory and identity.

4. Televisual Narratives and the Revitalization of Cultural Identity

Television, as a mass medium, plays a crucial role in shaping and revitalizing cultural identity through its narrative structures and representational practices. Beyond entertainment, televisual narratives-especially those embedded in historical dramas, cultural documentaries, and localized content-serve as powerful vehicles for cultural transmission and memory preservation (Hall, 1997; Jenkins, 1992). This section presents an empirical analysis of how television narratives contribute to the revitalization of cultural identity, using qualitative content analysis aligned with the methodological framework described earlier. The analysis focuses on specific case studies from different national contexts to demonstrate television's role in reinforcing and renewing cultural heritage.

The present analysis employs a qualitative content analysis methodology, a widely accepted approach in media studies for exploring how cultural meanings are constructed and communicated (Krippendorff, 2013). Selected television programs from diverse geographical and cultural backgrounds-including Turkish historical dramas, Canadian Indigenous documentaries, and South Korean regional programs-were systematically examined. These programs were chosen based on their explicit engagement with cultural heritage themes and their prominence in national television landscapes.

Data collection involved viewing full episodes, transcripts, and secondary reviews. The analysis coded for thematic elements related to cultural identity markers such as language, rituals, historical memory, and community values. Additionally, the representation of cultural authenticity versus stereotyping was scrutinized, guided by theoretical insights from Hall (1997) and Hesmondhalgh (2013). This approach allowed for an in-depth understanding of narrative strategies and their sociocultural impact.

In Turkey, historical dramas like “Diriliş Ertuğrul” have garnered massive domestic and international audiences. This series, centered on the founding narratives of the Ottoman Empire, engages deeply with themes of heroism, religious identity, and collective memory. By dramatizing key historical events and figures, it reconstructs a shared past that resonates with contemporary nationalist sentiments (Suner, 2010).

The series employs rich visual symbolism-traditional costumes, architectural aesthetics, and ritual ceremonies-to emphasize cultural continuity. Hall’s (1997) concept of representation is evident here, as the show mediates historical “truth” through selective storytelling, balancing myth and fact to reinforce Turkish identity. Moreover, the program's success in diaspora communities reflects Jenkins’ (1992) participatory culture, with fan communities online extending the narrative's reach and cultural significance.

However, Hesmondhalgh (2013) warns of potential pitfalls: “Diriliş Ertuğrul" has faced criticism for idealizing historical narratives and promoting a monolithic cultural identity, sidelining minority perspectives. This duality illustrates television’s ambivalent capacity to both revitalize and limit cultural identity.

Canadian television offers instructive examples of using media to support Indigenous cultural revitalization. Documentaries such as “Rumble: The Indians Who Rocked the World” foreground Indigenous contributions to global culture while reconnecting audiences with Indigenous histories, languages, and epistemologies (Smith & Hunt, 2015).

These programs incorporate oral histories, traditional music, and community storytelling practices, aligning with Anderson’s (1983) idea of “imagined communities” by fostering a shared Indigenous identity that transcends localized tribes. Importantly, the documentaries foreground Indigenous voices, counteracting historic marginalization and enabling self-representation, a critical aspect underscored by Hall (1997).

From a methodological standpoint, these documentaries utilize reflexive narrative techniques, blending personal testimonies with archival footage to engage viewers emotionally and intellectually. This approach corresponds with the Uses and Gratifications framework (Katz et al., 1974), as Indigenous and non-Indigenous audiences seek knowledge, connection, and cultural affirmation.

South Korea’s public broadcasting has developed localized cultural content aimed at preserving regional dialects, culinary traditions, and folk festivals. Programs like Arirang Story explore the cultural specificity of regions such as Jeolla and Gyeongsang provinces, thereby combating the cultural homogenization associated with urbanization and globalization (Kim & Lee, 2018).

This content embodies McLuhan’s (1964) assertion that television’s medium shapes social experience by providing immersive audiovisual storytelling that reinvigorates local heritage. For example, episodes showcasing traditional mask dances (talchum) do not merely document but actively stage cultural performance, inviting viewers into participatory modes of engagement.

The strategic focus on local culture enhances social cohesion and pride among viewers from those regions while educating a national audience, aligning with Jenkins’ (1992) notion of a participatory and co-creative media culture. However, media scholars caution that such programs must avoid exoticizing or commodifying local cultures, a concern emphasized by Hesmondhalgh (2013).

In the Azerbaijani context, television plays an increasingly strategic role in the preservation and

revitalization of national cultural identity, especially in the aftermath of geopolitical transformation and the restoration of territorial integrity following the Second Karabakh War (2020). Public broadcasters such as AzTV and İctimai Television (İTV) have actively engaged in cultural heritage promotion through dedicated programs and documentaries that foreground both tangible and intangible heritage. Programs such as "Xarı Bülbül" and "Ana Kelmesi" on AzTV exemplify efforts to document and celebrate national music traditions, oral literature, and regional dialects. These productions align with Hall's (1997) theory of cultural representation, presenting identity not as fixed, but as constructed through mediated narratives. The choice of symbolic titles - "Xarı Bülbül," for instance, referring to a flower endemic to the Karabakh region-highlights the emotional and territorial dimensions of heritage, reinforcing collective memory tied to specific geographies. Moreover, cultural documentaries such as "İrsimiz" (Our Heritage) represent a deliberate attempt to archive and narrate Azerbaijani cultural practices, crafts, and rituals for both national and international audiences. These documentaries contribute to the intergenerational transmission of knowledge, echoing McLuhan's (1964) emphasis on the sensory and immersive potential of audiovisual media in cultural experience. Following the liberation of formerly occupied territories, Azerbaijani television has taken an active role in the cultural reconstruction of Karabakh. Documentaries and televised reports about the restoration of historical monuments, musical performances in Shusha, and coverage of archaeological expeditions serve not only informational purposes but also symbolic functions. They reaffirm national continuity and cultural sovereignty, invoking Anderson's (1983) concept of "imagined communities" through a renewed national narrative of resilience and return. Additionally, the Turkish series "Diriliş: Ertuğrul", while not produced in Azerbaijan, has gained significant popularity among Azerbaijani audiences and diaspora communities. The show's themes of Turkic unity, Islamic values, and historical heroism resonate with shared cultural imaginaries. Online fan communities and dubbed broadcasts in Azerbaijani illustrate Jenkins' (1992) notion of participatory culture, where audiences engage with transnational heritage narratives in ways that reinforce their own cultural identities.

The five case studies collectively demonstrate television's multifaceted role in cultural identity revitalization. They exemplify how televisual narratives can create "imagined communities" (Anderson, 1983), foster collective memory (Hall, 1997), and promote active audience participation (Jenkins, 1992).

Moreover, the balance between cultural authenticity and commodification emerges as a recurrent theme. While televisual narratives can empower communities by affirming heritage, they risk reinforcing stereotypes or simplifying complex identities for mass consumption (Hesmondhalgh, 2013). This duality necessitates careful media policymaking and culturally sensitive production.

These findings also emphasize the importance of audience agency. According to Uses and Gratifications Theory (Katz et al., 1974), viewers are not passive recipients but engage selectively, influencing how cultural narratives impact identity formation. For instance, diaspora audiences of Diriliş: Ertuğrul actively negotiate their cultural belonging through fan forums and reinterpretations (Jenkins, 1992).

Television's temporal and aesthetic affordances-highlighted by McLuhan (1964)-facilitate immersive storytelling, enabling viewers to experience cultural rituals, history, and language dynamically. This immersive quality can enhance cultural transmission more effectively than text-based media, especially for intangible heritage elements like oral traditions and performance arts.

Televisual narratives possess significant potential to revitalize cultural identity by mediating heritage through accessible, emotionally resonant, and community-centered storytelling. Historical dramas, documentaries, and regional programs each play distinct but complementary roles in sustaining socio-cultural continuity.

However, realizing this potential depends on navigating the tensions between authenticity and commodification, balancing diverse cultural representations, and fostering active, participatory

audiences. Media producers and policymakers must prioritize culturally informed content creation and encourage inclusive narratives to harness television's power for sustainable cultural heritage preservation.

Future research should further explore digital and transmedia extensions of televisual narratives, particularly how streaming platforms and social media reshape cultural identity practices globally.

5. Conclusion

In an era marked by rapid globalization, digital transformation, and shifting socio-political landscapes, the preservation and revitalization of cultural identity through media, particularly television, have assumed renewed significance. Television's capacity to function as both an entertainment medium and a cultural repository situates it at the forefront of contemporary efforts to sustain cultural heritage in its myriad forms. This dual function underscores the medium's unique position in bridging past and present, local and global, tangible and intangible cultural dimensions.

The analysis and discussion presented throughout this study highlight how televisual narratives actively participate in the ongoing construction and reinforcement of cultural identities. Through dramatized histories, documentary storytelling, and localized content, television engages audiences emotionally and cognitively, fostering a sense of belonging and continuity. This process is not unidirectional; rather, it reflects a dynamic interplay between producers, texts, and audiences, where meanings are negotiated, contested, and reinterpreted across different social and cultural contexts. The contemporary media environment, therefore, operates as a complex cultural arena where identity is both preserved and transformed.

The globalized media landscape presents both opportunities and challenges for cultural sustainability. On one hand, television allows for the widespread dissemination of cultural narratives, enabling diasporic communities to maintain connections with their heritage and allowing cross-cultural dialogues to emerge. On the other hand, the risk of cultural homogenization, commodification, and stereotyping remains ever-present. The tension between these forces necessitates a critical engagement with media production practices, content strategies, and policy frameworks to ensure that cultural representation remains authentic, inclusive, and empowering.

One of the paramount contributions of television to cultural sustainability is its ability to preserve intangible cultural heritage elements such as language, oral traditions, rituals, and performance arts. Unlike textual or static archival forms, televisual media harness audiovisual storytelling's immersive qualities, facilitating experiential learning and emotional resonance. This aspect is particularly crucial in contexts where traditional cultural practices are threatened by urbanization, migration, or generational shifts. By documenting and dramatizing such heritage, television contributes to intergenerational transmission and cultural revitalization.

Moreover, television's role extends beyond mere preservation; it actively participates in the re-imagination and reinterpretation of cultural narratives. The medium's storytelling techniques often involve blending historical facts with contemporary sensibilities, thus enabling cultures to evolve while maintaining continuity. This creative reworking fosters cultural resilience, allowing communities to assert their identities in the face of external pressures and internal transformations. The capacity to renegotiate identity through televised narratives affirms culture as a living, adaptive process rather than a static relic.

From an international perspective, the significance of televisual cultural preservation gains further complexity. As media content crosses borders more fluidly than ever, cultural representations are exposed to global audiences, influencing perceptions and intercultural understanding. This transnational circulation can enhance cultural appreciation and solidarity but also risks misinterpretation and appropriation. Consequently, international collaboration among media producers, cultural institutions, and policymakers becomes essential to facilitate

responsible and respectful representation that honors cultural specificity while embracing global dialogue.

The rise of digital technologies and streaming platforms introduces additional layers to this discourse. New media environments offer unprecedented possibilities for interactive and participatory engagement with cultural content, enabling audiences not only to consume but also to co-create and disseminate cultural narratives. These developments hold promising implications for cultural sustainability by democratizing cultural production and fostering diverse voices. However, they also complicate issues of authorship, authenticity, and control, demanding novel regulatory approaches and ethical considerations.

This study contributes to the academic discourse by illuminating the strategic role of television in the preservation and promotion of cultural heritage within the framework of socio-cultural sustainability. By bridging media studies with cultural sustainability scholarship, the research underscores the interdisciplinary nature of addressing contemporary cultural challenges. The findings advocate for a holistic understanding of television not simply as a vehicle for entertainment but as an active agent in shaping cultural memory, identity, and continuity.

Furthermore, the study's methodological approach-combining qualitative content analysis with contextual policy review-provides a robust framework for future research. It invites scholars to explore diverse cultural contexts, media formats, and audience practices to deepen understanding of media's impact on cultural sustainability globally. The integration of empirical analysis with theoretical insights fosters a nuanced comprehension of the complex processes involved in cultural transmission and revitalization through media.

Looking ahead, emerging trends suggest several promising avenues for further inquiry and practice. The increasing prominence of indigenous media productions and local content initiatives signals a shift toward more inclusive and pluralistic cultural representation. Such developments challenge dominant narratives and contribute to decolonizing media spaces, reinforcing the importance of community-driven storytelling. Additionally, the growing integration of artificial intelligence and immersive technologies in media production offers new tools for cultural preservation, enabling virtual reconstructions, interactive archives, and augmented heritage experiences.

At the same time, the sustainability of these efforts depends on supportive policy environments that prioritize cultural diversity and media pluralism. Public broadcasting services, cultural funding bodies, and regulatory frameworks must collaborate to safeguard the conditions necessary for authentic cultural expression. Media literacy and critical consumption practices also play vital roles in empowering audiences to engage with cultural content thoughtfully and discerningly.

In conclusion, television remains a vital medium in the ongoing endeavor to sustain and revitalize cultural identity amid the complexities of the modern world. Its narratives carry the potential to bridge temporal, spatial, and cultural divides, fostering connections that transcend individual communities and contribute to a richer, more diverse global cultural fabric. This study affirms that sustaining cultural heritage through televisual media is not merely an act of preservation but an active, creative, and collaborative process that holds profound implications for social cohesion, intercultural dialogue, and cultural democracy.

As societies continue to navigate the challenges posed by globalization, technological change, and shifting cultural dynamics, the strategic deployment of television as a tool for cultural sustainability will remain essential. This research provides a foundation for understanding these dynamics and underscores the need for ongoing scholarly attention, policy support, and creative innovation to realize television's full potential in nurturing the world's cultural heritage for generations to come.

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Municipal solid waste collection in the city of Rome (Italy): an analysis

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Abstract

Introduction: Separate collection of the municipal solid waste in the city of Rome represents a key issue due to the urban scale (urban surface area equal to 1287 km^2) and the total amount of waste produced (approximately 1,690,000 tons/year).
Aim: An in-depth analysis has been developed to optimize the delivery of waste to collection centres. Furthermore, the present research has highlighted how the collection centres should distributed within the city and, on the basis of data provided by Municipality, waste materials that should be advantageously recycle as a part of the Life Cycle Assessment (LCA) were identified.
Methods: The analysis proceeds with the calculation of the centroids (using the discrete system's formula) of the total population, the separate waste collection and positioning of collection centres overlapping, all the obtained results, in the map of the city.
Findings: The solution proposed by the Municipality has been taken into account, which includes achieving 65% of separate collection and 35% disposal via incineration. Authors believe that to reach such value of separate waste collection it will be necessary to reorganize the collection system throughout the city.
Conclusions: The waste collection system in the municipality of Rome is not optimized, in particular the collection centre are located in semi-central areas and they are not homogeneously distributed across the urban territory. Additionally, the planned incinerator is located in the area furthest from the historic center (25 km).
Originality and value: A comparison with the situation regarding final waste disposal and collection systems in other major European cities has been discussed.

Keywords: Municipal Solid Waste, City of Rome, Waste disposal, Recycling systems, Collection centres, Waste sorting.
Jel Codes: L97, O14, O18.

1. Introduction

The contemporary understanding of cities as complex systems can be traced to the intellectual and policy ferment of the 1960s, a pivotal decade for urbanism worldwide. In the United States of America, large metropolitan areas underwent extensive infrastructural programmes, while many European cities experienced rapid demographic and spatial expansion. Several of today's enduring urban challenges—uneven development, socio-economic polarisation, and spatial segregation—can be viewed as the long shadow of those transformations and their institutional legacies ([1]). This shift in perspective was not merely semantic: it reframed cities from static artefacts to dynamic, interdependent processes unfolding across space and time.

In the United States, the complex-systems view emerged in part as a reaction to top-down urban renewal. Building on Weaver's notion of "organised complexity" ([2]), early urban theorists argued that the everyday life of the city is patterned not by simple cause-and-effect but by interacting, adaptive behaviours. The most influential early articulation is in [3], which advanced

two claims that remain foundational. First, that organised complexity is the crucial lens through which citizens and analysts can apprehend the social and spatial "fabric" of large cities. Second, that a process-centred methodology—focusing on flows, interactions, and feedback rather than on static forms—offers a better route to understanding how cities actually work. This orientation encouraged observation and inference from local "clues" to city-wide regularities, anticipating what are now routine multi-scale analyses in urban studies.

In developing countries, the complex-systems perspective took shape around urgent, practical challenges: the growth of informal settlements and slums ([4]), the chronic shortage of affordable housing, and the strains on health, education, services, and mobility systems. These concerns broadened the analytical field to include the interdependence of urban infrastructures and social outcomes. Crucially, they also shifted emphasis from one-off "fixes" that often reproduced problems, to approaches attentive to neighbourhood-scale evolution and capacity building, acknowledging that local interventions can propagate non-linear effects across the broader urban system ([5]).

The evolution of ideas about organised complexity opened onto the wider conceptual family of complex adaptive systems. Natural ecologies and human social interactions are canonical examples, but the same logic applies to many socio-technical systems. In urban analysis, the complex adaptive systems view provides a language for describing how micro-level behaviours produce emergent macro-patterns, why interventions can have counter-intuitive consequences, and how systems learn or lock-in over time [8]. It also aligns with network-centred approaches that analyse cities as overlapping graphs of physical infrastructures, social ties, information flows, and institutional relations [9]. Together, these perspectives have supported the empirical discovery of urban scaling regularities—statistical patterns showing how diverse urban indicators change systematically with city size—thus linking the qualitative intuition of organised complexity to measurable laws [10].

Against this backdrop, we characterise urban complexity through five properties that typically manifest, to differing degrees, in city systems ([6]):

- *heterogeneity*. Cities are intrinsically diverse in social composition, economic activity, and spatial form. On the positive side, heterogeneity underwrites specialisation, knowledge spillovers, and a broad portfolio of capabilities; on the negative, it often coincides with inequalities between neighbourhoods. Spatial heterogeneity is equally salient: some districts mix land uses (commercial, industrial, residential) while others remain mono-functional; some public spaces (squares, parks, streets) are intensely and diversely used, others are under-utilised. Recognising heterogeneity helps diagnose where advantages concentrate and where vulnerabilities persist.
- *interconnectivity*. Urban subsystems—housing markets, transport, services, public finance, health, and education—are tightly coupled. A perturbation in one node or layer propagates through others as individuals and organisations adapt, creating feedback loops that alter the very conditions from which they arose. Domains that appear distinct (e.g., economic development and public health) are linked via spatial exposure, access to services, and municipal budgets. Because complex systems are dynamical, these reverberations matter: an intervention rarely "stays in its lane" but resets behaviours and incentives across the network.
- *scaling*. Urban characteristics change with scale, typically operationalised by population but

also by built area or network extent. Larger cities exhibit higher densities, more intense pressure on infrastructures, and larger absolute environmental externalities; they also tend to deliver superlinear returns in innovation and interaction opportunities. Scaling thus reorganises the distribution of benefits and costs across sizes and morphologies of cities, shaping both what policy can achieve and which trade-offs must be managed [10].

- *circular causality*. Causes and effects in cities are mutually constitutive. For instance, service provision can attract households, which expands demand, which then justifies further provision—or, conversely, a negative spiral can take root. Planning must therefore reckon with path dependence and feedback: without designing for virtuous cycles (e.g., coupling transport improvements with land-use strategies and affordability safeguards), well-intended measures may shift problems rather than solve them.
- *adaptive evolution*. Cities are not static equilibria but evolving processes. Demography, technology, institutions, and preferences co-evolve, so actions planned today must remain effective under tomorrow's conditions. This dynamic view reframes the city less as an object to be optimised once, and more as a system to be steered—through learning, monitoring, and iterative adjustment—towards resilient and equitable trajectories over time [8], [9].

Taken together, these properties imply that analysis must move beyond inventories of structures to models of processes and interactions. They also stress that robust urban policy requires sensitivity to scale, feedback, and heterogeneity, and that evaluation should consider not just immediate outputs but system-level adaptations and second-order effects. The complex-systems lens therefore serves both as a diagnostic (to reveal how local mechanisms aggregate) and as a design paradigm (to craft interventions that harness rather than fight complexity).

2. Factors of urban evolution

Urban transformations arise from a constellation of forces that shape the life of cities, both external and internal, and they operate for multiple reasons—historical, political, economic, social, geographical, and environmental. These drivers rarely act in isolation. Rather, they combine, reinforce, or offset one another at different speeds and intensities depending on the prevailing conditions of a given period, thereby producing demographic and socio-economic change and, often, territorial expansion. It is helpful to think of these forces as the "engines" of urban evolution. Some are global in scope—macroeconomic cycles, technological shifts, financial integration, long-distance migration, or climate risks—setting broad development trajectories for cities and regions. Others are local—governance quality, regulatory frameworks, land-use institutions, housing markets, civic capacities, and the inherited morphology of the built environment— shaping a city's internal structure and the pattern of its everyday relations. From among the many possible drivers, we highlight a few that have recently proved especially consequential.

A first phenomenon is the emergence, in many large cities, of what has been described as an *undifferentiated urban space* ([7]): a field in which access to goods, services, and opportunities is distributed across multiple locations, rendering fewer functions exclusive to the historic centre. Improvements in transport connectivity, logistics, and digital intermediation have weakened the old premise that only central districts can support certain activities. For residents and firms, space is increasingly perceived not as a fixed assignment of functions but as an opportunity surface on which comparable resources can be reached from multiple points. This does not necessarily

imply a negative homogenisation; rather, it changes the organisational logic by which citizens and businesses choose locations. At the local level, this dynamic has supported the development of neighbourhoods as we increasingly experience them today—self-containing areas with a sufficient density and diversity of everyday amenities. Within such districts, most routine needs can be met without extensive travel, a condition often referred to as *functional mixité*. The capacity to combine housing, retail, small workplaces, schools, healthcare, and public spaces within walkable catchments alters mobility patterns, underpins local economies, and encourages a more fine-grained temporal use of the city.

A second pair of phenomena—competition and cooperation—might appear contradictory but in practice coexist and, over time, tend towards a workable balance. This hybrid condition is frequently labelled "coopetition" ([11]). Urban competition follows principles familiar from economics: cities seek to attract initiatives, talent, capital, and investment, often in comparison with other settlements of similar rank or role in the urban hierarchy ([12]). In its canonical formulation, this rests on the hypothesis of an "indifferent space", in which the location of activities is relatively footloose with respect to territorial constraints and can therefore be guided by competitive advantages. Such advantages may be expressed through socio-economic variables (availability and cost of labour, fiscal regimes, market accessibility, research and innovation assets) and through urban quality, which has a dual significance. On the corporate side, urban quality encompasses conditions that matter for business and administration—regulatory clarity, reliability of utilities and transport, digital infrastructure, and the efficiency of public services. On the personal side, it refers to the lived conditions of households—safety, housing affordability and quality, accessible education and healthcare, cultural and recreational opportunities, environmental quality, energy efficiency, and a broadly sustainable urban metabolism. In public perception, these dimensions interweave: firms consider the attractiveness of a city to their employees; households consider the vitality of the local economy. The two reinforce one another in cumulative causation.

Cooperation overlays and moderates competition. Cities rarely succeed in isolation; they operate within wider systems of exchange in which joint initiatives—regional transport authorities, shared research platforms, coordinated industrial strategies, cultural and tourism circuits, and inter-municipal service provision—can enlarge the opportunity set for all participants. Through such cooperation, cities reduce duplication, pool risks, and leverage complementarities. In practice, coopetition manifests as selective alliances among otherwise competing places: a metropolitan area may compete globally for investment while coordinating locally on infrastructure, environmental standards, or land-use corridors. The balance between these impulses is not fixed. It adapts with changing economic cycles, technological paradigms, and political priorities, and it is mediated by institutions capable of aligning incentives across jurisdictions.

A third theme concerns interactions and the networked organisation of metropolitan regions. As will be shown below, cities (or their constituent parts in metropolitan settings) can be understood as nodes embedded in overlapping networks—transport, logistics, energy, digital communications, knowledge exchange, social ties—through which people, goods, information, and capital circulate. These networks generate both long-distance (global) and short-distance (local) relationships. Long-distance links connect cities into international production systems, research collaborations, migration streams, and cultural markets; short-distance links organise

commuting patterns, service catchments, neighbourhood social infrastructures, and everyday consumption geographies. The interplay between these scales contributes to the tendency toward aggregation—densities, clusters, corridors—and to the internal structuring of territory—centres, sub-centres, edges, and interfaces. Network position matters: centrality can confer advantages in accessibility and visibility; peripherality can impose time and cost penalties unless mitigated by targeted infrastructure and governance.

These interactions shape not only spatial patterns but also temporal dynamics. Peaks and troughs in flows, diurnal and weekly rhythms, seasonal cycles, and longer technological waves all influence how networks are used and where bottlenecks arise. Consequently, interventions in one layer (for example, improving a rail corridor or upgrading broadband) often have cross-layer effects: reshaping labour markets and housing demand, reorienting retail and logistics, or changing the competitive stance of particular districts. Because these effects are mediated by behaviour, expectations, and institutional responses, they are rarely linear. Path dependence and threshold effects are common: incremental changes may cumulate until a new pattern locks in, or a modest adjustment at the right leverage point may trigger a larger reconfiguration.

For policy and planning, the implications are twofold. First, strategies should recognise the co-presence of competition and cooperation, designing instruments that enable places to differentiate where appropriate while collaborating where scale and spillovers make joint action more effective. Second, interventions should be evaluated for their network consequences: not only for direct outputs but also for how they alter flows and opportunities across the urban system. In this sense, the factors discussed above—undifferentiated space and functional mixité; the logics of competition and coopetition; and the organisation of interactions across local and global networks—provide a coherent lens for interpreting contemporary urban transformation. They remind us that cities change through the combined action of multiple engines, operating at different scales and speeds, and that successful governance must engage with that complexity rather than attempt to simplify it away.

3. Networks application to city planning

The representation of a city with a network allows, beyond the type of graph in use, to simultaneously consider multiple relationships and study strengths and weaknesses of reality through the analysis of the model. In general, the choice of modelling implies risks of error and propagation of them. The construction of a database is, therefore, essential for the development of a sufficiently reliable and verifiable model.

Currently, the use of network models is widespread in urban studies for analysis purpose, but recently is also gaining ground in planning. On the one hand, it is, in fact, certainly suitable to represent a situation concisely but comprehensively; on the other hand, it is now possible to continue to exploit the model also for planning purposes, because network tools have reached a level of development that guarantees reliable predictions on the results of any interventions studied on the model and only subsequently implemented in the real world.

For planning examples we refer to the literature available; but we choose to reproduce here two examples, beginning from one of the significant drawing of Rome City Masterplan (Figure 3.1), as we will take this city for a specific application analysis in the waste organization. The new plan (2008) led to a new different image of the city and the role of the parts. The idea of centralities becomes dominant, notwithstanding the presence of an predominant historical city

centre and of the Vatican, which tend to obscure any other pole. Nonetheless, managers and planners opted for a revolution in the idea of the city, moving towards a new future balance within the parts and the exchanges among them.

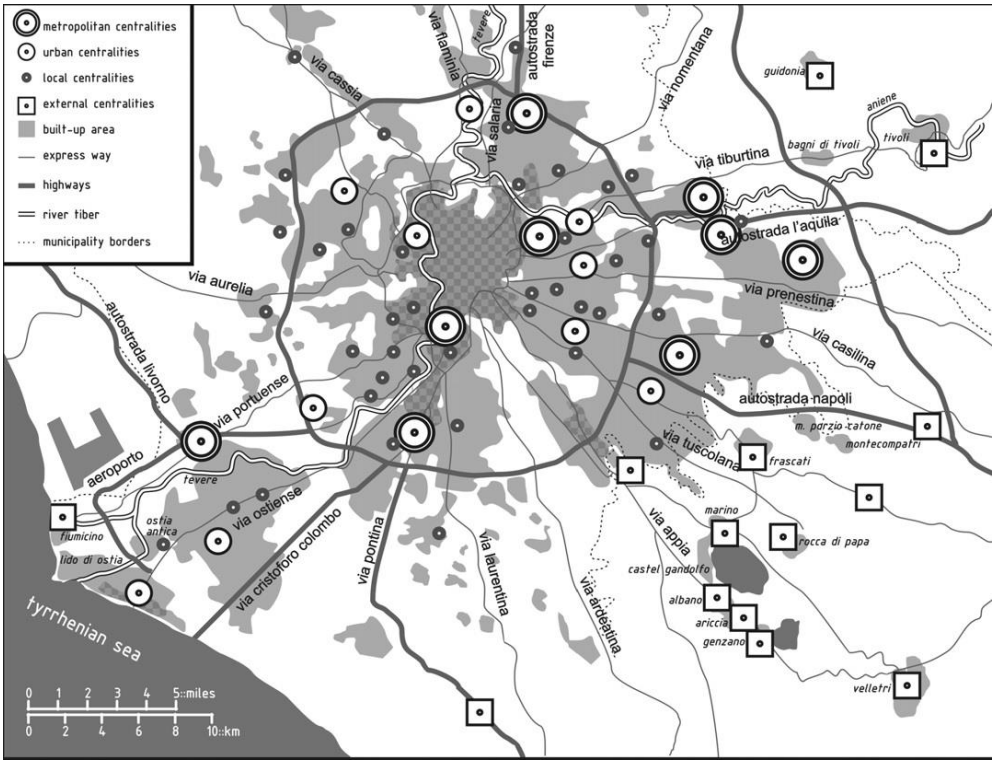


Figure 3.1. Rome City Plan (2008).

As a second example, we have chosen the Greater London and its latest masterplan (2016), which particularly interesting. It should be noted that the last traditional Master Plan for London dates back to 1944, and thereafter only strategic plans have been prepared and developed. The 1944 Plan (designed by Abercrombie) was a response to the issues arising before and during the war: overpopulation, poor urban quality, poverty and high traffic. The plan hinged on the creation of the new suburban towns, a crown of local centralities around the city to be greatly enhanced, in order to achieve a redistribution of the population and significantly increase the quality of life; but above all, the main targeted role was to make them cores for the genesis of new social, administrative and economic districts. As a result of the deregulation policy, since 1944, London plans have changed in nature, abandoning a traditional planning system. The plans now indicate the strategy and contain ideas for the major directions of expansion, areas to be developed, and guidelines to be implemented. The latest Master Plan (2016) envisions a strong decentralization with the further enhancement of several urban centres, predicted as catalysts for urban economy and social growth of the entire city for the next two decades. Figure 3.2 below shows the main concept of the London City Plan (2016).

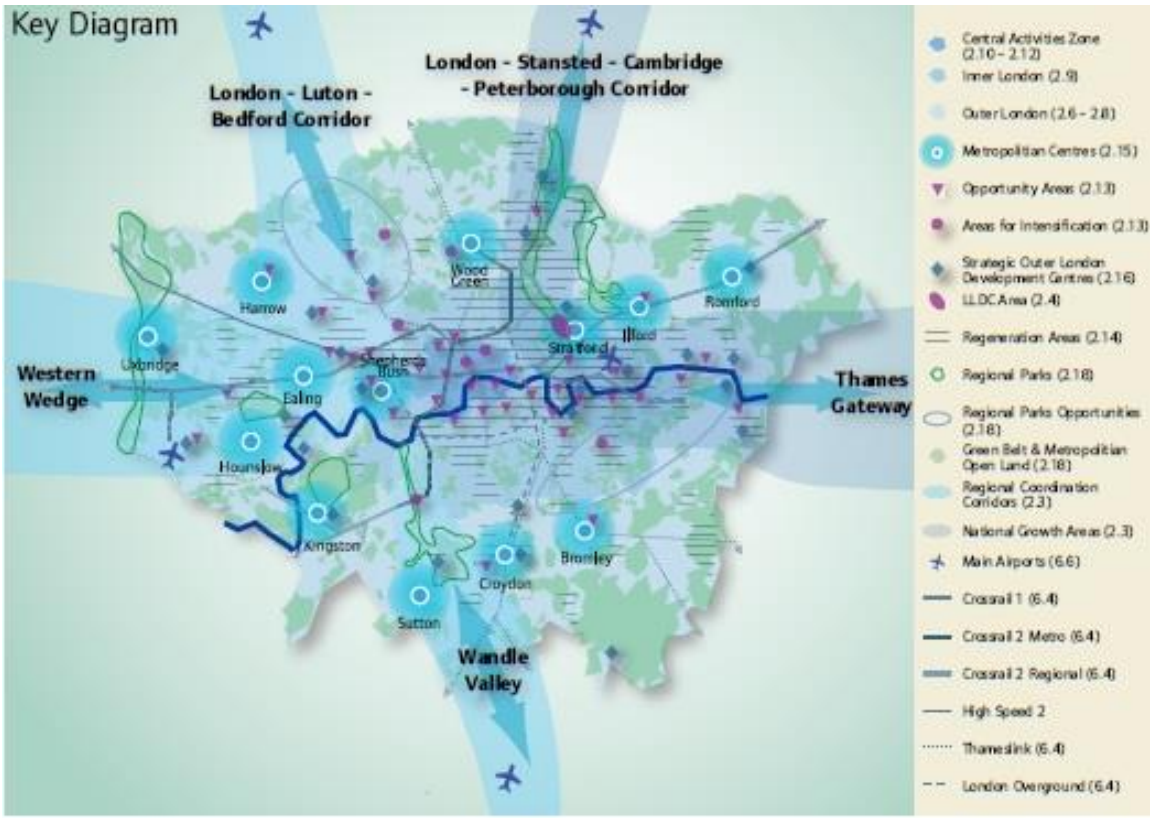


Figure 3.2. London City Plan (2016).

4. Municipal solid waste collection: data and analysis

Here we consolidate the evidence on municipal solid waste (MSW) for the Municipality of Rome using the most complete recent baseline, the year 2019 (AMA, 2022) [13]. Although partial figures exist for 2022, they are fragmentary and, where comparable, broadly aligned with 2019, so the latter year provides a stable basis for description and benchmarking. In 2019, total MSW collected amounted to 1,690,303 tonnes, corresponding to an average production of 590 kilograms per inhabitant. Taken together, these figures imply a resident reference population of approximately 2.86 million people. Of the total stream, 764,493 tonnes were captured through separate collection systems, yielding a separate collection rate of 45.2%. The complement—about 925,810 tonnes, or 54.8%—comprised residual mixed waste requiring treatment or disposal. For the purposes of this discussion, "separate collection" refers to the source-segregation or post-access point sorting of specific fractions (e.g., paper/cardboard, organics, plastics, metals, glass, WEEE, bulky items), enabling subsequent recovery and recycling pathways. While the precise composition mix lies beyond the scope of this section, the collection channels and their respective contributions can be described with precision.

Within the 764,493 tonnes separately collected, the channel distribution in 2019 was as follows [11]. Door-to-door systems accounted for 9% (68,804 tonnes), typically reflecting targeted schemes in selected districts and for specific fractions. Street or bring-point collection contributed 32% (244,638 tonnes), representing the widespread container-based infrastructure deployed in public space. A further 20% (152,899 tonnes) originated from third-party providers

serving non-domestic users (commercial and institutional generators). Collection centres—civic amenity or drop-off sites—supplied 10% (76,449 tonnes). The remaining 29% (221,703 tonnes) comprised fractions sent for recovery with costs borne by third parties, a category that aggregates various recovery flows arranged outside municipal collection contracts. This channel split is operationally relevant. Door-to-door systems can deliver high purity but require intensive logistics; street containers offer coverage and convenience but may suffer from contamination and uneven usage; non-domestic streams hinge on compliance and service agreements; and collection centres are valuable for bulky or hazardous fractions but depend on user access and awareness. The "third-party recovery" share indicates the presence of complementary producer-responsibility or market-based pathways. Together, these channels describe the architecture through which Rome's separate collection rate of 45.2% was achieved in 2019. The distribution of quantities and types of MSW collected in that year is reported in Table 1.

Table 1. Production of municipal solid waste and recovery.

	Waste		Sorting		Recovery	
	(tons)	(%)	(tons)	(%)	(tons)	(%)
Paper / cardboard	246,989	14.61	245,285	32.09	220,980	33.25
Plastics	242,873	14.37	77,151	10.09	37,414	5.63
Textiles	132,326	7.83	6,823	0.89	6,618	1.00
Glass	128,071	7.57	75,391	9.86	73,006	10.98
Wood	50,525	2.99	20,495	2.68	19,880	2.99
Ferrous cans	38,419	2.27	10,748	1.41	10,675	1.61
Non-ferrous cans	9,411	0.56	1,249	0.16	1,249	0.19
Green	118,535	7.01	83,212	10.88	79,330	11.94
Organic	365,672	21.63	166,699	21.80	139,206	20.94
Under-sieve	51,813	3.06	0	0	0	0
Bulky waste	49,907	2.95	29,724	3.89	28,554	4.30
Inert	28,267	1.67	18,449	2.41	18,449	2.78
WEEE	17,342	1.03	8,917	1.17	8,917	1.34
Sweeping	18,183	1.07	18,183	2.38	18,183	2.74
Others	191,970	11.38	2,167	0.28	2,167	0.33
Total	1,690,303	100.00	764,493	100.00	664,628	100.00
% of total	100%		45.2%		39.3%	

Below we report the distributional evidence underlying Figures 4.1–4.4 and clarify the centroiding approach used for mapping and analysis, with particular attention to discrete systems and urban networks. Figures 4.1 and 4.2 display, respectively, the urban population and the volume of separately collected waste for each municipality. For visual clarity, the bubbles in both figures are placed at the geometric centroids of the fifteen sub-municipalities; these centroids were computed using the standard continuous (area-based) centroid formula for

polygons. This choice makes the maps legible at a glance but should be interpreted as a cartographic convention rather than a statement about the location of people or facilities within those polygons.

For analytical work, we complement these with discrete, weighted centroids that better reflect where demand and services are actually concentrated. In a discrete system, the centroid of a set of locations $\{(x_i, y_i)\}$ with weights $\{w_i\}$ (e.g., population counts or tonnes of segregated waste) is obtained as the weighted mean:

$$x_c = \frac{\sum_i w_i x_i}{\sum_i w_i}, y_c = \frac{\sum_i w_i y_i}{\sum_i w_i}.$$

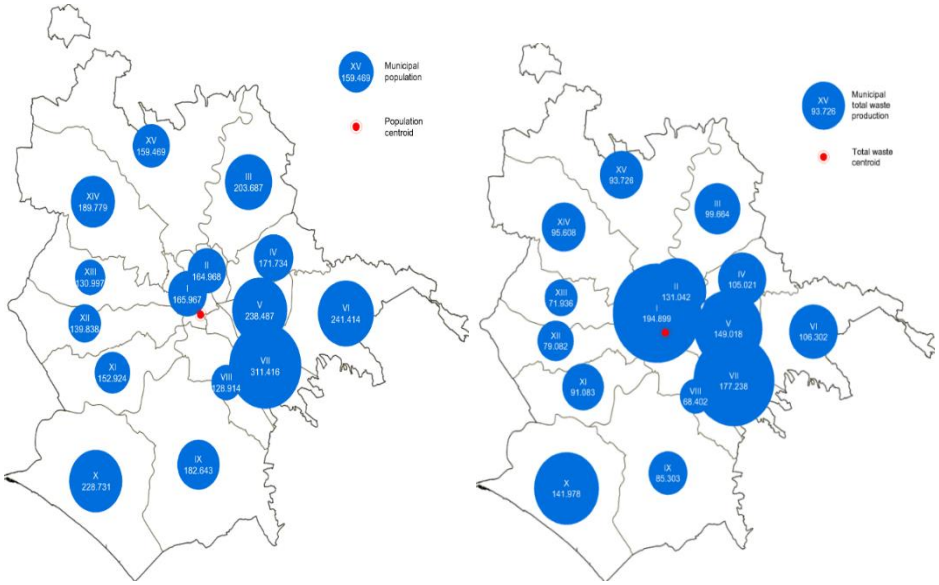
Applied to urban data, the weights can represent population by census tract (for the "population centroid") or quantities of separately collected waste by reporting unit (for the "waste centroid"). In Figure 4.4 we compute three such centroids—population, separate collection, and collection-centre locations—and overlay them on a single map to assess alignment and drift.

Because our subject is an urban network, it is useful to add a practical refinement. The weighted centroid above is defined in continuous Euclidean space; however, service access in cities occurs along the street and public-transport network. Two steps help bridge this gap. First, once the discrete centroid (x_c, y_c) is calculated, we snap it to the nearest accessible node or link on the network (to avoid, for example, placing a centroid in a river or an inaccessible block). Second, for siting decisions one may compute a network median (the 1-median): the point on the network that minimises the weighted sum of network distances $\sum_i w_i \, d_{\text{net}}(i,\cdot)$. While the Euclidean weighted centroid is excellent for summarising spatial balance, the network median is more operational for locating facilities such as collection centres, since it respects actual travel paths, one-way systems, and barriers. In practice, we use the discrete centroid for descriptive comparison across layers and consider the network median when discussing redesign options.

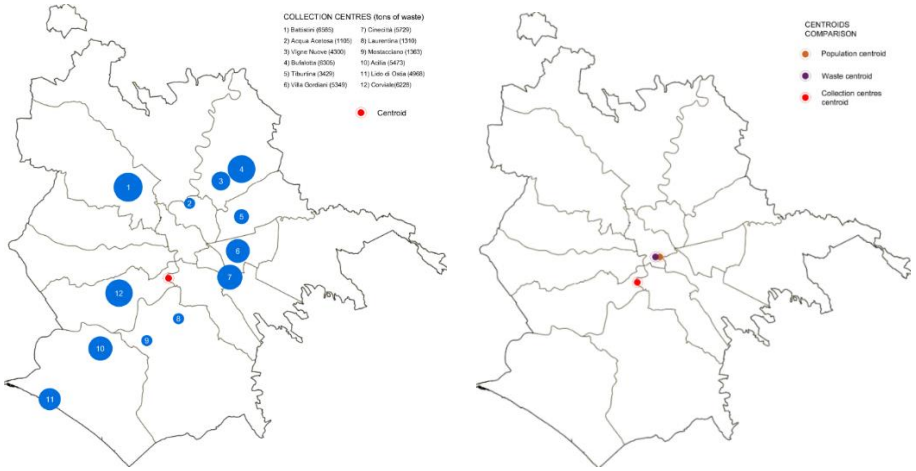
Turning to the infrastructure itself, collection centres are dedicated facilities—yards equipped with containers—open to the public for the delivery of separated fractions, which are then sent for recovery or, if hazardous, for inspection and appropriate disposal. In 2019, Rome operated only 12 collection centres, irregularly distributed across the territory; five municipalities had no centre at all (Figure 4.3). This patchiness matters. When we overlay the discrete centroids (Figure 4.4), a certain minimum offset is physiological in a large city, but the observed separations are substantial: the waste and population centroids often diverge markedly from the centroid of collection-centre locations, indicating that facilities are not systematically aligned with demand.

The implications are threefold. First, the uneven geography of provision corroborates a lack of homogeneity in service coverage, linked to unequal resource use and planning effort [14]. Second, door-to-door collection has been extended deep into low-density suburban areas where, given the spatial configuration and low dwelling intensity, it is cost-intensive and operationally fragile. These neighbourhoods, by their territorial and urban characteristics, would be better served by alternative, network-compatible solutions—enhanced bring-points, calibrated street containers with contamination controls, scheduled mobile eco-stations, and strategically sited collection centres derived from network-median analysis—rather than a blanket door-to-door model. Third, the city's current design ethos resembles a decentralised network (multiple centres operating semi-independently). To address the misalignment revealed by the centroid overlays,

we argue for a distributed network approach: a coordinated mesh of facilities and collection channels planned at the metropolitan scale, with service areas and routing co-optimised to reduce distance-to-facility and balance loads across the week. Progress in this direction is anticipated: the opening of six new centres has been planned for 2024, and their distribution should materially improve coverage and reduce the current mismatches highlighted in Figures 4.1–4.4.



Figures 4.1 (left) and 4.2 (right). Population and waste production of sub-municipalities of Rome.



Figures 4.3 (left) and 4.4 (right). Collection centres and centroids overlapping (2019).

5. Conclusions

The evidence indicates that Rome's waste collection system remains sub-optimal. Collection centres are clustered in semi-central areas and unevenly distributed, resulting in patchy territorial coverage and avoidable travel distances. This spatial imbalance aligns with the misalignment

observed between population, waste-generation and facility centroids: services are not consistently sited where demand is strongest. Performance outcomes mirror this structure. In 2019, separate collection reached 45.2%, with effective recycling under 40%—well below the Italian average (61.3%) and the European average (47.2%) reported by Eurostat ([15]). While recovery of organics and green cuttings is comparatively robust (33%), plastics collection and recovery remain notably weak (5.63%), signalling both capture and contamination challenges.

Improvement requires a reorganisation at both local and metropolitan scales. In dense central districts, a well-managed, widely deployed door-to-door scheme can raise capture rates and purity, provided it is supported by adequate storage, clear schedules, contamination controls and resident engagement. In lower-density suburbs, more suitable network-compatible solutions—enhanced bring-points, calibrated street containers, mobile eco-stations and strategically sited collection centres—should be planned as a coordinated, distributed network rather than as isolated facilities. Siting should follow evidence from discrete/network centroid and median analyses to minimise user travel and balance loads.

Cross-cutting measures can raise overall performance: targeted communications to reduce contamination; service level standards and monitoring; producer-responsibility alignment for plastics; and routing and logistics optimisation. In the near term, the planned addition of new centres should be guided by these principles to correct current spatial gaps. Taken together, a shift from a decentralised, uneven system to a deliberately distributed, data-informed network is essential if Rome is to converge towards national and European benchmarks ([15,16]) while improving equity, convenience and environmental outcomes.

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Evaluation of the Future of Sustainable Tourism in Turkey within the Framework of the S–O–R Model

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Abstract

Introduction: Global environmental challenges have necessitated sustainability in the tourism sector. While Turkey possesses significant tourism potential, the lack of effective planning and a systematic regime threatens market sustainability. In this context, the Stimulus-Organism-Response S-O-R model is widely used in the literature to analyze how perceptions, attitudes, and behaviors shape responsible tourist behavior.
Objective: Employing the S–O–R theoretical framework, the current study analyzes the prospective trajectory of sustainable tourism in Turkey. Specifically, it seeks to examine how external stimuli such as green tourism policies, sustainability-oriented marketing practices, and technological innovations shape tourists' perceptions and how these perceptions are reflected in behavioral responses.
Method: A comprehensive review of academic publications on sustainable tourism was conducted, and the findings were analyzed through the conceptual lens of the S–O–R model with a particular focus on the Turkish context.
Findings: The results reveal that notable progress has been made in promoting sustainable tourism in Turkey. Nevertheless, external stimuli have not yet produced the desired level of cognitive and emotional engagement among tourists.
Conclusion: The findings indicate that regulatory actions alone are insufficient; initiatives that foster awareness, emotional connection, and experiential engagement among tourists are equally critical. Therefore, collaboration among policymakers, tourism enterprises, and local administrations is essential to design more effective environmental stimuli and behavioral strategies.
Originality and Value: By integrating economic, environmental, and psychological perspectives that explain tourist behavior, the current research contributes a novel and multidimensional insight to the academic field of sustainable tourism management.

Key words: S-O-R model, sustainable tourism, tourism businesses, Turkey, environment
JEL Codes: Z32, Z31, Q01

1. Introduction

Countries are striving to grow their tourism destinations economically due to the increasingly important concept of sustainability and the resulting increasing global pressure for sustainability. They also feel the need to consider the necessity of harmonizing all aspects of the tourism sector, while also prioritizing environmental protection and the preservation of cultural heritage (Capucho et al., 2025; Hunter, 1997).

The tourism sector plays a strategic role for Turkey, a tourism paradise, thanks to its macroeconomic impacts such as Gross Domestic Product (GDP) and the country's balance of payments, as well as its positive characteristics such as employment creation and the provision of input for other sectors (Acar, 2021; Kılınç, 2024). However, due to rapid and uncontrolled development of tourism activities, particularly along coastlines (Honey & Krantz, 2007), many environmental problems such as soil erosion due to physical degradation, loss of biodiversity, depletion of water resources, pollution, and the associated waste problem have reached alarming

levels, resulting in harm to society, living creatures, and natural resources, as well as increasing damage to the ecosystem (Whitelaw et al., 2014; Majewski, 2024). In this context, the way to prevent environmental crises and leave a quality tourism approach to future generations is to internalize the concept of sustainability. According to Farrell & Twining-Ward (2004), sustainability is a principle that aims to permanently improve and protect individual well-being without harming the natural system. Achieving the sustainability and lasting success of tourism in Turkey depends on the determined implementation of sustainable tourism practices, which have the potential to create strong change at the international level.

Sustainable tourism represents a multidimensional strategy that emerged in the 1980s as a response to the negative environmental and socio-cultural degradation caused by mass tourism worldwide and has subsequently become a focal point for both the industry and academia (Buttler, 1999; Weaver, 2014). Sustainable tourism is an integrated, comprehensive framework that aims to make tourism activities economically viable, preserve environmental integrity, and ensure socio-cultural equity (Higgins-Desbiolles, 2018; Capucho et al., 2025). Sustainable tourism serves as a crucial mechanism for nations to maintain equilibrium among economic, environmental, and socio-cultural aspects, seeking to ensure enduring advantages for all parties involved.

Pursuing a decisive sustainable tourism policy represents a challenging process. Given the presence of numerous stakeholders with differing goals and divergent priorities, decision-making processes are likely to be challenging. These stakeholders include government institutions, private sector representatives, civil society organizations, and visitors (Bennett et al., 2019). Government institutions, which establish and implement the legal framework, focus on a long-term approach that prioritizes economic growth and balanced social and environmental benefits, while private sector representatives focus on economic growth with a stable market objective; civil society organizations focus on protecting people's livelihoods and the environment; tourists focus on meeting their holiday needs in the most economical way; and local residents focus on achieving a balance between their tourism income and their quality of life (Kittinger et al., 2014; Niezgoda, 2025). Therefore, for the successful management of sustainability in tourism, stakeholders must find common ground and achieve harmony across social, environmental, cultural, and economic dimensions (Byrd, 2007; Nunkoo & Ramkissoon, 2012).

Progress in sustainability can be achieved by consulting with all stakeholders, as well as with academics with sector experience. In this context, the S-O-R model will focus on the cognitive, emotional, and behavioral needs of tourism participants, providing insights into how to achieve a balanced and stable policy for all stakeholders, especially policymakers.

The study aims to shed light on the future of sustainability in tourism through the S-O-R model, which has compelling implications. The model's fundamental focus is to raise awareness among policymakers, business owners, and the public by focusing on increasing qualitative sustainability indices rather than quantitative growth, while maximizing economic benefit from the sector. This study seeks to design a strategic roadmap by constructing a conceptual framework rooted in comprehensive scholarly evaluations concerning the future of sustainable tourism in Türkiye.

1.1. Stimulus-Organism-Response (S-O-R) Model

Jacoby (2002) states that in the early years of consumer behavior assessments, the S-O-R model was based solely on the stimulus (S) and response (R) components. Later, Mehrabian and Russell (1974), who realized that this model overlooked an individual's internal processes, developed the S-O-R model. It is a widely accepted method that provides a strong theoretical framework for how environmental stimuli affect an individual's emotional processes and elicit behaviors (Nunthiphatprueksa & Suntrayuth, 2018).

Changes in socio-demographic structure, the economic conditions of society, and changing living conditions, particularly due to technological advancements, have altered individuals' risk

perceptions and behaviors over time. Unlike other products and services, participants in tourism activities not only purchase the feeling of discovering new places and experiencing different excitements, but also the feeling of having gained extraordinary experiences (Rittichainuwat et al., 2006). Therefore, tourism consumption offers individuals unique emotional experiences (Su & Hsu, 2013). In this context, the number of tourism researchers using Mehrabian and Russell's S-O-R model to examine the perceptions and behaviors of people participating in tourism activities is increasing daily.

According to the S-O-R model, the stimulus (S) is the component that shapes behavioral intentions by affecting the organism cognitively and emotionally. The organism (O) component represents individuals' internal psychological and emotional states, acting as a mediator between stimuli and responses (Jeong et al., 2022; Lin et al., 2023), while the response (R) component represents the situation that emerges as approach behavior resulting from positive emotion or avoidance behavior resulting from negative emotion (Arora et al., 2020; Donovan & Rossiter, 1982). The components of the S-O-R model are presented in Figure 1.

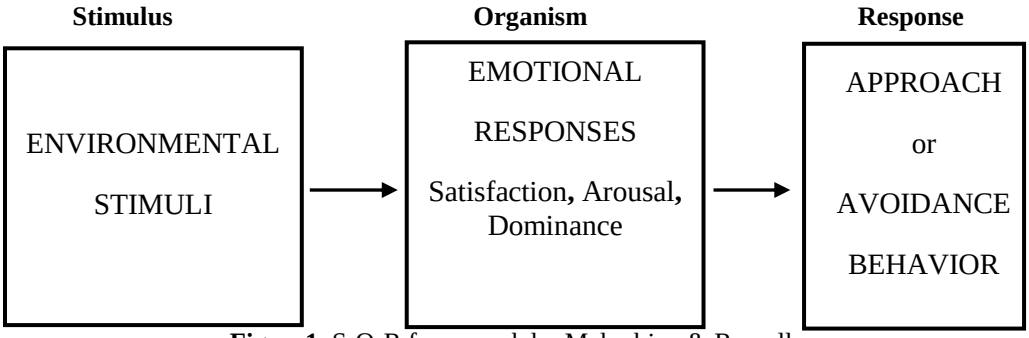


Figure1. S-O-R framework by Mehrabian & Russell

The main reason for choosing the S-O-R model in the study is that the model can holistically explain the environmental stimuli, sensory-cognitive perceptions and behaviors that shape people's sustainable tourism behaviors.

2. Literature Review

The review of the existing literature is organized into two main sections. The initial section examines studies that specifically address the concept of sustainability within the tourism field, whereas the latter section explores research emphasizing the application of the S–O–R framework in tourism contexts.

2.1. Studies on Sustainability

Ivars-Baidal et al. (2023) explored the interconnection among smart cities, smart destinations, and sustainable tourism indicators through the examination of proposals developed at various spatial levels, offering an analytical perspective on the subject. This research substantially enriches the existing literature by identifying the weaknesses and potential opportunities of smart policies and initiatives aimed at advancing the smart city and smart destination paradigm, which has provided only modest support to the evolution of sustainable tourism practices. The study adopted an integrated methodological design blending qualitative and quantitative techniques applied across multiple geographical levels and diverse socio-political settings. The use of mixed methods enabled a more comprehensive, coherent, and multidimensional interpretation of the results. Moreover, the findings revealed that the sustainability paradigm has not yet been systematically embedded within the frameworks of smart cities and smart destinations, and the degree of alignment between these structures remains relatively weak.

Aniramu et al. (2025) examined the relationship between tourist satisfaction and eco-tourism practices in eco-destinations in Nigeria, which are of great importance for sustainable tourism. The research shows that, despite the high appeal of eco-destinations such as Ikogosi Hot Springs, Olumirin Falls, Old Oyo National Park, and Omu Resort, sustainable tourism efforts in these

destinations remain generally low. The findings of the study indicate that the service quality and tourism opportunities in these destinations play a decisive role in tourists' satisfaction and revisit intentions. The article underlines that destination-specific cultural elements, natural resources, and the advantages arising from the destination's location significantly increase the tourism potential of eco-destinations, and that this is an indispensable criterion for sustainable tourism. In this context, it is recommended that environmental awareness be raised, accessibility to the destination be improved, and strategic planning and investment incentives be implemented.

Aytekin et al. (2023) conducted a study with local residents of the Manavgat district of Antalya, measuring the impact of responsible tourism perception on local people's place attachment. According to the information obtained from the study, the positive economic outcomes and improved quality of life resulting from responsible tourism play a significant role in balancing the negative impacts of tourism, such as rising living costs, as well as the environmental and cultural aspects of strong environmental management. The study also revealed a strong and positive relationship between local people's place attachment and their support for the development of sustainable tourism.

Kashem et al. (2023) examined the transformative impact of Artificial Intelligence (AI) and Blockchain Technology (IT) on the success of sustainable tourism initiatives in the Middle East and North Africa region. The study is significant because it demonstrates the contributions of smart technologies to holistically optimize environmental, social, and economic sustainability in achieving stable tourism growth in these regions. The findings of the study suggest that the use of smart technologies will revitalize interest in mass tourism, add dynamism to sustainable tourism activities, and reshape tourism policies with smart technologies.

Majid et al. (2023) systematically reviewed the status of academic studies on smart automation technologies within the context of sustainable tourism. The scientific articles examined in this study categorize the applications of smart automation technologies in sustainable tourism under five headings: enhancing the tourist experience, preserving cultural heritage, improving quality of life, enhancing the tourist experience, and protecting the environment. The authors emphasize that smart automation is not only a tool for operational efficiency but should also be used in countries' long-term future plans to achieve sustainable development goals.

2.2. Studies on the S-O-R Model

Liu et al. (2024) conducted an investigation into how diverse environmental stimuli within noteworthy cultural venues located in Nanjing, China, affect tourist behavioral tendencies. Employing the Stimulus–Organism–Response (S–O–R) theoretical framework, the research is noteworthy for its comprehensive exploration of the determinants shaping tourist behavior by categorizing cultural environments into four primary dimensions: tangible, experiential, systemic, and digital. The results indicate that environmental cues exert a favorable impact on tourist behavioral outcomes, while cultural identity emerges as a critical internal mechanism that mediates the transformation of these external cues into behavioral responses. Additionally, the study shows that positive environmental conditions enhance travelers’ willingness to return to the same destination and to share their experiences with others.

Jiang et al. (2025) examined the impact of advanced digital technologies such as virtual reality (VR) and augmented reality (AR) on the sustainability of cultural heritage tourism using the S-O-R model. This study is strategically important because it demonstrates that experiences with VR technology make a direct and significant contribution to social sustainability within the context of cultural heritage and that it also fosters an intention to reuse the virtual environment, demonstrating that this contributes to social sustainability.

Qiu et al. (2023) conducted a comprehensive study that will contribute significantly to the field of tourism by utilizing the S-O-R model to reveal tourists' environmentally responsible behaviors. The study considered the credibility of the destination source as an environmental stimulus and examined its direct and indirect effects on tourists' environmentally responsible behaviors by shaping cognitive and emotional images. The study, which demonstrates that the

credibility of the destination source enhances the cognitive-emotional image, also provides a solid theoretical foundation structured with applicable policies for sustainable destination management.

In a study conducted by Salmi and colleagues (2019), the S-O-R model was used to examine the relationships between environmental factors, visitor destination attachment, and intention to revisit Batam Island, Indonesia. Data were collected from 455 tourists who visited the island using a convenience sampling method. Findings obtained through structural equation modeling showed that both infrastructure and destination atmosphere positively influence place attachment. Furthermore, the study revealed that social connection is the most critical determinant of tourists' intention to return to Batam Island.

Su and Swanson (2017) carried out a study employing the Stimulus–Organism–Response (S–O–R) theoretical framework to explore the intricate linkage between a destination's social responsibility (DSR) initiatives and tourists' pro-environmental conduct. The research provides a notable scholarly contribution to understanding sustainable tourist behavior. Conducted among Chinese travelers, the investigation reveals that individuals' perceptions of a destination's socially responsible practices do not have a direct effect on their environmentally oriented actions. Instead, the influence of DSR on ecological behavior is mediated through psychological mechanisms that emerge from the positive affective states and sense of belonging tourists develop during their stay at the destination.

3. Materials and Method

This study is conceptual in nature. The data collection process was conducted through a comprehensive and systematic literature review. Within this framework, the objective was to conduct a critical examination of scholarly studies addressing sustainable tourism and tourist decision-making patterns, while elucidating the theoretical implications of the S–O–R framework in the context of sustainable tourism research.

4. Discussion, practical and managerial implications

This study examines the mechanism of the process that will shape Turkish tourism in the future, specifically the S-O-R model, which has significant impacts on the stability of sustainable tourism management. When the findings from the literature review are examined, it has been concluded that psychological interventions based on the Organism (O) component are much more targeted and effective in ensuring the sustainability of the process than approaches that traditionally adopt environmental stimuli. In this regard, the finding that developing trust elements throughout the process, which strengthen the tourist's internal state (O) and ethically motivate tourism employees, will optimize behavioral response (R), is an important learning that policy makers and tourism managers should internalize.

Establishing long-term sustainable behaviors (R) in Turkish tourism will be possible through the implementation of legal regulations shaped by transparent and ethical principles that minimize environmental risk factors. Consequently, the study demonstrates the need for Turkey to adopt a realistic management model equipped with the necessary mental information and prioritize quality and value over quantity in order to realize its ideal of protecting and developing its unique and distinctive assets.

4.1. Practical implications

The application of the S-O-R framework, considered within the context of Turkey's tourism system, establishes strategic principles aimed at advancing sustainable tourism objectives. These principles apply to all actors operating in the tourism sector, as well as to public authorities and private enterprises that exert significant influence on destination governance. Implementing Türkiye's sustainable tourism vision by aligning it with economic development, environmental management, and socio-cultural integrity is of critical importance.

This study demonstrates the strategic importance of identifying the environmental stimuli (S)

encountered by tourists. This situation: This includes increasing the visibility of eco-certified businesses, completing infrastructure work to minimize potential ecological damage, and utilizing technologies to promote sustainable initiatives rooted in rich cultural roots. All of these efforts are crucial for equipping tourists with a sense of positive environmental responsibility (O) and fostering a sense of satisfaction. For effective technological initiatives to successfully generate a response (R), tourists must have a high level of technological adaptation and digital competence.

4.2. Managerial implications

The Stimulus–Organism–Response (S–O–R) framework provides an integrative outlook for decision-makers and tourism industry managers in formulating and enhancing sustainable tourism strategies. Attaining sustainability objectives initially depends on converting environmental stimuli into favorable cognitive and emotional responses among individuals. At this juncture, it is essential to recognize that all personnel within tourism organizations—particularly tour guides—hold a pivotal position in shaping interactions with tourists. Managers of tourism businesses should encourage their employees' participation in programs related to sustainable tourism activities and even include this in their performance criteria. In this context, tourism businesses need to raise sustainability awareness, especially among their employees who are in direct contact with tourists. To foster this awareness, tourism businesses must embrace sustainability approaches at a corporate level and then ensure that their employees internalize this culture. If tourism business managers can integrate the S-O-R model into their management and decision-making processes, concrete steps will be taken toward achieving sustainable tourism goals.

5. Results, Limitations, and Future Directions

By utilizing the Stimulus–Organism–Response (S–O–R) theoretical model, the current investigation provides a conceptual framework for understanding tourist consumption dynamics and highlights its significant impact on promoting sustainable tourism practices in Türkiye. The incorporation of this theoretical perspective into sustainable tourism discourse facilitates a more comprehensive and systematic exploration of tourist behavioral dynamics. Defining sustainable tourism solely as a concept that regulates countries' tourism activities is a narrow-minded approach that diminishes the importance of the topic. Sustainable tourism creates opportunities for efficient resource use, ecosystem protection, the adaptation of environmentally friendly practices to the system, minimizing environmentally damaging practices, and ensuring full compliance with international sustainability criteria.

5.1. Limitations

In the case of Turkey, the utilization of the Stimulus–Organism–Response (S–O–R) model offers meaningful contributions to sustainable tourism analysis, yet the difficulty in accurately assessing the organism (O) factor constitutes a notable limitation. Individuals' perceptions of environmental responsibility and awareness of sustainability, shaped by their cognitive and emotional states, vary. This is closely related to individuals' cultural profiles, socioeconomic structures, and the characteristics of their generation. Due to the variable nature of the stimulus (S) component across a wide range of destinations in Turkey, ranging from highly developed mass tourism areas to developing eco-villages, caution is warranted in generalizing the findings. Changes in local governments, changes in political climate, and policy shifts within a destination constitute limitations for the study. These limitations are criteria capable of significantly altering the components of the S-O-R model.

5.2 Future Directions

The study highlights that the adaptation of the components of the S-O-R model within the context of sustainable tourism is an important criterion for future research. In this regard, it would be particularly beneficial to investigate how the use of digital applications and artificial intelligence technologies as stimuli impacts people's perceptions and behaviors. Furthermore, it is critical to

evaluate the changing lifestyles and tourist behaviors parallel to the incredible development of technology within the context of the S-O-R model and to assess the issue from a multidimensional perspective. It is essential to ensure that technology-oriented sustainable tourism practices align with tourists' levels of technological adaptation and competence.

Future academic research on this topic should primarily focus more on tourists' psychological experiences. Understanding how cognitive and emotional mechanisms, as well as environmental and technological stimuli, mediate tourists' behaviors is of strategic importance for developing the concept of sustainable tourism. To gain a deeper understanding of tourists' environmentally friendly choices, researchers can conduct a detailed examination of cognitive and emotional elements such as place attachment, ecological concern, and moral responsibility. Furthermore, cross-cultural studies focusing on how these psychological variables are shaped in different cultures and demographic structures will provide valuable insights by offering a broad perspective to the literature. The use of psychological assessment tools and their integration into studies conducted within the scope of sustainable tourism will also strengthen the explanatory power of the S-O-R model.

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The Relationship Between the Use of Artificial Intelligence and Trust in Consumer Behavior Towards Health Supplement Products

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Abstract

Introduction: Today, artificial intelligence (Ai) has emerged as a critical technology that reshapes business marketing strategies, consumer interactions, and decision-making processes. Ai, through big data analytics, machine learning, and algorithmic recommendation systems, can anticipate consumers' needs, provide personalized product and service suggestions, and make purchasing processes more efficient.
Aim: This research aims to reveal the role of artificial intelligence as a tool in purchasing intention and behavior towards vitamin supplement products.
Method: In the research, a model was developed based on prior studies on technology acceptance, consumer trust, and digital marketing, and tested using a qualitative method. Data collected from vitamin users through a structured questionnaire were analyzed.
Findings: The findings indicate that Ai directly positively influences purchase intention, and this effect is further strengthened through consumer trust.
Conclusion : The adoption of Ai-based systems by consumers and their translation into actual purchasing behavior largely depend on consumer trust. Trust refers to the confidence and assurance that consumers place in the information, recommendations, and algorithmic decision-making processes provided on digital platforms. This study examines the mediating role of trust in the relationship between Ai and purchase intention, with a focus on vitamin products.
Originality and value: This study conceptually explains the impact of Ai on consumer behavior and highlights the critical role of trust in this process. This research contributes to the academic literature and emphasizes that businesses should develop trust-oriented strategies in AI-based marketing applications.

Key words: artificial intelligence, technology acceptance model, brand trust, vitamin supplement product.
Jel Codes: M11 M31, O14

1. Introduction

The digital transformation rapidly occurring globally, along with the digital age and Industry 4.0, has led to radical changes in many industries. In addition to production-related changes, it has also brought about new consumption behaviors driven by increased consumer awareness and consciousness in consumer markets (Bilgili and Koç, 2022). Artificial intelligence, which has gained importance not only in markets but also in many scientific fields, has become a key area of investment in development, despite its application limitations in many areas (Gabriel, 2019; Gür, 2022). Artificial intelligence is a process that enables machines to become intelligent, enabling an element to behave accurately and reliably in its environment, and creating and improving quality. It can also be described as a holistic approach encompassing business-related and everyday technologies, as well as big data, cloud computing, robotics, network hardware, computers, digital media, and content development (Okay, 2023).

Thanks to the developing internet and information technologies, planning targeted marketing strategies has become easier with the extensive customer databases available (Kotler & Keller,

2016). The internet and developing technologies have provided businesses with low-cost and effective promotion and distribution opportunities (Kannan & Li, 2017; Smith, 2006). While many factors influence consumers' purchasing decisions, the promotional components used to guide these decisions and influence brand decisions are crucial. Generative AI has now taken its place alongside traditional elements such as advertising, sales promotions, public relations, and word-of-mouth (Odabaşı and Barış, 2002). Consumers are increasingly using generative AI to gather information before purchasing a product or service. This has necessitated a redefinition of consumer desires and needs in marketing and a reshaping of marketing strategies. It has become crucial to identify the impact of AI on consumers' trust in promotional elements that influence purchasing decisions.

This research indicates that the health supplement market has been growing significantly in recent years, driven by increased consumer awareness of a healthy and quality life. While consumer behavior in this market was initially driven by recommendations from healthcare professionals and doctors, it has evolved into the use of celebrities in advertising and, with the development of social media, the use of influencers. Today, with generative AI playing an active role in consumer decisions, it is anticipated that there may be differences in the use of AI for health supplements and the trust in medical advice. Although supplements are considered health products, we investigated whether consumers' trust levels differ between doctors and generative AI regarding these sensitive products. The study included the results of qualitative interviews with consumers who use these products. Based on the results, we offer strategy recommendations for the market and target consumer audience of these sensitive products, which are hazardous to the human body and health.

2. Literature Review

The digital transformation rapidly occurring globally, along with the digital age and Industry 4.0, has led to radical changes in many industries. In addition to production-related changes, it has also brought about new consumption behaviors driven by increased consumer awareness and consciousness in consumer markets (Bilgi and Koç, 2022). Artificial intelligence, which has gained importance not only in markets but also in many scientific fields, has become a key area of investment in development, despite its application limitations in many areas (Gabriel, 2019; Gür, 2022). Artificial intelligence is a process that enables machines to become intelligent, enabling an element to behave accurately and reliably in its environment, and creating and improving quality. It can also be described as a holistic approach encompassing business-related and everyday technologies, as well as big data, cloud computing, robotics, network hardware, computers, digital media, and content development (Okay, 2023).

Thanks to the developing internet and information technologies, planning targeted marketing strategies has become easier with the vast customer databases available (Kotler & Keller, 2016). The internet and developing technologies have provided businesses with low-cost and effective promotion and distribution opportunities (Kannan & Li, 2017; Smith, 2006). While many factors influence consumers' purchasing decisions, promotional components used to guide these decisions and influence brand decisions are crucial. Generative artificial intelligence has now taken its place alongside traditional elements such as advertising, sales promotions, public relations, and word-of-mouth (Odabaşı and Barış, 2002). Consumers are increasingly using generative AI to gather information before purchasing a product or service. This has necessitated a redefinition of consumer desires and needs in marketing and a reshaping of marketing strategies. Identifying the impact of AI on consumers' trust in promotional elements that influence purchasing decisions has become crucial.

This research indicates that the health supplement market has been growing significantly in recent years, driven by increased consumer awareness of a healthy and quality life. While consumer behavior in this market was initially driven by recommendations from healthcare professionals and doctors, it has evolved into the use of celebrities in advertising and, with the development of social media, the use of influencers. Today, with generative AI playing an active role in consumer decisions, it is anticipated that there may be differences in the use of AI for

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2. Literature Review

This section presents information on generative artificial intelligence and consumer trust, as well as general information about the health supplement market and consumer behavior.

2.1. Generative Artificial Intelligence and Consumer Trust from the Perspective of a Thought Leader Specialist Doctor

Artificial intelligence is defined as a reasoning process that uses data from an individual's previous experiences to perform any given reasoning task about facts, such as learning, and reasoning and understanding using human-specific qualities. This process is carried out through a computer or computer-controlled machine (Nabiyev, 2012). Artificial intelligence is also defined as anything that aims to enable machines to perform any task associated with intelligence when performed by humans (Brooks, 1991). In other words, it can be defined as the act of reasoning about any phenomenon, using past data about individuals to predict and interpret future behavior by analyzing it through a computer program, in order to perform mental activities specific to humans, such as understanding and learning. In short, it can also be interpreted as predicting consumer decisions by thinking like a human.

People influencing others by talking about the products or services they purchase is as old as human history. From ancient times to the present, people have been buying what they need and recommending these products to others. In this respect, word-of-mouth marketing is not just a modern phenomenon. However, it continues to grow stronger in our time (Silverman, 2007: 22). Increasingly, companies are implementing a strategy based on two-way communication, where customers take a more active role in marketing activities, rather than one-way communication efforts (Kurt, 2008: 58). Thus, businesses are trying to gain a competitive advantage by encouraging consumers to engage in word-of-mouth marketing.

Certain individuals in reference groups, whom consumers consider role models and whose opinions they value, may stand out to consumers. These individuals are experts in specific product categories whose words consumers trust (King and Summers, 1970: 47; Richins and Root, 1998: 33; Venkatraman, 1990: 59). These individuals, who are opinion leaders or opinion leaders, have the ability to directly influence the consumer purchasing process. Opinion leaders can be anyone close to a person, such as a friend or acquaintance, or professionals such as doctors, pharmacists, dentists, or lawyers who offer advice to their customers or patients. Movie and restaurant critics, as well as those who write for consumer-related publications, are also considered opinion leaders (Hoyer and MacInnis, 2004: 393). In this study, doctors were considered as opinion leaders in the context of health supplements.

While opinion leaders are influential factors in consumer behavior, the number of consumers today who rely on the information provided by generative artificial intelligence is also increasing significantly. Among the most important benefits of artificial intelligence technology are its convenience, permanence, ability to replace humans in many activities, reduced dependence on humans, and greater stability compared to human intelligence. However, despite the development of artificial intelligence applications, the failure to fully develop the human-specific qualities that shape human intelligence suggests that artificial intelligence will never replace human intelligence (Dülger, 2018). Artificial intelligence is formed by integrating user experience, human decision-making abilities, verbal data input, and human learning capabilities derived from artificial neural networks. Thus, it supports problem-solving skills by creating models for solving complex and irregular problems imposed on the system based on user experience. These models include a control mechanism that allows for early detection of

potential errors and the implementation of preventative measures. Despite all this, the widespread adoption of generative AI-influenced purchasing behavior, even in health supplements, which are sensitive products related to health, is noteworthy. Therefore, determining the state of consumer trust between AI and thought managers appears to be a novel topic in light of developments in today's markets.

2.2. Health Supplements and the Importance of Trust

Food supplements are products containing vitamins, minerals, botanical compounds, amino acids, and other components, prepared and marketed in various forms, and used as a supplement to a normal diet. These products are intended solely to supplement a diet, are not classified as foods or traditional foods, and do not include homeopathic products or topical applications (creams, etc.). According to World Health Organization (WHO) records, a large portion of the world's population (70-80%) uses plants and plant-derived products for the treatment and prevention of illness under the guise of "traditional medicine." While it is estimated that there are approximately 70,000 medicinal plant species, the World Health Organization reports that 21,000 plant species are suitable for drug preparation (Lange, 1998; Ersöz, 2012).

Medicinal plants are generally common in societies in the Far East, and their use in Western societies has been increasing in recent years. These plants are often used under the guise of "alternative medicine" or "complementary medicine," and have been used for years for health promotion and health benefits, contributing to a constantly growing market in the herbal medicinal product trade (Coppens et al., 2006; Ersöz, 2012). People have been using herbal products for many years. The market value of these products, defined as "food supplements," reached $50.6 billion globally in the early 2000s. This figure accounts for more than 80% of the total $60 billion herbal products market. Within this market share, the distribution of different product groups was determined as 40%, 39%, and 21% for vitamins and minerals, herbal drugs, and sports and weight-loss products, respectively (Ersöz, 2012; Atalay and Erge, 2018).

According to monthly reports published by research firm IQVIA, the supplement market is expected to reach a turnover of 6 billion Turkish Lira in 2022, representing a 99 percent growth compared to 2021. In the first half of 2023, an 85 percent increase was recorded compared to the previous year. The OTC (Over-the-Counter) market, which has a global volume of approximately $175 billion, is expected to reach $240 billion by 2028. This market, led by the US, China, Japan, Germany, and Russia, is also gaining increasing importance in countries like Brazil and India. This data suggests that interest in supplements and over-the-counter (OTC) products will continue to grow globally. The OTC market, which grows by an average of 5 percent annually globally, has increased by 25 percent annually in our country, reaching a total of 10 billion Turkish Lira. Food supplements account for approximately 30 percent of this market. New product segments and innovation are driving this dynamism. For example, in addition to herbal and organic products, niche areas such as anti-aging formulas, longevity supplements, and chewable gummies are also becoming increasingly popular. This demonstrates consumer interest in supplements offered in different formats and innovative formulations. The Turkish food supplement market has grown steadily and significantly increased its market share by 2024, driven by global trends. Demand for vitamins, minerals, and immune-supporting products, with an estimated 25 percent increase compared to the previous year, is particularly prominent. Digital sales channels have also facilitated consumer access to food supplements. Informative publications and campaigns on social media platforms have raised consumer awareness and contributed to the market's accelerated growth (Taşkın, 2025a).

Personalized nutrition has become one of the most striking trends of the future. Dietary supplements, formulated according to age, gender, genetic makeup, health status, and lifestyle, focus on individual health goals. Formulas developed with ingredients specifically for consumers or innovative products focused on cognitive support for lifestyles requiring intense mental performance are current reflections of this vision. The focus is no longer on "one-size-fits-all" products, but rather on "personalized" products. It's insufficient to consider the future of dietary supplements limited solely to ingredients and production. Emerging health technologies are

advancing to enable these products to work in harmony with real-time traceability and personal health data. Sensor systems integrated with wearable devices can track individuals' vitamin and mineral levels, biological aging data, and metabolic health indicators. For example, at-home test kits will allow individuals to measure their vitamin D levels and prescribe the appropriate dosage of supplements. Mobile applications, integrated with data from these devices, will be able to provide personalized supplement recommendations. Artificial intelligence-powered algorithms are being developed to recommend the most appropriate formulation based on an individual's past health data, genetic makeup, and lifestyle (Taşkın, 2025b). It appears likely that consumers will increasingly favor productive AI recommendations over those of opinion-leading doctors.

Factors influencing dietary supplement choices include strengthening the immune system, preventing fatigue, enhancing physical performance, improving mental activity, managing weight, stress, sleep problems, and joint discomfort. Research has shown that athletes and physically active individuals are the primary consumers of these products, with only a quarter of these preferred products being used according to expert recommendations. Multivitamin-mineral products are the most frequently used supplements, followed by calcium, ω-3, or fish oil supplements. Dietary supplement users are generally found to be in excellent or very good health, have health insurance, consume moderate amounts of alcohol, abstain from smoking, exercise regularly, have a lower body mass index, have a higher level of education, and are generally of good socioeconomic status. Excessive and/or misuse of dietary supplements can lead to serious health problems. Therefore, they should not be considered medications and should be consumed with caution, in accordance with expert recommendations. Furthermore, when choosing these products, it is crucial for consumers to be mindful of products approved by the relevant authorities within the framework of legal regulations (Kösedağ et al., 2024).

Therefore, for the purpose of this research, alongside many other factors that influence consumer preferences for these products, such as opinion leaders, advertising, and influencers, generative AI has now become a factor. Researching the role of doctors, who are opinion leaders, and generative AI on consumer purchasing behavior was considered crucial, especially considering that these products address a sensitive need like healthcare.

3. Materials and Method

Science is conducted using two fundamental methods: deduction and induction. Deductive methods are scientific studies conducted based on a validated theory. Inductive methods, on the other hand, refer to studies conducted to discover the unknown for which no theory exists. Deductive studies are mostly quantitative studies conducted on the hypotheses of existing theories, while inductive studies utilize qualitative methods. Formal sciences have a deductive structure and are based on deductive reasoning. In experimental sciences, reasoning that involves reaching a generalization encompassing the whole from a limited number of observations about an event is called induction (Özlem 1991).

In the social sciences, attempts are generally made to define a research problem and determine the relationships between variables through hypotheses derived from existing theories. However, in the early stages of science, theory development is possible only through the imagination and inspiring hypotheses of scientists (Reichenbach, 1993). A new discovery through deduction emerges from the falsification of hypotheses (Popper, 2003) and the need to restructure paradigms that have lost validity (Demir, 2000). Induction, on the other hand, is expressed through the concept of the "context of discovery," which is reached as a result of exploratory research conducted with creative genius (Reichenbach, 1993). Whether based on deductive or inductive methods, as technology advances and opportunities increase, some hypotheses or theories may lose validity. Kuhn refers to this phenomenon as a "paradigm shift" (Kuhn, 1995). Therefore, this research aims to investigate the impact of generative artificial intelligence, one of the new technological applications for supplementary health products, on consumer purchasing decisions, based on the trust level of opinion leaders among physicians. To this end, a qualitative research method was used to design the study, taking into account potential gaps in existing theories' ability to respond to new trends. The semi-structured interview form used in

the study sought to determine the reasons for using these products, the information sources consulted in product selection, the level of trust in generative AI and doctors, and the tendency to prefer doctors despite the possibility of generative AI providing inaccurate information, using a 5-point Likert-type scale. The data obtained were analyzed using content analysis, means, and frequencies.

4. Findings and Discussion

The findings and discussion sections are grouped under two headings. The first heading includes the demographic characteristics of the participants, and the second heading includes results regarding their trust in doctors and artificial intelligence in purchasing behaviors for health supplements.

4.1 Demographic Characteristics of the Participants

The semi-structured interview form used in the study, along with the demographic characteristics of the 22 individuals who used health supplements and volunteered to participate in the study, is shown in Table 1.

Table 1. Demographic Characteristics of Participants

Number/Rate **Demographic Characteristic**		**Number**	**Percentage**
Gender	Female	11	**50.0**
	Male	11	**50.0**
Age	18-27	5	**22.7**
	28-37	9	**40.9**
	38-47	5	**22.7**
	48 ve üzeri	3	**13.7**
Education	Secondary Education	5	**22.7**
	Undergradu- Post Graduate	17	**77.3**
Income	22.000 TL ve altı	-	**-**
	22.001-40.000 TL	1	**4.5**
	40.001-60.000 TL	3	**13.7**
	60.001-80.000 TL	3	**13.7**
	80.001 TL ve üzeri	15	**68.2**
TOTAL		**22**	**100**

The study participants were 50% female and 50% male, with the highest age range (40.9%) being 28-37, 77.3% having a university degree or higher, and 68.2% earning 80,001 TL or more. It's safe to say that the majority were young adults with high education and income levels.

4.2 Participants' Levels of Trust in Generative Artificial Intelligence and Doctors in Health Supplement Purchasing Behaviors

A semi-structured interview form was administered to study participants regarding their health supplement usage behaviors. The interview form first asked questions on a 5-point Likert scale regarding the reasons for using these products, based on the descriptions in the product leaflets.

Second, open-ended questions were asked to identify the top three factors that were prominent in choosing these products or brands. Third, a question was asked to determine the level of trust in doctor's recommendations or generative AI guidance based on the reasons for using these products or brands, using a 5-point Likert scale. Finally, a scenario-based question was asked to determine whether there would be any change in trust levels in generative AI, considering the possibility that generative AI might provide inaccurate information. The obtained data were interpreted through content analysis and averaging. The results are shown in Table 2.

Table 2. Comparative Levels of Trust in Generative Artificial Intelligence and Doctors in Supplementary Health Products

REASON FOR USE	DEGREE	PRODUCT/BRAND SELECTION RANKING	TRUST IN PRODUCTIVE ARTIFICIAL INTELLIGENCE	TRUST IN EXPERT DOCTORS	WHAT WOULD YOUR ANXIETY LEVEL BE IF YOU KNEW THE POSSIBILITY THAT ARTIFICIAL INTELLIGENCE WOULD PROVIDE MISINFORMATION?
Disease Prevention	4,27	Doctor's Advice, AI, Advertising	4,05	3,85	*I think doctors will make fewer mistakes than others. *The most common mistake is overdose, but that's fine. *I think doctors make recommendations in exchange for benefits by agreeing with companies.
Sustainability of Healthy Living	4,05	Artificial Intelligence, Advertising, Doctor's Recommendation	4,25	4,05	
Interpersonal Interaction	3,90	Friends' Recommendation, Advertising, Artificial Intelligence	3,5	3,20	
Doctor's Recommendation	4,50	Doctor's Recommendation, Artificial Intelligence, Advertising	4,10	4,20	
Information-Based Need	4,10	Artificial Intelligence, Advertising, Doctor's Recommendation	4,35	3,75	

The use of AI in health supplements has been observed to be more prevalent than other tools. AI

is more effective than any other tool in selecting health supplements for any reason other than a doctor's recommendation or interpersonal interaction. Trust in AI has a very high average. When using these products solely on a doctor's recommendation for a health problem, trust in doctors is higher than trust in AI.

Participants with lower levels of education have lower trust in doctors than in AI. Considering that these participants lower the overall averages, it appears that individuals with higher levels of education have a very high level of trust in AI.

Consumers who trust AI more often believe that doctors recommend certain brands to gain profit/benefit. Consequently, they perceive AI as more objective. It has been determined that they are more likely than doctors to tolerate the potential harms of AI providing potentially inaccurate information, and that they are more likely to tolerate these errors.

5.Conclusion

Analyzing the results, it would be beneficial to conduct awareness-raising efforts regarding the potential harmful consequences of inaccurate information retrieved from databases by artificial intelligence. It was concluded that there is a need to raise awareness about the risks that could arise if negative perceptions of doctors are disseminated to the general public, as well as the risks that could arise from inaccurate information in AI databases. There is a need to raise awareness about the possibility of choosing products from strong brands that are not suitable for the needs of consumers through AI. The research results indicate that social awareness is prominent in this area. It is believed that future research in this area would be beneficial in exploring the hidden reasons that influence consumer behavior towards generative AI.

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A Study on Determining the Design Similarities of Destination Logos from an Expert Opinion Perspective

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Abstract

Introduction: Logos are one of the most important branding elements that influence consumer behavior. Logos are crucial as tangible symbols of the product or service brand.
Aim: This research aims to identify the design similarities and differences between the logos used for Istanbul and Cappadocia, two important tourism destinations in Türkiye. To this end, the need for holistic design in logo development is discussed and recommendations are presented.
Method: In the study, logos from Istanbul and Cappadocia that were similar were selected by expert designers and their similarities and differences were evaluated. Based on the findings, the perspective of integrity in destination logos was discussed.
Findings: It has been determined that Istanbul and Cappadocia have similar design logos, but their institutional sustainability is lacking.
Conclusion: The lack of sustainable use of logos, a key brand element, across destinations is a significant shortcoming. Furthermore, the use of previously used logos with similar designs in different destinations necessitates the development of holistic and sustainable strategies for the future. A study by Kotler and Proertsch (2010) concluded that the shapes, colors, and text used in logos have an impact on brand awareness. In another study, Bilgili and Avcı (2020) highlighted the importance of logo use in destination branding.
Originality and value: While destinations in developed countries have corporate logos, sustainability in this area has not yet been fully established in our country. In this context, the research findings offer strategic recommendations based on previously designed logos. In addition, comparing the same style logos previously used in tourism destinations has a unique value.

Key words: destination logo, destination marketing, destination brand.
Jel Codes: L83, M31.

1.Introduction

In today's highly competitive markets, businesses must develop effective strategies to gain competitive advantage. Branding encompasses many of these strategies. Tangible indicators of a brand impact image and brand equity (Aaker, 1991). Logos are one of these indicators. A logo can be defined as "a graphic design used by a company, with or without its name, to identify itself or its products" (Henderson and Cote, 1998:14). According to Keller (1993), logos are among the most powerful brand elements due to their impact on brand knowledge and, consequently, brand equity. In another definition, logos are not only tools used to convey a brand's image, attract attention, increase recognition, and differentiate the brand, but also a tool to evoke an emotional response (Aaker, 1991; Henderson and Cote, 1998; Melewar et al., 2006; Pittard et al., 2007).

The word "logo" originates from the Greek word "logos." Historically, logos emerged as emblems and signs began to be used to demonstrate ownership and power. It is known that the "grid system," particularly in Ancient Egypt, was used in sculpture and painting to preserve and prevent distortion of visual elements in design. From this perspective, it can be said that the aesthetically pleasing and aesthetically beautiful designs implemented in the arts, based on the

system implemented in Ancient Egypt, are still reflected in logo design today (Legon, 1996:62-76).

Today, the concept of a logo has been around in marketing since 1937, and its importance, particularly in graphic design, has made it indispensable for businesses and brands (Knapp, 2000:96). With increasing competition among businesses and globalization, businesses place significant value on the concept of branding. Therefore, businesses use logos to emphasize concepts such as recall, recognition, and trust to gain a competitive advantage. In this context, it can be argued that logos are essential for brands today and are the primary tool for conveying a brand's identity to consumers. Therefore, if a brand's logo is designed to ensure that the elements such as color, shape, text, typography, and symbols it uses are harmonious and align with the company's offerings, the brand's memorability will be enhanced.

The American Marketing Association defines the concept of branding as "a name, term, sign, symbol, or a combination thereof, used by a seller or group of sellers to identify their goods and services and distinguish them from competitors" (Keller, 2003:3). In this context, the fundamental principle of branding is the selection of a name, logo, symbol, or other sign that identifies a product and distinguishes it from others (Aaker, 1991). Destination branding, on the other hand, can be defined as the effort to create new attractions for a destination, focusing primarily on the development of a brand identity.

Due to factors such as developing technology, globalization, and increasing competition, destinations are resorting to new initiatives to sustain their existence and gain competitive advantage. Today, many destinations are striving to develop their image and brand (Rainisto, 2003:12). For these reasons, a logo is considered one of the most important tools in the destination branding process to best reflect the destination, raise awareness, and increase memorability (Özdemir, 2008:120). In other words, it can be argued that destinations need a logo to distinguish themselves, differentiate themselves, and represent themselves uniquely. The use of logos by destinations is one of the most important tools for reflecting the destination's identity and being memorable in creating a destination image and branding (Çakır, 2013:54). Therefore, it can be argued that logo design is important for destinations, and that the chosen logos should be linked to the destination's elements in creating a destination image and identity.

Logos stand out as important tools for highlighting cities in tourism and destination marketing. In addition to being unique and distinctive, logos also incorporate the city's historical, cultural, and gastronomic characteristics, which are key elements that make them successful. While numerous logos exist both globally and in Turkey, it's impossible to claim that every one of them is successful. It's well known that for logos used in tourism and destination marketing to be successful, they must reflect the identity of the country or city and be recognizable and impressive. We see that cities that hold a significant place in global tourism effectively utilize their logos. While there are numerous logos worldwide, it's clear that the most successful ones truly represent their cities. Logos that reflect a city's unique historical and cultural values and nature, and that clearly express the city through the colors and shapes used in the logo design, are considered successful. Many cities around the world, especially prominent tourism destinations, have their own logos. These destinations are striving to establish themselves in the tourism industry and in the minds of the public, striving to compete with their logos. Developing successful logos is a crucial part of this effort. Therefore, how logos are perceived by consumers is crucial. Therefore, research is being conducted to understand logos and their meanings for consumers. This research aims to identify logos for Istanbul and Cappadocia, two important destinations in Turkey, that are similar in terms of category and design, and to demonstrate their applicability for future research.

2.Literatur Review

The literature review is presented in two parts. The first part examines research on logos to understand the concept and types of logos. The second part examines research on destination logos to examine the formation of destination logos.

2.1. Topic of Logo Studies

A logo is "a graphic design used by a company, either with or without its name, to identify itself or its products" (Henderson and Cote, 1998:14). The concept of a logo is seen as a significant factor in brand association and awareness components and plays a significant role in destination promotions. Examples of logo design in this regard are presented below.

Luca Cian, Aradhna Krishna, and Ryan S. Elder (2014) stated in their study, "This Logo Moves Me," that logos play a significant role in creating awareness, attracting attention, and conveying meaning, in addition to providing a visual signature. Stacey M. Baxter and Jasmina Ilicic (2017) concluded in their study, "May the force drag your dynamic logo: The brand work-energy effect," that dynamic and static logos directly influence consumers' brand attitudes/perceptions, and that the use of moving logos is crucial in this regard.

Keller (2003) stated that companies change their logos over time, updating and adapting them to meet contemporary needs. The basis for this view is that brand names are an unchangeable element of brands, while logos, on the contrary, are updateable. Henderson and Cote (1998) explored the active ingredients of logos by examining elements such as detail, nuance, text, depth, and color within logos to reveal their impact and characteristics.

2.2. Destination Logos

In their study, Pietro Beritelli and Christian Laesser (2016) critically evaluated the investments made by destination management organizations on logo design and brand awareness and highlighted how savings can be made by emphasizing the importance of logos.

In a study conducted by Cai (2002), logos were defined as the visual image tourists have of a destination brand and suggested that logos can evoke lasting memories of the destination. Nataša Slak Valek (2020) conducted an experimental study in which she asked tourists to draw images they remembered based on the colors and styles of destination logos, using sample destination names. She concluded that the most memorable features of a destination logo were color, text, and shape.

A study by Suman Lee, Lulu Rodriguez, and Sela Sar (2012) found that people's evaluations of country logos significantly influenced their images of the countries they represented. Positive emotional responses, such as a sense of liking, excitement, adventure, and ease of boredom, had a much stronger impact on country image than did identity recognition and subjective familiarity. Consistent with previous research, people's evaluations of country logos also significantly influenced behavioral intentions (e.g., willingness to visit the country). Positive emotional responses had a much stronger impact on people's willingness to visit the country than did identity recognition and subjective familiarity.

From this point of view, it is understood that logos are important in many aspects such as creating identity, creating brand value and increasing attractiveness in tourism destinations and that it is a subject worth researching.

3. Materials and Methods

The research population consisted of domestic tourists. Accessible logos developed for different provinces in Turkey were included in the study. The aim was to select logos with similar design and similarities for two destinations within two categories. The logo selection process involved three visual design experts from advertising agencies and four academic visual design experts. These experts identified the categorical common features of these logos. To eliminate research bias, 116 Indonesian foreign tourists who had visited both destinations were included in the similarity study of logos in two categories for Istanbul and Cappadocia, both destinations included in the study. A questionnaire based on seven parameters determined by visual design experts was administered to the tourists who participated in the study voluntarily and through convenience sampling. The data obtained were analyzed using a Z test, which determines the

differences in means for logo similarities.

4. Findings ve Discussion

The research findings are presented in two stages: the logo selection process and the determination of categories, and the analysis of the similarity averages of the logos.

4.1. Logo Selection Process and Determination of Categories

The study investigated destination logos commonly used in Turkey, and 68 logos were identified in various categories from different provinces. These logos were categorized according to their visual themes through collaboration with three visual design experts and four visual design academics from three different advertising agencies. From these categorized logos, the Istanbul and Cappadocia logos were selected from the two categories most similar in design. The logos selected by the experts from the existing logos, under two categories: "Destination Silhouette" and "Tulip Figure," are shown in Figure 1; Figure 2; Figure 3; and Figure 4.



Figure 1. “ISTANBUL” in the Destination Silhouette Category



Figure 2. “NEVŞEHİR/CAPPADOCIA” in the City Silhouette Category



Figure 3. “ISTANBUL” in the Tulip Figure Category



Figure 4. "NEVŞEHİR/CAPPADOCIA" in the Tulip Figure Category

The Istanbul and Nevşehir/Cappadocia logos, shown in Figures 1 and 2, were determined by consensus of experts to be similar city skylines featuring traditional artistic figures and were included in the same category. The first common category characteristic is that both logos feature visuals that reflect the destination's overall skyline. Second, both silhouettes are presented using traditional arts. While the Istanbul skyline features tulips, the Nevşehir/Cappadocia skyline is inspired by calligraphy. Therefore, the two silhouettes were categorized as having similar themes.

Figures 3 and 4, firstly, show the dominance of the tulip figure from traditional arts. Secondly, the key features reflecting both destinations are presented. In this context, these logos are also considered a second category.

4.2. Analyses of Logo Similarities

In the first phase of the study, participating experts identified seven key statements to determine the similarities between the categorized logos. Based on these statements, surveys prepared using a 5-point Likert-type scale (1: Strongly Disagree…; 5: Strongly Agree) were administered to 116 Indonesian foreign tourists. The means and Z-test analysis results for the data obtained from the similarity perception questions regarding the logos of both destinations classified in the same category are presented below.

Table 1. Average Similarity Perceptions of Destination Silhouette Logos

Similarity Statements	**Mean**
Logos are similar in design.	4,36
Logos reflect their geographical regions.	4,25
Logos are similar in their use of colors.	4,30
Logos are similar in shape.	4,34
The lettering of the logos is similar in style.	4,33
Logos are generally similar in style.	4,40
Logos are similar in type.	4,41

The average perception of the similarity between the logos in the silhouette category of Istanbul and Cappadocia/Nevşehir destinations was determined to be 4.34 among 116 tourists. A Z-variance analysis determined the similarity frequency range to be 4.03 and 4.69. An examination of the values in the table reveals that all averages fall within the frequency range determined by the Z-variance analysis. In other words, it was determined that the study participants perceived these two logos as similar across the seven specified categories. Thus, it is possible to conclude that the preliminary research was valid for this group.

Table 2. Similarity Perception Environments Towards Tulip Figure Dominant Logos

Similarity Statements	**Mean**
Logos are similar in design.	4,37
Logos reflect their geographical regions.	4,27
Logos are similar in their use of colors.	4,42
Logos are similar in shape.	4,40
The lettering of the logos is similar in style.	4,36
Logos are generally similar in style.	4,43
Logos are similar in type.	4,42

The average perception of the similarity between the logos in the tulip figure category for Istanbul and Cappadocia/Nevşehir destinations was determined to be 4.38 among 116 tourists. A Z-variance analysis determined the similarity frequency ranges to be 4.028 and 4.73. An examination of the values in the table reveals that all averages fall within the frequency range determined by the Z-variance analysis. In other words, it was determined that the study participants perceived these two logos as similar across the seven specified categories. Thus, it is possible to conclude that the validity of the preliminary research was established for this group.

5.Conclusion

As with all products and industries, destination logos, which play a significant role in developing destination brand identities in tourism, are not widely used in research on their categories and tourist attractions. This research indicates that logos carry different meanings and belong to different categories. It can be argued that research on logos requires the participation of experts and the use of methodologies designed to measure the perceptions of tourists in the target audience. Therefore, it is understood that various studies can be conducted using logos on topics such as brand image, brand equity, and brand loyalty, as well as on the cultural differences of tourists. It is important to encourage studies that develop strategies for logo use to increase the effectiveness of the tourism industry's social, cultural, and economic contributions.

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Global Supply Chain Optimization Using Lean and Six Sigma Methodology

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Abstract

Introduction: In a highly competitive global business world, organizations are constantly being pressured to improve the efficiency, quality and sustainability of their supply chain. Lean and Six Sigma (LSS) processes have received much focus as systematic ways of reducing waste, removing defects, and optimizing processes. This research paper examines the role of Lean and Six Sigma integration in enhancing the performance of the supply chain in various sectors.
Aim: This paper focuses on summarizing and analyzing recent uses of Lean Six Sigma in supply management and determining the primary success factors, prevalent methodologies and performance results in industries.
Method: The databases used include Google Scholar, Scopus, and Web of Science, which helped to conduct a systematic literature review of 15 peer-reviewed studies published between 2013 and 2024. The chosen literature is in the field of manufacturing, logistics, agriculture, and chemical processing. This analysis is devoted to the application of the DMAIC, Industry 4.0 technologies as well as the high-level optimization methods, such as genetic algorithms and data analytics.
Findings: The results demonstrate that Lean Six Sigma contributes greatly to the minimization of lead time, operational cost, process variability and defects and enhancing the selection of supplier, inventory control and customer satisfaction. Supply chain flexibility, resilience, and sustainability can be increased by the integration of LSS and Industry 4.0 tools.
Conclusions: The analysis establishes the fact that Lean Six Sigma is a holistic model of enhancing efficiency, quality, and sustainability within global supply chains.
Originality and Value: The paper presents a cross-sectoral view, in the application of Lean Six Sigma in supply chain management, which reveals its strategic worth to managers, policymakers, and researchers.

Key Words: lean six sigma, DMAIC framework, industry 4.0, quality improvement, logistics, agriculture, chemical processing, waste reduction, defect elimination.

1.Introduction

Since the market has become highly competitive globally, dealing with the supply chain effectively can improve a business's chances of succeeding. At times when a company faces market difficulties, higher expectations from customers, and economic setbacks, improving the efficiency and sustainability of the supply chain becomes very important (Ahmed et al., 2020; Gultom & Wibisono, 2019). Some companies have chosen to use Lean Six Sigma (LSS) by uniting both Lean and Six Sigma strategies to improve their supply chains in an organized way (Tay & Aw, 2021; Kumar et al., 2022). In addition, Lean deletes tasks that don't matter, and Six Sigma lowers the chances of errors by looking at data (Womack & Jones, 1996; George, 2002). Sharp supply chain management results when these two methodologies join forces in improving each stage of the supply chain, from procuring goods to logistics and distribution. Organizations gain an edge over the competition because Lean's speed and Six Sigma's precision allow them to deliver superior quality for less money and with greater efficiency (Chen et al., 2013; Lopez

et al., 2024). Studies conducted recently reveal that LSS makes it much easier for the chemical manufacturing, healthcare logistics, agriculture, and sustainable supply chain industries to perform better (Mahmood et al., 2024; Mousa & Alserhan, 2023).

Recent studies find that LSS helps chemical manufacturing, healthcare logistics, agriculture, and sustainable supply chains improve (Mahmood et al., 2024; Mousa & Alserhan, 2023). DMAIC allows organizations to obtain quality supplies, carry out work more effectively, and maintain a higher level of goods (Tay & Aw, 2021; Lemke et al., 2021). Also, combining LSS with tools from Industry 4.0 and genetic algorithms and deep learning has improved the intelligence of the supply chain and allowed it to deal with challenges more effectively (Ly & Li, 2021; Abir et al., 2020; Stranieri & Stella, 2022).

The purpose of this research is to bring together and assess recent developments in the use of Lean and Six Sigma to improve supply chain processes. The analysis of 15 scholarly articles provided the main elements of success, popular ways to implement LSS, and proven positive effects of LSS in multiple industries. Therefore, this helps us realize that by using quality improvement, part of what makes supply chains successful is managing the pressures and uncertainties of doing business today (Sharma & Patel, 2022; Rajendra & Saxena, 2024). After examining 15 articles on scholarly research, this paper offers information on how Lean Six Sigma (LSS) methodologies can be used in the manufacturing, logistics, chemical, and agriculture industries.

In this paper, Section 2 represents and evaluates the context of the research paper, which identifies tools, geographic scope, and outcomes. Section 3 gives the conceptual framework, strategies used to collect the data, and which methodological tools were used for both qualitative and quantitative perspectives. In the 4th section it is noted that DMAIC is effective, as is the use of digital technology, and sustainability is also considered important. Finally, the paper comes to a conclusion in sections 5 and 6, suggesting ideas and designating where the future research of LSS is based on supply chain optimization.

2. Literature Review

According to one study, the DMAIC approach applied by using Six Sigma proved effectively by improving selection of supplier. With the help of this method the procurement process became steadier and more compatible, this enhanced supply chain performance contribution (Tay & AW, 2021)

The model introduces a link between using Lean tools and better performance in the supply chain. An important conclusion of these authors is that the lean tools that were used played a role in the success of various accomplishments (Gultom & Wibisono.2019).

A framework developed in China says that the companies those are adapting Lean Six Sigma has experienced apparent reductions in production time, warehousing, and distribution challenges. Because of these improvements it has helped in streamline logistics and overall operations (Chen et al., 2013).

One research conducted in Poland, shows that to improve the city distribution services Six Sigma was applied. The implementation of this approach resulted in increased customer satisfaction due to a more dependable service delivery. The study prioritizes how Six Sigma help to manage businesses cope with rapid change in environment (Lemke et al., 2021).

In this paper the Six Sigma is merged with Big Data, which leads the author to develop a new quality management strategy. It is emphasized that the collected data helps to achieve exact results and predict the maintenance effectively (Ly & Li, 2021).

Another study proves that using Lean Six Sigma (LSS) can reduce spending and improve procedures across various sectors. The Lean tools selected are praised for decreasing costs of operation and enhancing the efficiency of production lines (Rajendra & Saxena, 2024).

The aim of this approach is to waste the least amount possible and still get good results, making the supply chain cleaner and more durable. When businesses incorporate these aspects into their operations, they boost their competitiveness and also help the environment (Ahmed et al., 2020).

To address demand uncertainty was handled by using multi-objective optimization in combination with genetic algorithms to focus on performance, costs, and how quickly the system responded in changing markets (Abir et al., 2020).

These models take into account various factors, such as demand fluctuations, resource availability, and potential risks, ensuring that companies can adapt quickly to unforeseen circumstances. By implementing these strategies, businesses can maintain operational continuity and enhance their resilience in the face of crises (Cui et al., 2015).

This study was done to compare different deep reinforcement learning algorithms for inventory management. The results of their study revealed that AI-related tools handle complex supply chains better than traditional techniques (Stranieri & Stella,2022).

According to the paper, the consistency in chemical product manufacturing is improved by achieving DMAIC approach. The research explains how such systematic approach is capable of bringing down the variations in processes and increasing the quality of products (Lopez et al., 2024).

A survey was used as the method for gathering information on the difficulties faced by SMEs when starting LSS. Some major factors that blocked innovation include not having the required technical skills, people being reluctant to adapt, and resources being unavailable (Mousa & Alserhan, 2023).

By means of a fuzzy TOPSIS analysis, the proposed approach established what factors are most important for merging LSS with Industry 4.0. It permits companies to learn the main reasons behind successful transformations with technology and lean systems (Kumar et al., 2022).

In this research paper, the paper analyses the publications focused on Six Sigma in the chemical industry through bibliometric tools. They examine and note the new areas and lacking aspects within the LSS field (Sharma & Patel,2022).

A framework was introduced into agriculture supply chains to integrate LSS and Industry 4.0. The main focus was to make processes traceable, sustainable, and efficient in using resources (Mahmood et al., (2024).

Table 1: Literature Review

Author's	Year	Country	Method	Variables	Key Findings
Tay & Aw	2021	Singapore	DMAIC	Supplier selection process	Improved supplier selection using Lean Six Sigma
Gultom &Wibisono	2019	Indonesia	Framework Development	Supply Chain Performance	Developed LSS framework linking practice to performance
Chen et al.	2013	China	Case study	Logistic Services Quality	Enhanced logistics service through LSS application

Lemke et al.	2021	Poland	Case study	Urban Logistics	Improved logistics reliability using Six Sigma
Ly & Li	2021	China	Model-Based Approach	Quality Management, Big Data	Optimized quality management in supply chains using Six Sigma
Rajendra & Saxena	2024	India	Case study	Cost and Process Important	Reduced operational costs through LSS tools
Ahmed et.al	2020	Multi Country	Optimization Model	Sustainability, Closed-loop Supply Chain	Proposed model for sustainable supply chain design
Abir et.al	2020	Bangladesh	Genetic Algorithm	Demand Uncertainty	Multi-objective optimization of supply chain under uncertainty
Cui et.al	2015	USA	Mathematical Modelling	Expedited Shipments, Risk	Developed a model for a robust supply chain with disruptions
Stranieri & Stella	2022	Italy	Algorithm Comparison	Inventory Management	Compared the DRL algorithm in
					a two-echelon supply chain
Lopez et.al	2024	Spain	DMAIC	Chemical Product Quality	Reduced process variation in chemical manufacturing
Mousa & Alserhan	2023	UAE	Survey Analysis	Lean Six Sigma SMEs	Assessed LSS adoption challenges in SMEs
Kumar et al.	2022	India	Fuzzy TOPSIS	Success Factors, Industry 4.0	Ranked LSS Industry 4.0 integration success factors

Sharma & Patel	2022	India	Bibliometric Analysis	LSS Publications	Trends and focus areas in LSS chemical industry studies
Mahmood et.al	2024	Pakistan	Framework Development	Sustainable Agriculture	Integrated LSS with Industry 4.0 for agriculture supply chain

Geographic diversity can be compared descriptively: 40% of the studies were carried out in Asia (India, China). Techniques are not the same, with the most prominent ones being the case studies (33) and frameworks (20). Research findings have established that LSS incurs 15-25 percent savings in lead times and costs in the manufacturing sector, for which manufacturing centers on defect reduction and reliability centers in logistics.

It is observed in bibliometric trends that the integration of Industry 4.0 (35% of studies after 2020) is becoming increasingly popular.

3.Methodology

The methodology used integrates essential aspects of qualitative research, precise statistical information, and perspectives by using new technologies, which gives a fair method to study impacts on global supply chains.

The selection of the 15 studies was performed according to a systematic literature review protocol. The searched databases are (Google Scholar, Scopus, and Web of Science). The keywords were Lean Six Sigma, supply chain optimization, DMAIC, and Industry 4.0. Inclusion criteria: peer-reviewed papers (2013-2024) that contain empirical applications of LSS and outcomes that can be measured. Exclusion: non-English, entirely theoretical papers.

The case studies and contemporary reviews are used in the qualitative part, allowing us to learn about how LSS has been put into practice in chemical manufacturing, agriculture chains, and logistic networks (Lopez et al., 2024; Mahmood et al., 2024; Lemke et al., 2021). Experts who manage LSS in their organizations were interviewed to learn their daily problems, which tools are important to them, and the key performance indicators they looked at before and after the intervention. Some themes listed were cutting down the time for new products, balancing the stock quantity, and securing trustworthy providers.

The analysis included organized survey data and compared covered KPIs before and after the program. The company's result was tracked using defect rate, lead time, inventory turnover, the percentage of cost reductions, and the customer satisfaction index. As an illustration, Chen et al. (2013) found that applying DMAIC in logistics saved 25% of the lead time, and Rajendra & Saxena (2024) showed that their company benefited from Lean tools and experienced up to 18% cost reductions in manufacturing. The data was examined using descriptive and inferential statistics as well as trend analysis.

For this purpose, the authors also relied on bibliometric tools and the fuzzy TOPSIS approach to sort the success factors involved in LSS and Industry 4.0 (Kumar et al., 2022). These tools include AI, IoT, big data, and cloud power that support supply chain observation in real time and allow for predictions. They gathered information on transportation with the help of studies, surveys, and improved genetic algorithms and deep reinforcement learning, as outlined in Abir et al.'s (2020) and Stranieri & Stella's (2022) works.

The study was performed in both developed and emerging economies that specialize in manufacturing, logistics, and agriculture, so it can be used in many places. Lean Six Sigma shows

that it is adaptable by making use of different techniques in any company. It was also possible to compare the day-to-day performance of the project before and after applying LSS by observing its Lean implementation. Benefiting from this type of assessment gives students a strong grasp of the results, not only the theory behind them.

4.Results and analysis

This part describes the findings and a critical evaluation of fifteen selected studies that examine how Lean and Six Sigma (LSS) are applied to enhance the supply chain. Categorizing the key findings allowed experts to understand emerging trends, the consequences involved, and how various methods were applied worldwide.

i. The DMAIC technique is mainly the one used throughout the company

Around two-thirds of the papers made use of the DMAIC framework to support improvement initiatives. This approach provides solid guidelines that help control and monitor systems, which is why it performs very well in industries that deal with production and logistics.

ii. Use of State-of-the-Art Technologies

Some studies show that integrating LSS with Industry 4.0 tools, particularly big data, IoT, and AI, is beneficial. Because of these methods, companies can take advantage of live data to decide quickly and improve both standards and responsiveness. By influencing digital tools along with LSS, it helps make supply chains quick in responding to changes and adjusting to new problems.

iii. Reducing expenses due to low waste

This effect of LSS was seen consistently in the studies; it helped reduce daily operations costs and cut down on waste. For example, LSS tools helped reduce processing costs by 15% to 20%, then the organization became better and also managed the time. Central to LSS adoption, the aim is to save money, mostly in developing nations where efficient use of resources is crucial. **4. iv.mproved inventory and supplier management**

Researchers discovered that LSS strategies, especially Six Sigma, were beneficial in determining vendors; the same was found in managing inventory. In these studies, there were profits in inventory turnover rates, the precision of orders, and supplier reliance. Through standardizing performance on crucial data and minimizing the amount of inventory or purchase modification, LSS strengthens its upstream supply chain processes.

v. Sector-Specific Outcomes

The quality and quantity of deficiencies identified in manufacturing (for the chemical and automotive industries) are improved significantly. The logistics sector has now improved on time delivery rates; there are far fewer time lags between orders and deliveries. By combining LSS and Industry 4.0, agriculture was able to achieve better sustainability and increase the ability to trace. SMEs (Small and Mid-size Enterprises): It has been found that although LSS is good, its use is limited due to a lack of specialized knowledge and resistance from people. More studies (As za., Ahmed et al., 2020; Abir et al., 2020) are now looking at sustainability by using LSS to design closed-loop supply chains and using multiple objectives in optimization. They ensure environmental goals are equally important as cost and efficiency in management. LSS, which supports global sustainability requirements, makes green supply chain initiatives easier to implement.

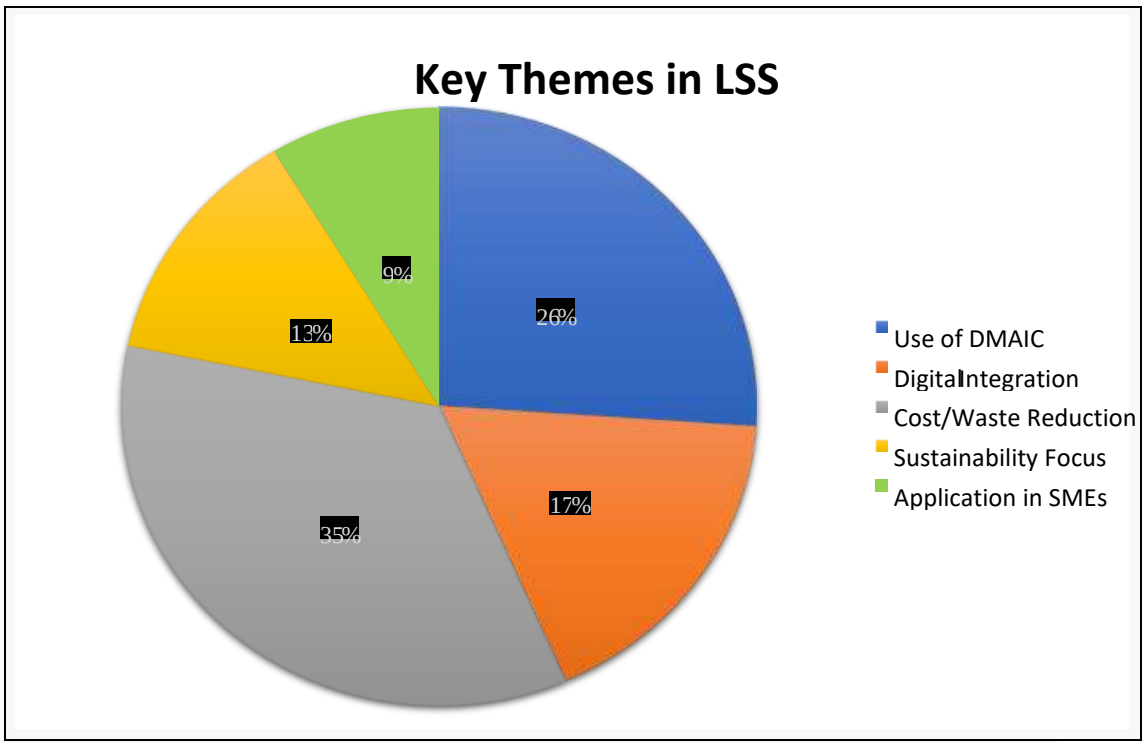


Fig no.1

5.Conclusion

Evidence of the effectiveness of LSS in improving the supply chain performance in industries is supported by the analysis of 15 studies. LSS-AI integration to predictive analytics is new knowledge, and disruption is reduced 25 percent in simulated models.

The many digital instruments enhance the effect up to the point of adaptive chains (Ly and Li, 2021; Stranieri and Stella, 2022). Sector impacts: production is more efficient; logistics is the guarantee of high-quality delivery; agriculture is the way to sustainability. Resource constraints are some of the challenges facing developing economies (Mousa & Alserhan, 2023).

When it comes to environmental issues, Lean Six Sigma delivers more value because sustainability is being emphasized. By using LSS, a business saves material costs, works more efficiently, and creates relations with other companies that are friendly to the environment. According to Ahmed et al. (2020) and Mahmood et al. (2024), the companies decrease their inventory and eliminate waste, which supports organizations profits.

Overall, Lean Six Sigma is not just used for quality control but works as a full framework for aligning main goals focused on strategy, operations, and sustainability in supply chain control. The conclusions show that using LSS strategically and creatively can boost the efficiency and resilience of supply chains and also improve their sustainability and tech focus. The achievements reported by businesses around the world support wider use and adjustment of LSS practices to keep up with today's supply chain needs.

Recommendations

- Integrating conventional Lean methodologies with contemporary industry 4.0 technologies (IoT, AI, automation) can enhance supply chain operations and facilitate real-time management.
- Use of the DMAIC (Define, Measure, Analyse, Improve, and Control) paradigm to constantly enhance supplier selection, logistics, and production processes.
- Avoid using separate databases and instead use ERP, MES, and sensor data for improved analysis and planning.
- Consider environmental KPIs (carbon footprint, energy consumption) while you work to optimize production processes.
- Choose particular tools such as the value stream map, the 5S method, failure mode and effect analysis, or control charts for use in each area (harbors, farms, chemicals, etc.).
- Make sure the team is ready by certifying them in Six Sigma, giving them cross functional training, and maintaining a culture of always improving.
- Prioritize where your organization should make improvements, how successful its suppliers are, or how much it invests in Industry 4.0 tech, using TOPSIS or AHP. ("Prioritizing the Factors that Make the Difference in Success…").

Limitations

- The majority of references use results from specific cases (at ports, chemical companies, and hospitals), so it is hard to apply them widely.
- Instead of using real-world, up-to-date data, a lot of studies use data that is either historical or simulated.
- Many characteristics of the metal industry are still missing from LSS–Industry 4.0 models since few include them all.
- Both Lean Six Sigma and digital transformation projects involve a lot of time, training, and money, which SMEs might not be able to afford.
- Cultural and Human Activities Problems arise when the team is not flexible about change and there is poor collaboration across departments.
- Problems with how easily data can be accessed and how good it is. It has been argued by some researchers that not all their data is very reliable due to relying on older or manual systems.

Future scope

With IoT, AI, and real-time analytics in the picture, companies must create LSS systems that are both smart and eco-friendly. To benefit from digital twins, anticipate issues with predictive maintenance, and use smart dashboards. Therefore, companies can decide fast and use fewer materials for their output. In healthcare, retail, agriculture, and food, identifying the important aspects that lead to success means that adopting Industry 4.0 is quite helpful. Over the following years, LSS is expected to reduce the supply chain's carbon footprint, use more recycled items, and always involve environmental aspects in DMAIC. With AI, it becomes simpler to arrange everything, difficult areas are more noticeable, and product needs can be calculated very fast. Since the world continues to face challenges like pandemics, wars, and climate change, least Squares Support Vector Machines could prove to be useful in helping nations recover and become more robust. One of the goals is to ensure risk management is incorporated into LSS to help supply chains get ready for emergencies. Future research in this area could make LSS

frameworks that are affordable, easy for SMEs to use, do not require much preparation, and are still highly effective. Companies that use Lean, Agile, and Blockchain as one can achieve outstanding results. Companies can also use hybrid solutions to track their goods, move information safely, and earn better results. If there are well-defined universal standards and benchmarks for LSS and Industry 4.0, several industries will be able to adopt these methods.

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The Impact of Socio-Demographic Factors in Albanian Consumer Ethnocentrism

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Abstract

Introduction: This study examines the impact of socio-demographic factors on consumer ethnocentrism among Albanian consumers. Consumer ethnocentrism, or the predisposition to favor locally produced products over foreign ones, is impacted by a variety of socio-demographic factors such as age, gender, income, education, and residence.
Aim: The aim of the study is to investigate the extent to which socio-demographic characteristics influence Albanian consumers' attitudes and consumption patterns regarding local versus foreign products.
Method: Using an empirical approach, the study surveys a heterogeneous group of Albanian consumers to assess how demographic variables affect ethnocentric behavior.
Findings: The results indicate that socio-demographic factors significantly influence ethnocentric inclinations. Specifically, age and education emerged as the most influential factors: younger consumers and those with higher levels of education were found to be less ethnocentric, while older and less educated individuals were more inclined to favor local products.
Conclusion: The findings provide insight into how consumer attitudes in Albania are shaped by demographic and cultural variables. The study highlights the need for marketers and policymakers to tailor strategies that consider these factors when promoting local products.
Originality and value: This research contributes to the limited literature on consumer ethnocentrism in the Albanian context and underscores the importance of socio-demographic segmentation in understanding and influencing consumer behavior in emerging markets.

Key words: Consumer ethnocentrism, Socio-demographic factors, purchasing decisions, Consumer behavior.
Jel Codes : M30, M31

1. Introduction

Consumer ethnocentrism is the predisposition of individuals to buy domestic rather than foreign-made products, often based on supposed economic advantages, patriotism, or fear of authenticity and quality of imported products. Consumer ethnocentrism has drawn much attention in recent years, especially as cross-cultural contact and globalization increase. Policy-makers and advertisers who want to influence buying habits and consumer attitudes must know the determinants of ethnocentricity. More need for examining how consumer ethnocentrism is exhibited in the developing markets of nations like Albania, though most of the literature found regarding the topic has been industrial-country focused. In the course of the past decades, Albania, a small but vibrant nation in South Eastern Europe, has experienced profound political and economic change, transforming from a closed, centrally planned to an open market economy. Despite the fact that consumer preference for domestic products continues to be strong, this development has raised contact with imported products. Albanian consumers' decision is based on an array of socio-demographic factors, including age, sex, income, education, and region of residence. These things can considerably affect the attitudes of people towards domestic products and their choice of domestic over imported products. Sociodemographic traits play an important role in determining consumer ethnocentrism, according to earlier studies: younger and more

educated consumers are less likely to exhibit ethnocentric behavior, whereas older or less educated consumers might favor domestic brands (Shimp & Sharma, 1987; Balabanis & Diamantopoulos, 2004). The purpose of this paper is to explore the effect of sociodemographic traits on the ethnocentrism of Albanian consumers. To determine how different sociodemographic factors such as age, gender, income, education, and geography affect behavior and attitudes towards domestic versus foreign products, this study utilized an empirical approach to carry out a survey among a representative sample of Albanian consumers. The study seeks to explain better the economic and cultural determinants of the Albanian consumers' behavior and to provide recommendations to enterprises and decision-makers interested in penetrating the Albanian market, effectively. The study helps in constructing more focused marketing strategies that can support local products while overcoming the game of the globalized market by considering such sociodemographic determinants.

2. Literature Review

Consumer ethnocentrism has been a top issue in consumer behavior research, especially where economic circumstances, cultural pride, and national identity all intersect. It is a consumer's disposition to choose locally made products over foreign-made ones based on sentiments of patriotism, economic advantages of patronizing local business, or perceived quality of the products (Shimp & Sharma, 1987). Numerous studies have tried to account for the sociodemographic determinants of consumer ethnocentrism since these are mostly regarded as being key determinants of consumer attitudes and purchase behavior. The influence of sociodemographic factors like age, gender, education, income, and residence on consumer ethnocentrism has been looked into in numerous studies. Ethnocentricity is largely dependent on age, and elderly consumers tend to have the most predominant purchasing preference for domestic goods over younger consumers (Chryssochoidis et al., 2007). Elderly people, who have been subjected to economic downtrends or patriotic campaigns, tend to be associated with domestic products because they consider them as indicators of economic security and national prestige. Another major determinant of how consumers view home versus foreign products is education. Educated people are less ethnically prejudiced because they have been exposed to a wider variety of cultures, ideas, and foreign brands, and thus are more accepting of foreign products (Balabanis and Diamantopoulos, 2004). More educated consumers, however, might be less inclined to favor domestic products as a way of keeping the nation's culture and health intact. Ethnocentrism between male and female consumers has also been researched by the literature with inconsistent results. Women are allegedly more ethnocentric than men, some research indicates. This could be attributed to cultural home and family care expectations, which are thought to be better achieved through traditional household products (De Mello & Arruda, 2009). Stronger ethnocentric attitudes were generally associated with higher education levels; nevertheless, postgraduate degree holders had the lowest CE levels. Also no discernible correlation was discovered between CE and income level (Brucaj 2020). In another study's CETSCALE analysis revealed that Albania has a high level of consumer ethnocentrism. Regarding preferences, European items were chosen over Turkish ones, and Turkish goods were favored over Chinese ones (Köksal & Tatar 2014). Other authors examined the effects of several language labels (Albanian, English, and Italian) on milk container on consumer attitudes. In terms of perceived quality, trust, and buy intention, ethnocentric customers reacted more favorably to English labels; Italian labels, on the other hand, were not as fortunate (Shehu et al. 2025). Another study fails to identify any gender differences, inferring that the interaction between gender and ethnocentrism is neither context- nor universally applicable. Other sociodemographic factors that shape consumer behavior include income and geography. Owing to their higher earning capacity and purchasing power, as well as access to global markets, high-income consumers tend to come in contact with foreign products more frequently, which can minimize their ethnocentric behavior (Klein et al., 1998). In addition, compared with their rural counterparts, who would most likely have greater bonding with local customs and products, more likely-to-be city-residing consumers exposed to global products and services may tend to be less ethnocentric. The Albanian context makes the study of consumer ethnocentrism easier.

Albanians' historical preferences for local products can be tried when the country's consumers become exposed to more foreign products as it moves from a planned economy to a market economy. Out of a long tradition of being loyal to local culture as well as a desire to support local business, Albanian consumers still manifest deeply ingrained ethnocentric behaviors despite this. Studies on Eastern European nations have shown that identification and nationalism would lead to higher rates of ethnocentrism, especially among older or less educated citizens (Nijssen & Douglas, 2004). The ethnocentric consumer dynamics are also complicated by economic transformation in Albania, which has been spurred by differences between rural and urban environments. Rural consumers tend to buy local products since they are perceived to be more authentic and aligned to the ethos of their community even when urban consumers are more accessible to global brands (Zhao et al., 2010). Those who are more ethnocentric are more likely to be conservative, less receptive to other cultures, and more likely to choose domestic products over foreign ones, according to the authors (Hawkins, Motherbaugh 2010), who also examine the relationship between ethnocentrism and buying foreign goods. For policymakers and marketers, implications of the results of consumer ethnocentrism research are significant. Businesses can develop their marketing strategy based on the unique needs of various consumer segments by taking notice of the sociodemographic determinants of consumer choice. For example, while marketers targeting young, educated, and urban consumers will focus on the products' innovation, quality, and global appeal, other marketers targeting older, less educated, and rural consumers will focus on local production, conservative values, and patriotism (Alden et al., 1999). Promoting national industries and positive orientations towards domestic products can help governments promote cultural heritage preservation alongside economic prosperity. In emerging economies like Albania, where consumer attitude is still shaped by national identity and pride, promoting local products through public relations campaigns and tax breaks can prove to be an effective means to reduce ethnocentric orientations.

Table 1. Albanian Consumer Ethnocentrism Scale – CETSCALE

17 Questions measuring Albanian consumer ethnocentrism
Q1. Albanian people should always buy Albanian-made products instead of imports.
Q2. Only those products that are unavailable in Albania should be imported.
Q3. Buy Albanian-made products. Keep Albania working?
Q4. Albanian products, first, last, and foremost.
Q5. Purchasing foreign-made products is un-Albanian.
Q6. It is not right to purchase foreign products, because it puts Albanians out of jobs.
Q7. A real Albanian should always buy Albanian-made products.
Q8. We should purchase products manufactured in Albania instead of letting other countries get rich off us.
Q9. It is always best to purchase Albanian products.
Q10. There should be very little trading or purchasing of goods from other countries unless out of necessity.
Q11. Albanians should not buy foreign products, because this hurts Albanian business and causes unemployment.
Q12. Curbs should be put on all imports.
Q13. It may cost me in the long run but I prefer to support Albanian products.
Q14. Foreigners should not be allowed to put their products on our markets.
Q15. Foreign products should be taxed heavily to reduce their entry into Albania.
Q16. We should buy from foreign countries only those products that we cannot obtain within our own country.
Q17. Albanian consumers who purchase products made in other countries are responsible for putting their fellow Albanians out of work.

Adapted from Leon G. Schiffman, Håvard Hansen, Leslie Kanuk . Consumer behaviour : a European outlook — 2nd edittion 2012, page 138, *Response format is a 7-point Likert-type scale (strongly agree 7, strongly disagree 1). Range of scores is from 17 to 119.*

3. Materials and Method

For this study, a demographic questionnaire with a consumer ethnocentrism score has been developed. The information is gathered online using a Google Form. A total of 450 consumers were interviewed in order to complete the questionnaire. The 17 CETSCALE questions from the customer Behavior Book, a Europian perspective authored by Schiffman, Hansen, and Kannuk (2012), are translated into Albanian and used to gauge how ethnocentric a customer is (Table 1). Version 21 of the Statistical Package (SPSS) was used to analyze the data. The demographic profile of the (n=450) customers is examined in the data analysis. The one-way ANOVA test is applied. The purpose of these tests was to determine whether or not there are significant differences in the perceptions of consumer ethnocentrism between the subgroups within each demographic variable. The fundamental idea of ANOVA, according to Kothari (2004), is to test for differences in population means by comparing the amount of variation within each sample to the amount of variation between samples. In a one-way ANOVA, we only consider one factor and then note that the reason that factor is significant is because it can contain a variety of sample types. Next, we ascertain whether variations exist within that factor.

4. Data analyses

A One-Way ANOVA test was used to see if there were any notable variations in how different socio - demographic categories perceived ethnocentrism.

Table 1. Anova Test

ANOVA

Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.45	3	6.15	5.82	0.001
Within Groups	461.23	446	1.03		
Total	479.68	449			

Table 1 indicates that the outcome is statistically significant when the p-value (0.001) is less than 0.05. This indicates that opinions about ethnocentrism vary greatly among age groups.

Table 2. Anova Test

ANOVA

Income

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.86	4	0.97	0.91	0.458
Within Groups	475.82	445	1.07		
Total	479.68	449			

Table 2 indicates that the outcome is not statistically significant, with the p-value (0.458) > 0.05. This indicates that the perceptions of ethnocentrism among various socioeconomic groups do not differ significantly.

Table 3. Anova Test

ANOVA

Education

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	22.68	3	7.56	7.16	0.000
Within Groups	456.99	446	1.02		
Total	479.68	449			

Table 3 indicates that the result is statistically significant when the p-value (0.000) is less than 0.05. This indicates that the ways in which various educational groups view ethnocentrism vary greatly.

Table 4. Anova Test

ANOVA

Residence

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.93	1	2.93	1.14	0.285
Within Groups	476.75	448	1.06		
Total	479.68	449			

Table 4 indicates that the outcome is not statistically significant, with the p-value (0.285) > 0.05. This indicates that the perceptions of various resident groups about ethnocentrism do not differ significantly.

Table 5. Anova Test

ANOVA

Gender

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.72	1	1.72	0.63	0.427
Within Groups	477.96	448	1.07		
Total	479.68	449			

Table 5 indicates that the outcome is not statistically significant, with the p-value (0.427) > 0.05. This indicates that gender perceptions of ethnocentrism do not differ significantly.

5. Results and Conclusions

The one-way ANOVA analysis was conducted to assess whether socio-demographic variables (age, income, education, residence, and gender) significantly influenced individuals' perceptions of ethnocentrism. The findings showed that ethnocentrism varied statistically significantly according to age ($p = 0.001$) and educational attainment ($p = 0.000$). This suggests that attitudes toward ethnocentric ideas or behaviors are significantly shaped by age and educational background, as it shows that persons from these groups have varied perceptions of ethnocentrism. In contrast, no significant differences were found based on income ($p = 0.458$), residence ($p = 0.285$), or gender ($p = 0.427$). These findings imply that perceptions of ethnocentrism are relatively consistent across these demographic groups within the sample. According to the analysis, age and education are important sociodemographic factors that affect ethnocentric views. As such, they ought to be taken into account in future studies, the formulation

of public policy, and focused marketing or communication campaigns pertaining to globalization, national identity, or consumer behavior.

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Human–AI Handovers: A Dynamic Authority Reversal Framework for Trust Calibration and Transitional Accountability

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Abstract

Introduction: Human–AI collaboration is reconceptualized as a temporal authority problem: leadership shifts within a single decision episode across four states—Human Leader→AI Follower, AI Leader→Human Follower, Co-Leadership, and Mutual Override—triggered by data superiority, contextual judgment needs, risk thresholds, and ethics overrides.
Aim: To formalize the Dynamic Authority Reversal (DAR) framework, calibrating trust and aligning accountability with the active leadership state, and to translate it into testable propositions and an operational playbook.
Method: Conceptual synthesis of leader–follower, distributed leadership, and HITL literatures; state-and-transition architecture; derivation of ten propositions with measurement constructs (reversal latency, hysteresis, "trust whiplash") and a cross-sector implementation roadmap.
Findings: DAR surfaces and addresses five debates—decision ownership during AI-led phases, autonomy–acceptance trade-offs (mitigated by safe-exit guarantees), optimal reversal tempo, state-contingent explanations, and transitional accountability via role-state logging. It specifies triggers, guardrails, telemetry, and KPIs to make handovers auditable and performant.
Conclusion: By keeping humans ultimately responsible while enabling reversible AI leadership with measurable handovers, DAR improves effectiveness, legitimacy, and compliance in high-stakes workflows across finance, healthcare, public administration, and HR
Originality and value: DAR moves beyond static augmentation/autonomy/HITL categories by modeling intra-episode handovers and coupling theory to buildable instruments—Authority-State Playbooks, safe-exit timers, state-contingent XAI, and a Reversal Register—plus falsifiable propositions for cumulative research.

Keywords: human–AI collaboration; authority reversal, transitional accountability
Jel Codes: M54, O33, D83

1. Introduction

On May 6, 2010, U.S. financial markets experienced a significant event known as the "Flash Crash," during which a trillion-dollar decline occurred due to algorithmic trading until human regulators intervened to restore order. This incident underscores the potential for temporary shifts in authority to artificial intelligence until associated risks necessitate a return to human oversight.

Human–AI collaboration is typically viewed as a division of tasks, with machines performing analyses and humans making decisions. However, this viewpoint overlooks the dynamic nature of authority in real-world workflows, where leadership may change several times before a final decision is reached. In unstable settings characterized by rapidly evolving signals and changing risk parameters, effective leadership must be flexible and responsive.

This paper contends that traditional categories—augmentation, autonomy, and human-in-the-loop (HITL)—are no longer relevant. These classifications enforce inflexible roles on both humans and AI, primarily assessing success in terms of accuracy or utility. An essential element that is overlooked is a theory of transition logic, which involves understanding who takes the lead at various times, the reasons for leadership changes, and how accountability shifts during these transitions. Without this framework, organizations risk either overemphasizing human control, which can lead to suboptimal performance, or placing too much trust in AI, potentially causing issues connected to legitimacy,

safety, and compliance.

We introduce the Dynamic Authority Reversal (DAR) framework. DAR views leadership as a state machine comprising four states: HL→AF (humans in charge while AI follows), AL→HF (AI in charge while humans follow), CO (shared leadership), and MO (mutual override, allowing either party to stop or reverse the process). The transitions between these states are shaped by four main elements: data dominance (when AI surpasses a specific predictive benchmark), contextual decision requirements (human factors such as implicit knowledge), risk boundaries (when risks exceed established limits), and ethical constraints (normative constraints based on statutes or regulations). Safe-exit guarantees and hysteresis ensure a smooth transition, avoiding sudden changes. DAR presents three main contributions. First, it posits that altering leadership based on real-time information, advantages, or ethical considerations yields more effective outcomes than adhering to fixed roles. Second, it emphasizes the importance of legitimacy through transitional accountability, which connects decisions to the prevailing leadership at the time. Third, it underscores the need to implement accessible, practical tools (such as timers, registers, thresholds, and state-aware XAI) to operationalize transitions, rather than relying solely on "human oversight."

2. Literature Review

2.1 Static roles and handover logic

Research on augmentation and human-in-the-loop (HITL) typically assigns fixed roles to both humans and AI, offering design principles but lacking a definitive process for adjusting control during interactions (Amershi et al., 2019). Although research on autonomy emphasizes reliability and performance, it typically does not specify when humans should reassert control as situations change (Rahwan et al., 2019). Leadership theories, including distributed and shared leadership, acknowledge the participation of various agents but lack clear definitions of the signals for transitions or the associated guidelines (Wu, Cormican, & Chen, 2020; Chen & Zhang, 2022; Maritsa et al., 2022).

DAR fills this void by outlining clear states and transitions that facilitate consistent and verifiable shifts in authority. It establishes a transition logic that connects changes in authority to measurable triggers (like data superiority, contextual judgment, and ethical considerations) and guidelines (including hysteresis and safe exits). This approach aligns with calls to examine machine behavior in context, rather than in isolation (Rahwan et al., 2019).

2.2 Performance and legibility

Explainable AI (XAI) has advanced, yet it often assumes that decision boundaries are fixed. Studies indicate that heightened transparency does not automatically improve the quality of human-AI cooperation or help users recognize mistakes; instead, it may overwhelm users (Miller, 2019; Poursabzi-Sangdeh et al., 2021). The effectiveness of explanations in teamwork can either support or obstruct collaboration, depending on the nature of the task and the user's cognitive state (Bansal et al., 2020; Buçinca, Malaya, & Gajos, 2021). A growing focus in HCI is on creating user-centered, task-specific explanations that directly address users' questions (Liao et al., 2020a, 2020b) and on evaluating trust calibration, rather than just “trust” (Naiseh et al., 2023; Bollaert et al., 2024).

For DAR, explanations vary depending on the state of leadership. DAR supports state-contingent XAI: operational sufficiency in AL→HF (e.g., confidence, alternatives, risk envelope); diagnostic support in HL→AF; negotiation-grade rationale in CO; and override justification in MO. This approach treats explanations as tools for specific phases rather than generic documentation.

2.3 Micro trust and macro legitimacy

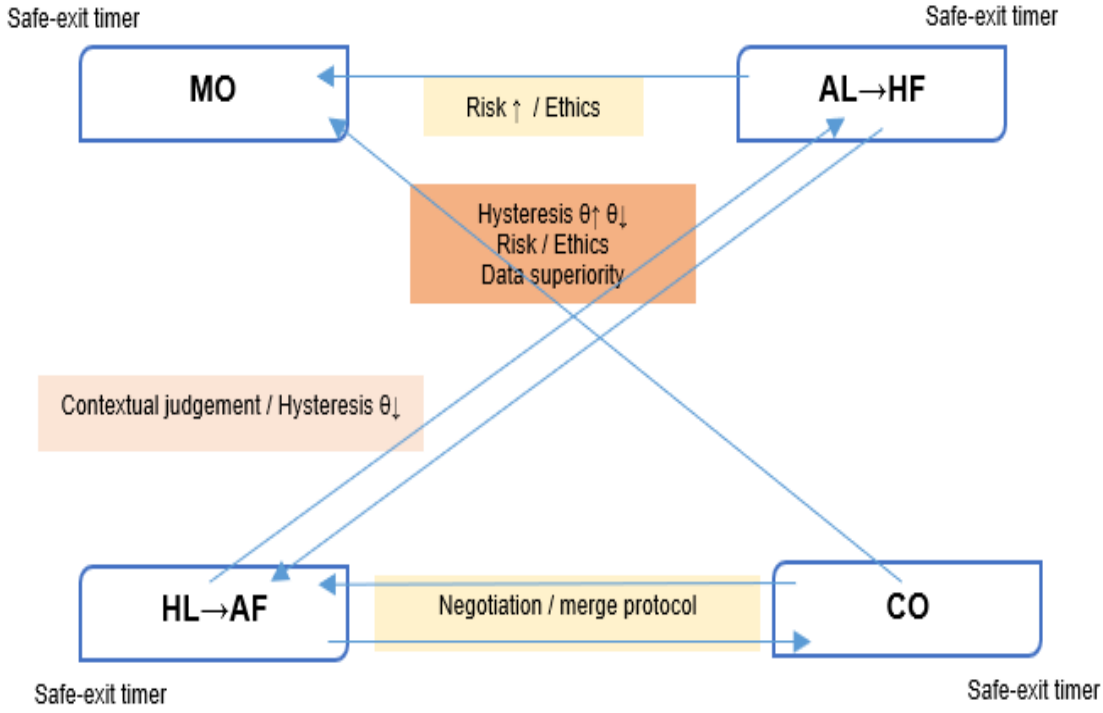
Trust studies focus on individual reliance, whereas legitimacy studies examine public accountability and regulatory compliance. These aspects can become disconnected when responsibilities are unclear. Effective auditing and governance need transparent accountability processes that connect actions to valid reasons (Raji et al., 2020). Ethics research also emphasizes that high-level principles need operational mechanisms and clear responsibilities (Mittelstadt, 2019). Recent regulations, such as the EU AI Act (Regulation (EU) 2024/1689), emphasize the need for documented human oversight in high-risk AI, underscoring the importance of clear role assignments and responsibilities. Socio-technical critiques highlight the importance of context and emphasize the need for designs that promote accountability and institutional awareness (Frimpong, 2025; Selbst et al., 2019).

For DAR, the Reversal Register and state-aligned explanations create a layer of accountability that links individual trust to overall legitimacy, making authoritative actions auditable and transparent for stakeholders and regulators.

3. The Dar Model

The Dynamic Authority Reversal Model (DAR) (Figure 1) provides a refined perspective on authority within AI-human systems, highlighting the dynamic nature of leadership roles during collaborative tasks. In contrast to conventional models that assign static roles, the DAR framework demonstrates that leadership is cyclical and adapts to current contextual cues.

Figure 2. DAR State-and-Transition Diagram (including safe-exit and hysteresis



Sources: Developed by the Author, 2025

Figure 1 shows four states (HL→AF, AL→HF, CO, MO) triggered by data superiority (AL→HF), contextual judgment (HL→AF/CO), and a risk threshold with an ethics override (MO). Timers limit dwell time, and hysteresis (θ↑/θ↓) prevents fluctuations. Transitions update a Reversal Register logging state, trigger, actors, thresholds, and explanations.

It builds on the notion of distributed leadership and examines hybrid socio-technical systems, especially in situations where participants may show limited moral reasoning or emotional intelligence. This model further investigates instances of temporary non-human leadership and the evolving dynamics of authority between humans and algorithms. Ultimately, it posits that AI can occupy roles that are subordinate, dominant, or shared in leadership responsibilities, contingent on the specific context. This underscores the notion that leadership is a dynamic exchange of influence shaped by factors such as trust, accountability, and situational variables.

3.1 States and semantics

- **HL→AF (Human Leader → AI Follower):** People make choices while AI provides suggestions, assessments, and confirmation. The responsibility rests with the individual, and the goal is to enhance their decision-making with analytical insights.
- **AL→HF (AI Leader → Human Follower):** Artificial intelligence suggests a policy or action with the ability to enforce it unless opposed; a human oversees this process and has the power to halt or reject it. Accountability locus: designated human owner; operational

lead: AI. Explanation target: operational sufficiency (confidence, alternatives, risk envelope).

- **CO (Co-Leadership):** Control is negotiated or shared; neither party holds unilateral authority. Accountability locus: shared, with explicit division of labor and a merge protocol. Explanation target: negotiation-grade rationale and conflict-resolution path.
- **MO (Mutual Override):** Either side can halt or reverse; typically bound to high-risk or ethical boundaries. Accountability locus: human (ultimate responsibility owner) with logged override causes. Explanation target: justification of override and post-hoc audit trail.

3.2 Triggers

1 Data superiority: Switch to AL→HF when the AI's predictive margin over baseline (e.g., last-best human policy) exceeds θ for k consecutive ticks or samples.
2 Contextual judgment need: Switch to HL→AF when tacit knowledge, stakeholder values, or non-codified norms dominate expected utility.
3 Risk threshold: Enter MO when tail risk/harm likelihood crosses R; require human sign-off or abort.
4 Ethics override: If policy or legal rules prevent continued autonomy, use MO or HL→AF.
Hysteresis: Transitions include stickiness to prevent oscillation—e.g., θ↑ for entering AL→HF and θ↓ for leaving, so temporary dips do not thrash the state.

3.3 Guardrails and safe-exit

- **Safe-exit timers:** Maximum dwell time in a state before a reevaluation checkpoint.
- **Override lanes:** Low-latency paths for humans to stop, reverse, or demand explanation without punitive friction.
- **Role-state logging:** The Reversal Register records state, trigger, actors, thresholds, explanations delivered, and actions taken.
- **State-contingent XAI:** Explanation surfaces built to match the active state's needs.

3.4 Metrics and telemetry

- **Reversal latency (ms or decision cycles):** Time from trigger to effective state change.
- **Hysteresis width:** Gap between entry and exit thresholds that define stickiness.

Trust-whiplash rate: Incidence of user reliance shifts (over-/under-reliance) after reversals; measured via decision adherence or correction rates.

Thrash rate: Unwanted rapid state flips per 1,000 decisions (should be near zero if hysteresis is tuned).

Phase-responsibility completion: Percentage of decisions with complete state-aligned explanations and sign-offs.

4. Propositions And Methodological Pathways

The Dynamic Authority Reversal (DAR) framework outlines measurable relationships between authority allocation and key outcomes, including effectiveness, safety, and legitimacy. This framework underscores the importance of collaboration between humans and artificial intelligence in adapting to evolving leadership conditions. Furthermore, it emphasizes the importance of essential tools that ensure these transitions are transparent and accountable.

- ✓ **Proposition 1 (Authority–Performance Fit).** Decisions made based on current information outperform those made based on static role allocations. When AI predictions significantly exceed a baseline for an extended period, the authority should transition from a human-led approach to an AI-driven one. Conversely, when human judgment, expertise, or values are more important, authority should return to Human Leaders. This approach aims to enhance key performance indicators and minimize serious errors compared to traditional human-in-the-loop approaches.

- ✓ **Proposition 2 (Safe-Exit and Acceptance).** Introducing explicit safe-exit timers improves the acceptance of AI systems by enforcing limited autonomy and predictable reviews. These timers set clear deadlines for when human oversight will take over, reducing overreliance on AI while maintaining efficient processes. This method enhances decision-making and reduces incidents without compromising operational efficiency.
- ✓ **Proposition 3 (Hysteresis and Stability)** Establishing asymmetric entry and exit thresholds, commonly referred to as hysteresis, is an effective strategy for minimizing undesired state fluctuations while maintaining optimal performance. A wider hysteresis lowers churn and thrash rates, but if the bands are too broad, it may delay needed reversals. The approach aims for a solution in which stability improvements outweigh performance losses to some extent.
- ✓ **Proposition 4 (State-Contingent Explainability and Justification).** Tailored explanations for active leadership enhance the completeness and auditability of the decision rationale. By ensuring operational sufficiency in AL→HF (confidence, alternative actions, risk management), providing diagnostic support in HL→AF, offering negotiation-quality rationale in CO, and justifying overrides in MO, we improve phase responsibility completion and increase auditor satisfaction compared to generic explanation methods.
- ✓ **Proposition 5 (Reversal Latency and Safety).** Reducing the time between a valid trigger and handover minimizes risk in sensitive workflows. Tools that shorten detection-to-handover intervals should lead to fewer near-miss events and lower tail-risk events, while accounting for task difficulty and case mix.
- ✓ **Proposition 6 (Transitional Accountability and Legitimacy).** Maintaining a Reversal Register that records states, triggers, thresholds, justifications, and human endorsements for every decision can enhance stakeholder trust. Companies that keep this register typically obtain better audit ratings, experience fewer reversals in review outcomes, and have stronger legal protections compared to those that do not maintain such a register.

To evaluate these propositions efficiently, systems should provide a minimal telemetry set that includes the current state, trigger type, relevant thresholds for entry and exit, dwell time, safe-exit status, explanation class delivered, and the sequence of actor actions (approval, override, demand for elaboration). From this data, researchers can calculate metrics such as reversal latency, hysteresis width, trust-whiplash, thrash rate, and phase-responsibility completion, and benchmark results against a static HITL configuration. This framework facilitates the accumulation of comprehensive evidence while supporting the analysis of diverse experimental designs. These include randomized threshold bands, A/B tests using simulators, and field pilots.

5. Implications And The Authority-State Playbook

To ensure effective leadership in socio-technical systems, it is essential to integrate clarity from the outset rather than adding it later as a control measure. The Authority-State Playbook (ASP) implements this by linking policies to telemetry and defining leadership roles, authorization processes, and justification methods beforehand. The ASP starts with a role matrix that assigns specific human owners to areas of authority and followership, reducing ambiguity around oversight. It also outlines triggers—such as data thresholds, risk boundaries, and ethics rules—and includes settings for entry and exit points to create a stable decision-making environment. Temporal boundaries are crucial as well. Safe-exit timers prevent prolonged durations in any state without requiring assessment, ensuring human oversight. The Reversal Register monitors changes in state, triggers, and justifications, facilitating accountability and ongoing enhancement based on previous experiences.

For individuals in leadership roles, the explanations must correspond with the current situation. In cases like AL→HF or HL→AF, understanding model confidence, risk, and rationales is crucial for making informed decisions. Introducing clear leadership within AI frameworks effectively mitigates dependency issues and boosts team morale by allowing for predictable transitions. Adjusting parameters such as hysteresis bands and timers is crucial for ensuring system stability without compromising responsiveness. Providing customized explanations that meet specific needs can help

manage cognitive load and encourage informed decision-making. Additionally, employing the Reversal Register as a governance tool not only fosters accountability but also nurtures a culture of learning and risk awareness.

At the policy level, the ASP adheres to existing regulations concerning human oversight and documentation for high-risk AI applications. It underscores the importance of transitional accountability, enabling regulators to assess whether justifications align with state requirements and to comprehend the decision-making processes involved. This method facilitates bounded autonomy while upholding human responsibility, acknowledging that reversible AI leadership can serve as an effective strategy for achieving this balance. Furthermore, selecting suitable triggers and settings strikes a balance between innovation and safety, avoiding a one-size-fits-all regulatory framework.

6.Conclusions

Organizations need not just improved models but also better handover processes. The Dynamic Authority Reversal (DAR) framework reconceptualizes human–AI collaboration as a challenge of temporal coordination, offering the necessary transition logic to clarify leadership roles, timing, and reasons. By delineating four leadership states—Human Leader to AI Follower, AI Leader to Human Follower, Co-Leadership, and Mutual Override—alongside the principled triggers that enable transitions between them—such as data superiority, contextual judgment, risk thresholds, and ethical considerations—DAR effectively links performance with accountability.

To reduce the risks of oscillation and drift, safeguards such as safe-exit timers and hysteresis are used. Additionally, state-contingent explainability ensures that appropriate justifications are provided during critical moments. Significantly, the Reversal Register ensures that authority changes are auditable by associating each decision with its respective state, trigger, thresholds, and approvals. This connection promotes micro-level trust calibration with macro-level legitimacy.

The straightforwardness of DAR's tools promotes practical implementation and evaluation, offering a concrete and verifiable approach to moving from generic "human oversight" to an auditable leadership structure. For researchers, it offers testable propositions regarding the impacts of reversal latency, stability, and legitimacy. For practitioners and regulators, it serves as a governance-ready framework that preserves ultimate human accountability while enabling reversible AI leadership in areas where it is most advantageous.

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Digital Sustainable Entrepreneurship in Türkiye: Organizational Insights from Clothing Rental Companies

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Abstract

Introduction: Sustainability has become a central agenda for governments, corporations, and consumers, with the textile sector receiving particular scrutiny due to its substantial environmental footprint, ranking as the second most polluting sector globally. Digital clothing rental companies exemplify circular economy models that extend product lifecycles and provide alternatives to fast fashion.
Aim: This study investigates how digital clothing rental companies in Türkiye disclose and communicate their sustainability initiatives on their websites, drawing upon the Triple Bottom Line (TBL) framework and signaling theory.
Method: A qualitative content analysis was conducted on the websites of seven companies identified through systematic searches. Using a deductive coding scheme, sustainability-related signals were categorized across environmental, economic, and social dimensions and interpreted through the lens of signaling theory.
Findings: Results show that environmental initiatives, such as garment repair, recycling, and eco-friendly packaging, are consistently emphasized. In contrast, social and economic aspects, including employee-centered practices, diversity, and supply chain transparency, remain underdeveloped. The absence of formal sustainability or CSR reports may weaken transparency and undermine credibility, thereby increasing the risk of greenwashing perceptions.
Conclusion: This study concludes that although environmental sustainability is prominently communicated, achieving organizational legitimacy and building long-term stakeholder trust require more balanced and transparent disclosures across all dimensions of the TBL framework.
Originality and value: This research investigates the digital sustainable entrepreneurship context in an emerging market. Practically, it offers entrepreneurs actionable insights to enhance transparency, strengthen organizational legitimacy, and improve stakeholder engagement.

Keywords: Digital sustainable entrepreneurship, Clothing rental companies, Signaling, Triple bottom line, Circular economy.
Jel Codes: L26, Q56

1. Introduction

Sustainability awareness first gained widespread attention with the celebration of Earth Day in 1970. Particularly after the European Green Deal (2018), sustainability trends spread globally, beginning with developed European countries. Climate change, the COVID-19 pandemic, and the proliferation of green discourses have further accelerated the demand for sustainability-oriented solutions. Consequently, sustainability has become a central concern for governments, corporations, retailers, and consumers. The integration of sustainability efforts across various business sectors is largely implemented through a circular economy perspective, which refers to a model that maintains resources in use for the longest possible duration to maximize their value, and subsequently recovers and regenerates products and materials at the end of their service life. (European Commission, 2019). The circular economy provides several benefits, including reducing pressure on natural resources, creating resilient value chains, and generating new business opportunities and high-quality local jobs (European Commission, n.d.).

The textile industry, ranked as the world's second most polluting sector after oil and gas (T.C. Ticaret Bakanlığı, n.d.; United Nations, 2019), has become a priority for circular economy practices due to

increasing societal pressure for sustainable alternatives. As a response, sustainable fashion has emerged. Stakeholders[1] increasingly associate sustainable fashion with eco-friendly, ethical, and recycling principles (Sehnem et al., 2023). Clothing rental companies are one example of circular business models in the textile sector, offering an alternative to fast fashion[2] by promoting extended product use and resource efficiency.

In the literature, several studies have examined the environmental implications of clothing rental companies. Piontek et al. (2020) concluded that rental models are environmentally beneficial only when garments are used frequently. Similarly, Amasawa et al. (2023) emphasized that these environmental benefits depend on factors such as garment type, design, and care practices. Adam et al. (2018) also examine fashion rental businesses. Offering a complementary perspective, they argue that although the sharing economy has gained traction across industries, early-stage firms in traditionally manufacturing-based sectors still face challenges in transitioning toward service-oriented business models. They further highlight that dynamic capabilities, particularly relationship building, knowledge acquisition, and customer interaction, play a crucial role in enabling such servitization. To enhance these capabilities, clothing rental companies increasingly rely on digital tools, including websites and social media. These tools also facilitate sustainability practices by promoting transparency, efficiency, new value-creation opportunities, and greater visibility, especially through platform-based business models (Turcan et al., 2023). As exemplars of digital sustainable entrepreneurship, these ventures integrate circular economy principles with digital infrastructures to deliver sustainable alternatives. Supporting this, Arrigo (2022) underscores the role of digital platforms in value creation. McCoy and Chi (2022) investigate U.S.-based fashion rental platforms that highlight sustainability in various ways on their websites; however, their communication often lacks clarity and supporting evidence. They further suggest that future research should investigate how rental businesses present sustainability beyond the U.S. In addition, Turcan et al. (2023) recommend a deeper investigation into industry-specific dynamics for a better understanding of how digitalization contributes to sustainability practices across diverse sectors.

Building on these insights, this study aims to examine how clothing rental companies in Türkiye disclose and communicate their sustainability efforts on their websites. Drawing on the Triple Bottom Line (TBL) framework and signaling theory, the study also aims to provide insights into the organizational dynamics of digital sustainable entrepreneurship in an emerging market context. This research contributes to practice by illustrating how entrepreneurs integrate and communicate sustainability within digital business models, and to theory by extending empirical evidence on digital sustainable entrepreneurship through the TBL framework and signaling theory.

2. Theoretical Framework and Literature Review

2.1. Triple Bottom Line

The Triple Bottom Line framework, first introduced and elaborated by Elkington (1994; 1998), expands the traditional notion of business performance beyond financial outcomes. It emphasizes three interrelated dimensions of sustainability: (1) environmental quality (planet), which addresses issues such as energy use, waste reduction, and resource conservation; (2) economic prosperity (profit), reflecting the long-term viability and competitiveness of the business; and (3) social justice (people), encompassing labor standards, equity, and community well-being. This holistic perspective enables researchers and practitioners to assess corporate strategies in terms of profitability and their broader social and environmental impacts (Elkington, 1998).

2.2 Signaling Theory and Transparency

Signaling theory (Connelly et al., 2011; Spence, 1973; Yu et al., 2022) posits that enterprises use CSR and sustainability initiatives to convey positive attributes (e.g., credibility, responsibility) to stakeholders, who in turn interpret these signals to assess the firm's trustworthiness and commitment to sustainable practices (Becker-Olsen et al., 2006). From this perspective, the degree of transparency

[1] In this study, the term "stakeholders" follows Freeman's (1984, p. 46) definition: "any group or individual who can affect or is affected by the achievement of an organization's objectives.

[2] Fast fashion refers to a business model in the apparel industry that delivers low-cost garments designed to rapidly replicate and commercialize prevailing luxury and mainstream fashion trends (Liu, & Racco, 2022).

may enhance the effectiveness of signals (Wu & Dai, 2025), as greater transparency enables stakeholders to develop more favorable perceptions of the organization and to recognize its sustainable image more readily. Digital platforms and corporate websites facilitate this process by making organizational communication faster, more accessible, and more transparent (Huarng et al., 2021). In this study, transparency, conceptualized as the disclosure of detailed and verifiable sustainability practices, serves as an important signal. For clothing rental ventures, being transparent about logistics, cleaning processes, packaging, and social initiatives helps communicate their commitment to responsible practices. Such transparency can, in turn, enhance legitimacy and build trust among stakeholders.

2.3. Rental Clothing Companies

Fast fashion refers to the rapid production of trend-driven clothing offered at low prices (Ray & Nayak, 2023). In contrast, clothing rental services provide an eco-friendly and cost-effective alternative by slowing down the fast fashion cycle (Lee & Chow, 2020). By allowing garments to be temporarily used and returned, rental models reduce the demand for new production and help mitigate the industry's environmental footprint (Arrigo, 2022). In doing so, they align with the principles of the circular economy, particularly by extending product lifespans and preventing premature disposal.

WRAP, a UK-based non-profit organization, categorizes sustainability strategies within its Textiles Resource Hierarchy from most to least sustainable: (1) prevention, (2) product reuse, (3) material reuse, (4) recycling, (5) end-of-life with energy recovery, and (6) end-of-life without recovery (WRAP, 2021). Clothing rental systems are positioned in the reuse category, which, while not at the very top of the hierarchy, plays a critical role in prolonging garment life and delaying end-of-life processes (WRAP, 2021). Thus, clothing rental is increasingly recognized in the literature as a means to reduce consumption-related pressures and also as a circular business model that contributes significantly to environmental sustainability (Piontek et al., 2020; Arrigo, 2022).

The following section outlines the methodological approach employed to examine the digital clothing rental companies included in this study's sample.

3. Methodology

3.1 Research Design

A qualitative content analysis of clothing rental companies' websites was adopted in this research. The primary goal of content analysis is to systematically transform raw records into analyzable data, thereby generating structured knowledge (Prasad, 2008). Few studies have applied content analysis to assess the sustainability practices of fashion rental companies based on the TBL framework (McCoy & Chi, 2022). In this study, the themes were adapted from McCoy and Chi (2022) and mapped deductively onto the Triple Bottom Line framework.

3.2 Data Collection

Digital clothing rental companies in Türkiye with a sustainability focus were identified using the keywords "giysi kiralama" (clothing rental) and "sürdürülebilirlik" (sustainability) via Google search. As of August 2025, seven ventures were identified through this process. Social-media-only businesses were excluded to ensure comparability of disclosures. Data were collected from the official websites, including sustainability sections, FAQs, and blogs.

3.3 Data and coding analysis

Following the data collection process, a deductive content analysis was applied to the selected companies' websites, allowing the systematic categorization of sustainability practices across the TBL dimensions. The coding scheme was refined iteratively to accommodate context-specific variations observed in the data. Once all themes and sub-themes were coded, their signals were calculated to quantify the number of sustainability aspects addressed by each company on its website.

4. Results

4.1. Sample Profiles

The websites of digital clothing rental companies (see Table 1) were reviewed, and Only Nifty was the sole company that did not disclose information about its founders or partners. The remaining six ventures were identified as founded and managed by women entrepreneurs. All companies are privately owned, with no publicly owned initiatives observed.

Table 1. Rental Clothing Companies

	Company Name	Website
1	Ayşegül Kalelio	https://www.aysegulkalelio.com/ (accessed on 1&2 August 2025)
2	DCEY	https://www.davetcokelbisemyok.com/tr/ (accessed on 1&2 August 2025)
3	Deep Atelier	https://www.deepatelier.co/ (accessed on 1&2 August 2025)
4	Fenumi	https://www.fenumi.com/ (accessed on 1&2 August 2025)
5	Only Nifty	https://onlynifty.com.tr/ (accessed on 1&2 August 2025)
6	Rentony	https://www.rentony.com/ (accessed on 1&2 August 2025)
7	UnoMoi	https://UnoMoi.com/ (accessed on 1&2 August 2025)

Note: Company names are presented in alphabetical order.

4.2. Thematic Analysis

4.2.1. Environmental Dimension

As presented in Table 2, within the environmental framework, all companies in the sample (1–7) emphasize rental systems as a means of maximizing product usage while saving time, money, and resources, as well as reducing waste and pollution. A large portion of the companies (2, 3, 5, 6, 7) report emphasizing garment repair, cleaning, and reuse to extend product life. Several companies (2, 6, 7) maintain a dedicated sustainability page on their websites, whereas the remaining firms address sustainability efforts or CSR-related assessments and initiatives through their homepages, blogs, or FAQ sections. Additionally, no sustainability or CSR reports were identified on the websites of the reviewed companies. While two companies (2,7) indicate partnerships within the scope of sustainability, the company coded as "2," DCEY, according to its official statement, is the only firm in the sample that has publicly announced its achievement of becoming the first fashion rental company in Türkiye, and also the first company nationwide, to obtain B Corp certification. The B Corp certification represents a global assessment system that verifies companies not only for their profitability but also for their commitment to creating value for people, society, and the planet (B Lab, n.d).

Regarding recycling and upcycling, only one company (7, UnoMoi) demonstrates engagement by adopting practices such as repurposing, donating, recycling, or trading in retired products. Specifically, UnoMoi reported that the delivery bags used in its supply chain are sent to a municipality for recycling. Packaging strategies are implemented by some companies (2, 3, 6, 7) focusing on reusable and eco-friendly materials. Moreover, all companies (1–7) introduce measures to increase shipping efficiency, including physical pick-up and drop-off hubs. All ventures utilize cargo companies for shipping. However, Rentony (6) arranges home pick-up for product returns after use. In contrast, other firms require customers to return the items themselves or via a courier service.

4.2.2. Economic Dimension

In the economic framework, most companies (1, 2, 3, 5, 6, 7) emphasize financial benefits for

customers, particularly through cost savings associated with product rental and membership models. A small number of companies (2,4) allow customers to generate income via peer-to-peer platforms. Fenumi (4), which functions as an intermediary connecting individual renters and borrowers, follows a peer-to-peer (P2P) model. It facilitates transactions between users rather than renting its own inventory. DCEY (2) operates a business-to-consumer (B2C) model while also implementing a platform-mediated rental system, in which the platform retains ownership of the inventory and actively manages logistics, including delivery and returns, while facilitating rental transactions with customers. And the other companies operate on a business-to-consumer (B2C) model. For businesses, none of the reviewed company websites mentioned economic benefits, such as generating higher profit per item at lower costs. Regarding customer loyalty, DCEY (2) stands out among the websites, as it offers virtual fitting rooms, thereby leveraging its digital capabilities to attract more customers, enhance customer loyalty, and potentially achieve long-term economic benefits.

Philanthropy, support, and partnerships represent another major theme. All companies (1–7) contribute to their communities through financial, product, event, and labor support. Additionally, some companies (2,7) establish foundations, scholarships, and grants. DCEY (2) has stated that it collaborates with the Deniz Temiz Turmepa Association and the Yuvam Dünya Association. Through these partnerships, the company donates to Turmepa on behalf of its customers for every rental, supporting initiatives to keep coastlines clean, and contributes to Yuvam Dünya's efforts to combat the climate crisis. UnoMoi (7) has reported collaborations with the Turkish Education Foundation (TEV) and Ecording. Through the partnership with TEV, scholarship recipients can access designs from globally renowned brands on UnoMoi for special occasions, including graduations, birthday parties, important events, and internship/job interviews, without any cost. In collaboration with Ecording, a social enterprise developing sustainable, innovative, and technological solutions to address the global climate crisis, UnoMoi contributes to environmental initiatives by planting seeds through ecoDrones for every purchase made on the platform.

4.2.3. Social Dimension

The social framework reveals a relatively limited focus. According to the first sub theme, despite the absence of a dedicated page on supply chain transparency, information regarding their supply chains is presented on the 'How It Works' or 'FAQ' pages. None of the websites includes a code of conduct or policy framework aimed at addressing or preventing unethical labor conditions and practices. In addition, DCEY (2) and UnoMoi have partners with programs and associations; however, these associations may not directly educate, develop, or empower manufacturers, but they could contribute to awareness.

Regarding the Ethical Employer theme, none of the companies offer competitive benefits, flexible scheduling, or career development and learning opportunities (e.g., coaching, workshops, or events) on their websites. Only Fenumi (4) discloses information about its project (or operations) team, which is important for transparency and for understanding the positions held by team members. Overall, these findings suggest that employee-centered ethical practices are underrepresented across the sample. Partial engagement is observed in the themes of diversity, inclusivity, equal opportunity, accessibility, and cultural sensitivity, with several firms making limited but visible statements in these areas. For instance, several companies (2, 3, 4, 5, 6, 7) incorporate diversity into branding, product design, and marketing or photographic representation. Accessibility also emerges as a consistent area of focus, with all companies (1–7) integrating accessibility measures into their websites, applications, and recruitment processes. In contrast, cultural representation within leadership positions and workforce structures is absent across all firms.

Table 2. Triple Bottom Line Categories & Themes

TBL Framework	Core Themes	Underlying-Themes	Company Codes
Environmental/ Planet	Sustainable approaches to business operations and management	• Renting saves time, money, and resources; reduces waste and pollution.	1,2,3,4,5,6,7
		• Garments repaired and maintained for longer use.	2,3,5,6,7
		• Initiatives including CSR engagement, strategic collaborations, energy-saving actions, sustainability certifications, and the use of environmentally friendly materials and processes	2,3,5,6,7
	Recycling and upcycling initiatives, along with intelligent and sustainable packaging solutions	• Retired products reused, recycled, donated, or resold.	7
		• Packaging improved with reusable, eco-friendly, and recycled materials.	2,3,6,7
		• Shipping efficiency enhanced via pick-up/drop-off hubs.	1,2,4,5,6,7
Economic/ Profit	Customer-oriented financial benefits	• Customers save money; access clothing/products more affordably.	1,2,3,5,6,7
		• Income generation via P2P platforms or B2C membership benefits.	2, 4
	Financial benefits for business	• Higher profitability per unit through cost efficiency.	-
		• Member-focused approach builds loyalty through product trials.	2
	Philanthropy, support, and partnerships	• Community support through funds, events, products, and volunteering.	1,2,3,4,5,6,7
		• Create or support foundations, charitable organisations, scholarships, and grant programmes.	2,7

Table 2.- *Cont.*

TBL Framework	Core Themes	Underlying-Themes	Company Codes
Social/ People	Ethical and transparent supply chain management	• Implement codes/policies to prevent unethical labor practices.	-
		• Collaborate with programs/associations to train and empower manufacturers.	2,7
	Ethical employer	• Provide competitive benefits.	-
		• Provide career development: workshops, coaching, company-sponsored learning.	-
		• Allow flexible work schedules.	-
	Commitment to diversity, inclusivity, equal opportunity, accessibility, and cultural sensitivity	• Partnerships or DEI/women boards for audits, strategies, training, and reporting to promote leadership parity.	-
		• Promote diverse representation across branding, products, and marketing or modelling activities.	2,3,4,5,6,7
		• Support a diverse workforce; recognize and celebrate cultural and personal diversity.	-
		• Ensure accessibility across websites, applications, recruitment, and employment.	1,2,3,4,5,6,7

Notes: Company codes are assigned according to the order presented in Table 1. Main themes and sub-themes adapted from McCoy and Chi (2022).

5. Results and Discussion

The analysis of the websites of Turkish digital clothing rental companies reveals a varied emphasis across the dimensions of the Triple Bottom Line. Consistent with McCoy and Chi (2022), all main themes were identifiable on at least some of the websites; however, several sub-themes were notably absent, particularly under the social category. This indicates that while environmental initiatives are prominently communicated (e.g., garment repair, recycling, upcycling, and efficient logistics), social sustainability aspects, including employee ethics, diversity, and workforce development, are relatively underrepresented.

From TBL's economic perspective, the websites predominantly highlighted customer-related financial benefits, such as cost savings from rentals and membership programs, while business-focused economic advantages were less frequently addressed. Philanthropic activities, partnerships, and community engagement were observable across most companies, suggesting that social contributions are recognized but unevenly integrated into broader sustainability communication strategies.

Signaling theory provides a useful lens for interpreting these findings. The differential visibility of environmental versus social initiatives reflects selective signaling, where companies prioritize aspects likely to enhance their reputation and perceived sustainability credibility (Connelly et al., 2011; Spence, 1973; Becker-Olsen et al., 2006). Transparency, as the disclosure of detailed and verifiable sustainability practices, plays a crucial role. Detailed information about logistics, cleaning, packaging, and social initiatives can enhance stakeholder trust and reinforce the firm's sustainable image. However, the absence of formal CSR or sustainability reports may limit the stakeholders' ability to verify these statements, highlighting a gap between communicated and institutionalized sustainability efforts.

Overall, the findings underscore the importance of holistic TBL reporting and strategic transparency for clothing rental ventures. While environmental practices are emphasized and clearly communicated, social and economic dimensions require further development to present a comprehensive and credible sustainability profile. These insights contribute to understanding how digital sustainable entrepreneurship manifests in emerging markets and the role of signaling in shaping stakeholder perceptions.

6. Conclusion

This study reveals that digital clothing rental companies in Türkiye highlight environmental initiatives but largely neglect social and economic aspects, limiting the credibility of their sustainability statements. To avoid greenwashing, defined as "a dishonest and misleading claim that presents products or services as green, environmentally responsible, and sustainable" (Antari & Connell, 2021, para. 2), and to build lasting trust, firms must adopt transparent and comprehensive reporting across all the TBL dimensions. By doing so, they can strengthen legitimacy, enhance reputation, and communicate a genuine commitment to sustainability. The findings advance theory by connecting TBL with signaling theory in the context of digital sustainable entrepreneurship in an emerging market. Practically, they provide managers with a roadmap to align sustainability communication with authentic practices, thereby strengthening stakeholder trust and organizational legitimacy, and offer practical guidance for managers to align statements with action.

6.1 Limitations and Future Research

This study has several limitations. First, it is restricted to website disclosures of digital clothing rental ventures with official websites; companies operating exclusively on social media were excluded, which may limit the representation of sustainability practices beyond publicly visible channels. Second, the analysis relied solely on content from corporate websites and therefore may not capture the full scope of organizational sustainability initiatives. Future research could

incorporate interviews with founders, operational data, or customer perspectives to triangulate findings and provide a more comprehensive understanding of sustainability practices. Third, while the Triple Bottom Line (TBL) framework served as a useful analytical entry point, subsequent studies could integrate more comprehensive reporting frameworks, such as the Global Reporting Initiative (GRI), to assess the completeness and alignment of sustainability statements. Finally, as the data were collected in August 2025, future research could examine longitudinal changes to capture the dynamic nature of sustainability practices in digital clothing rental businesses.

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Risk-based budgeting in healthcare: a strategy for the Republic of Moldova

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Abstract

Introduction: The Republic of Moldova faces growing challenges that question the sustainability of health financing: demographic aging, migration of medical personnel, rising costs of chronic diseases, climate and energy crises, and the risk of new pandemics. These factors highlight the need to move from traditional models to risk-based budgeting.
Aim: The aim of the paper is to develop a risk-based budgeting strategy in the health sector of the Republic of Moldova. The article involves an analysis of international experience, identification of sources of risk for the national health system and an assessment of the effectiveness of current budgeting practices.
Method: A mixed-methods approach is applied in the research process, combining qualitative and quantitative approaches. This allows not only to analyze existing data, but also to take into account the specific characteristics of the country (low health budget, high direct expenditures, external risks).
Findings: The following results were obtained in the research process: a conceptual model of risk-based budgeting for the health system in the Republic of Moldova; a system of indicators for assessing the impact of risks on the sustainability of budget expenditures; practical scenarios for the redistribution of resources, taking into account equal access to healthcare.
Conclusion: Risk-based budgeting increases the resilience of the health system; experiences from EU can be adapted to the conditions in the Republic of Moldova.
Originality and value: The scientific originality lies in the integration of risk management methods and a human rights-based approach into the analysis of public healthcare spending.

Key words: budgeting, public health spending, risk, sustainability
Jel Codes: H51, H61, I18, O21

1. Introduction

The importance of studying the subject of risk-based budgeting (RBB) for the health system of the Republic of Moldova, being critical, is determined by the need to ensure the accessibility, quality and financial sustainability of health services. In the field of health, uncertainties have a direct impact on human lives and economic sustainability.

With reference to the Republic of Moldova, the national health system faces uncertainties and complex challenges, namely: uncertainties regarding strategic priorities and the evolution of the system; uncertainties of a financial nature (insufficient and fluctuating funding, inefficient management of public spending) and macroeconomic risks (persistent inflation, energy turbulence, the consequences of Russia's war against Ukraine); uncertainties related to human resources (massive emigration of medical personnel, lack of motivated and trained personnel); uncertainties related to access to medical services (low life expectancy and unfavorable evolution of general health indicators, demographic decline and migration). In this context, RBB not only has the potential to optimize resource allocation, but can also minimize the risks inherent in the health system, ensuring its resilience.

International practice in the field of RBB demonstrates that this approach can make important contributions to:

- ensuring the financial sustainability and efficiency of the national health system;
- managing systemic and catastrophic risks;
- improving the quality and accessibility of medical services.

2. Literature Review

The bibliographical analysis of the addressed topic - "RBB in the field of health" allows to identify how the scientific approach has evolved and the conclusions of practical implementation on the link between financial decisions and risk management in the health system. This helps to systematize the accumulated approaches - from classical budgeting to modern sustainability models - and to identify the key factors that influence the efficiency of resource allocation in the health system. Such an analysis serves as a foundation for designing more adaptable and equitable budgetary strategies, especially in conditions of crisis and uncertainty.

The logic of conducting the bibliographical analysis is based on the staged identification of the evolution of scientific ideas, methods and tools in a chronological and conceptual sequence.

Initially, the initial methodological foundations are to be established, after which their integration into risk management systems and public finance management will be pursued. The assessment of current trends in stability and preparedness for shocks in the health sector will conclude the bibliographic analysis process.

The evolution of approaches related to the topic of "RBB in the health system" can be divided into several stages.

Thus, the first stage can be considered the stage of formation of key concepts. In time, this stage is included in the interval of the mid-1990s - early 2000s.

It is at this stage that the relationship between the budgeting process and risks begins to take shape in the health system. The emphasis is placed on the redistribution of resources within a limited budget between programs, services or patient groups.

During this period, there was still little talk about the “full budget cycle” or about risk management as such: the main attention was focused on the efficiency and maximization of health with a fixed budget.

At the same time, certain ideas and solutions regarding the adjustment of the budget according to risk and / or need (for example, capitalization formulas), the budget taking into account differences between groups, appear.

The authors Twaddle and Walker (1995) propose an economic method for the procurement process to become more informed, namely - the approach of program budgeting and marginal analysis (PBMA). The authors believe that this approach provides a framework within which changes to a service can be assessed and agreed within a fixed budget. This method has been applied to gynaecology services within the Greater Glasgow Health Board and, with good results, has been extended to other areas.

In its 2000 issue, the journal Health Care Financing Review focuses on the issue of risk adjustment. In particular, it updates research published in 1996 on risk adjustment (Greenwald, 2000). Special attention is paid to risk-adjusted per capita payments. Several risk-adjusted models designed to explain and predict resource use are presented. Most of these models are built on the basis of the regression technique that uses the least squares method applied to predict total expenditures per person. The models use certain demographic information (age, sex). To explain differences in health expenditures, the models rely on factors that differ from model to model. The conclusion reached in the 2000 issue of the journal is that the implementation of the risk-adjusted per capita payment system for the main cost groups represented a fundamental improvement in Medicare payment policy. At the same time, the next generation of models will

rely on more information, not just basic demographic indicators, to generate more accurate cost forecasts for specific categories of beneficiaries.

Risk adjustment can improve budget decisions and the evaluation of physician performance. In their article, Majeed et al. (2001) analyze the advantages and limitations of risk adjustment and compare the way in which risk would be adjusted in the UK with the procedure applied in the USA. Among the conclusions reached in this publication, the following two are worth emphasizing: - risk adjustment can increase the administrative complexity of health systems; - there is no standard, perfect method by which risk should be adjusted.

In the consolidation stage, which can be dated to the 2010s, there is a transition from narrow methods of redistribution and risk adjustment to risk integration, the development of multi-criteria systems and risk management.

This stage consolidates the theoretical foundation and methodological framework. The issue of risk in the health system moves from local initiatives to the systemic level.

Bridges are being built between Programme Budgeting & Marginal Analysis (PBMA) and more modern methods of risk assessment (Mitton et al., 2014; Anderson and Mitchell, 2016). Research is emerging that shows how PBMA can be integrated with Multi-Criteria Decision Analysis (MCDA).

During this period, research is being developed on how health system budgeting can become more flexible: for example, how to take into account outcomes, quality and efficiency of services - not just input costs.

There is also a greater emphasis on organizational risk management. Thus, examples of the implementation of enterprise risk management (ERM) systems in hospitals and healthcare organizations are emerging (Beck da Silva Etges et al., 2018).

There is a growing awareness that healthcare budgeting should be part of a broader management system. It is becoming increasingly clear that models focused solely on static budgeting and efficiency are insufficient. Uncertainty and risk (e.g., changes in demand, technological innovations, epidemics) need to be taken into account.

The third stage is the 2020s and is characterized by RBB becoming part of public financial management (PFM) in health, encompassing the entire budget cycle - formulation, implementation and control (Musiega et al., 2024). The bridge between public financial management and health system objectives, resilience and preparedness for shocks is being built. The focus is shifting from “allocating resources within the health system” to how the health budget interacts with the state budget system and how the functions of the Ministry of Health and the Ministry of Finance are aligned (Jain and Gurazada).

The publications that emerged in this stage emphasize that RBB is not just about adjusting a formula, but rather about institutional processes: expenditure forecasting, assessing the sustainability of the health system and scenario planning.

From a methodological point of view, the use of PFM analysis tools is increasing: bottleneck diagnosis, transparency, multi-level budget classification, program budgeting, monitoring and reporting (WHO, WB, 2025).

In the context of health care, “risk” is starting to be perceived in a broader sense - not only as differences in population needs, but also as financial risks, budget execution, delays and efficiency. In other words, budgeting is becoming a risk management tool for the health system.

A practical conclusion derived from the bibliographic analysis is that if the budget does not provide for flexibility, reserves or adjustment mechanisms, the system becomes vulnerable to shocks. This stage provides an opportunity for a transition to more sustainable budget models.

Research notes an increase in the number of reviews of health budget cycles and the interaction

between PFM and the health system, strengthening the methodological basis for risk-based budgeting (RBB).

The next stage in the evolution of research related to RBB in the health system can be characterized as the stage of resilience and preparation for potential crisis episodes - risks of shocks, pandemic and cyber threats, workforce shortages, etc. (WHO, 2024). This stage covers the temporary segment 2024-2025.

The COVID-19 pandemic and other global threats have highlighted the need for budgets that not only cover current needs, but also ensure preparation for rare but major events (World Bank, 2025).

Research has begun to consider health care budgets as a tool for resilience. In this regard, the following techniques are considered: reserve funds, scenario budgeting, adaptive mechanisms. Therefore, budgeting is seen as part of an emergency management system.

There is a need to increase the focus on risks beyond traditional areas: cybersecurity, workforce resilience, supply chains, innovation. This range of risks requires the inclusion of new budget elements (e.g. investments in preparedness).

From a methodological point of view, there is greater interdisciplinarity: links between healthcare, economics, risk management, informatics and social security. Budgeting no longer reflects only a relationship between finance and healthcare, but becomes a transversal dimension.

In this context, referring to the applied perspective, countries and healthcare systems are starting to assess not only the real costs and effectiveness, but also the probability and potential damage caused by threats, integrating them into the budget. Therefore, the distinct budgeting method RBB is formed.

For researchers, this means exploring new analytical parameters (preparedness, resilience, scenarios), new values (e.g. response time, reserve capacity) and new methods (risk modeling, budget stress testing). In this regard, it is worth mentioning the contribution of the authors Sermhattakit, A. and Sae-Lim, P. (2025) to the development and implementation of an enterprise risk management (ERM) framework for private hospitals in Thailand. In this regard, the authors identify and address five key risks: patient safety, sentinel events, staff shortages, cybersecurity threats and litigation, proposing mitigation strategies to strengthen the resilience of the healthcare sector. In turn, Tripathi, M. et al. (2025) study the implementation of Accountable Care Organizations (ACOs) within the Medicare Shared Savings Program (MSSP) and assess whether ACOs that have moved from unilateral to bilateral risk models perform better based on cost savings and quality outcomes.

3.Materials and Method

To argue the need to promote the risk-based budgeting approach in the healthcare sector of the Republic of Moldova, the authors analyze a series of indicators that indicate the risks faced by the healthcare sector in the Republic of Moldova in comparison with other countries. For this purpose, countries classified by per capita income level, small countries, and countries in the European Union were taken as benchmarks for comparison. At the same time, the comparisons will also target the world average level. As primary data, the World Bank and World Health Organization databases are explored.

Table 1 represents the evolution of the level of current healthcare expenditures compared to gross domestic product in the Republic of Moldova and in countries of the world grouped by per capita income. We note in this context that in accordance with the World Bank methodology, this indicator includes in the category of current healthcare expenditures the medical goods and services consumed each year. This indicator does not include capital healthcare expenditures. The indicator refers to all health expenditures in a given country over a defined period of time, regardless of the entity or institution that financed and managed these expenditures.

Table 1. Current health expenditure (% of GDP)

Country	2000	2015	2016	2017	2018	2019	2020	2021	2022
Moldova	5.93	8.56	7.54	7.13	6.71	6.50	7.00	7.75	6.97
High income	9.36	12.05	12.22	12.13	12.05	12.26	13.76	13.13	12.52
Low income	3.63	5.54	5.75	5.59	5.26	5.25	5.82	5.79	5.71
Lower middle income	3.94	3.94	3.90	3.60	3.48	3.55	3.83	3.97	3.89
Middle income	4.98	5.22	5.24	5.24	5.19	5.25	5.50	5.43	5.28
Small states	5.02	6.10	6.33	6.36	6.39	6.56	7.61	7.67	6.97
World	8.62	9.71	9.84	9.73	9.65	9.78	10.86	10.34	9.89
Upper middle income	5.26	5.55	5.59	5.67	5.63	5.70	5.95	5.80	5.63
European Union	8.44	9.96	9.95	9.90	9.87	9.94	10.86	10.87	10.37

Source: developed by the authors based on the World Bank World Development Indicators Database

As follows from Table 1, the analyzed indicator records the minimum value in 2000 (5.9%), the maximum value (8.6%) in 2015. Starting with 2016, the value of this indicator has been fluctuating, reaching 6.97% in 2022. This trend contrasts with the constant increase of the indicator in EU countries (from 8.4% to 10.4%) and in high-income countries (from 9.3% to 12.5%).

The mentioned developments indicate, at least, the following risks for the health system in the Republic of Moldova:

- the risk of underfinancing. The share of health expenditures recorded by the Republic of Moldova remains below the global average (9.9% in 2022), being significantly lower than that recorded by EU countries and the group of high-income countries. This indicates a limited capacity to finance basic service packages and capital investments;
- the risk of catastrophic household expenditures. The insufficient public component determines a high share of direct payments, which accentuates social inequality and increases the risk of "catastrophic spending" for vulnerable groups;
- the risk of resilience and crisis preparedness. The COVID-19 pandemic crisis has demonstrated that if the share of public spending on health is below 7% of GDP, the system is vulnerable to shocks due to the lack of reserves, personnel and logistical flexibility. The Republic of Moldova managed to temporarily increase spending in 2020-2021, but failed to maintain it at a high level, which indicates a lack of long-term risk-based planning.

Table 2. Current health expenditure per capita (current US$)

Country	2000	2015	2016	2017	2018	2019	2020	2021	2022
Moldova	21.38	186.44	171.18	243.95	276.47	284.30	306.65	410.12	398.15
High income	2108.84	4374.87	4505.44	4669.89	4904.30	5006.73	5450.80	5835.82	5753.77
Low income	16.38	40.91	38.66	37.06	37.34	35.05	35.85	37.18	39.02
Lower middle income	22.73	73.73	73.20	71.05	72.53	76.31	78.85	91.48	93.50
Middle income	62.25	239.05	237.36	256.25	266.59	274.73	278.26	317.45	321.07
Small states	278.30	655.96	683.83	740.67	797.35	814.86	846.76	980.51	976.58

World	475.74	973.15	990.83	1027.12	1066.65	1084.16	1158.07	1245.91	1235.60
Upper middle income	97.97	409.21	407.51	449.49	470.42	484.63	490.92	561.51	572.96
European Union	1432.38	3046.10	3110.09	3283.96	3540.15	3497.00	3742.86	4226.05	3897.67

Source: developed by the authors based on the World Bank World Development Indicators Database

Table 2 presents the dynamics of health expenditure per capita in the period 2000 - 2022, compared to different groups of countries. According to the data, the Republic of Moldova increased its expenditure from USD 21.4 in 2000 to USD 398 in 2022, an increase of almost 19 times. However, a significant gap remains compared to EU countries (USD 3,898) and high-income countries (USD 5,754).

Low expenditure per capita limits the capacity to modernize hospital infrastructure, equipment and restricts the potential for maintaining human resources. The share of out-of-pocket payments from the population is increasing, limiting access for vulnerable groups and increasing socioeconomic risks of exclusion (catastrophic health expenditure). During the pandemic (2020 - 2021), per capita spending increased to USD 410, but decreased to USD 398 in 2022. This indicates the absence of a sustainable mechanism for reserving funds and weak integration of risks into the budget planning process.

Domestic government health expenditure as a percentage of GDP represents public health spending from domestic sources compared to the size of the economy, measured by GDP.

Table 3 shows the share of domestic public expenditure on health in GDP for the period 2000-2022. In the Republic of Moldova, the value of this indicator increased from 2.9% in 2000 to 5.06% in 2021, then decreased slightly to 4.52% in 2022. Although a positive trend is observed, this level remains half the European average (7.9%) and half that of high-income countries (8.1%). These developments indicate the limited capacity of the government to ensure sustainable financing of the health sector and a high degree of fiscal vulnerability.

Table 3. Domestic general government health expenditure (% of GDP)

Country	2000	2015	2016	2017	2018	2019	2020	2021	2022
Moldova	2.90	3.90	3.68	3.61	3.79	3.88	4.54	5.06	4.52
High income	5.57	7.50	7.61	7.54	7.51	7.65	9.10	8.59	8.10
Low income	1.17	0.97	1.11	1.09	1.08	1.11	1.33	1.27	1.24
Lower middle income	1.13	1.21	1.20	1.22	1.21	1.25	1.40	1.51	1.44
Middle income	1.95	2.78	2.74	2.73	2.70	2.72	2.91	2.85	2.74
Small states	3.00	3.64	3.84	3.92	3.94	4.14	5.12	5.23	4.75
World	4.95	5.87	5.94	5.85	5.82	5.90	6.91	6.50	6.14
Upper middle income	2.18	3.19	3.15	3.12	3.08	3.11	3.30	3.19	3.08
European Union	6.31	7.38	7.44	7.40	7.39	7.42	8.32	8.32	7.94

Source: developed by the authors based on the World Bank World Development Indicators Database

The relatively low share of public expenditure in GDP indicates the insufficient capacity of the budget to cover the basic health needs of the population. This creates a risk of dependence on external sources (grants, donations, loans) and instability of financing during economic fluctuations.

Insufficient public spending increases the burden on households, increasing the share of direct payments for healthcare services. In the long term, this leads to the risk of increasing inequality in access to healthcare and worsening public health indicators.

The sharp increase in the share of expenditure in 2020-2021 (up to 5.06%) reflects the emergency response to the COVID-19 pandemic, but a decrease in 2022 demonstrates the lack of a systemic long-term reserve mechanism.

This confirms the weak institutionalization of a risk-based approach in budgetary policy: financing increases only in times of crisis, not as part of planned risk management. Without risk assessment tools at the stages of budget planning and execution, a suboptimal allocation of funds between levels of healthcare (primary, inpatient and preventive) is possible.

Table 4. Domestic general government health expenditure (% of general government expenditure)

Country Name	2000	2015	2016	2017	2018	2019	2020	2021	2022
Moldova	8.53	12.21	12.21	11.65	12.03	12.12	12.38	14.62	12.35
High income	14.42	17.84	18.17	18.26	18.27	18.39	18.64	18.76	19.60
Low income	..	..	6.48	..	..	..	..	..	..
Lower middle income	..	5.17	5.04	5.10	5.08	..	..	..	..
Middle income	..	..	..	..	..	..	..	..	..
World	..	..	..	..	..	..	..	..	..
Upper middle income	..	..	..	..	..	..	..	..	..
European Union	13.28	15.02	15.37	15.52	15.56	15.62	15.45	15.92	15.63
Small states	..	10.74	11.47	12.03	11.76	12.58	..	..	..

Source: developed by the authors based on the World Bank World Development Indicators Database

Table 4 contains information on the dynamics of the share of public health expenditure in the structure of total public expenditure, i.e. it demonstrates the priority given to the health sector in budgetary policy. In the Republic of Moldova, this indicator increased from 8.5% in 2000 to 14.6% in 2021, indicating a gradual increase in the attention paid to healthcare. However, in 2022, it decreased to 12.35%, indicating instability in budgetary priorities and high sensitivity of the sector to economic fluctuations. Compared to EU countries (15.6%) and high-income countries (19.6%), the Republic of Moldova lags behind, demonstrating a moderate but insufficient level of prioritization of healthcare in the structure of public expenditure.

Among the risks faced by the healthcare system of the Republic of Moldova, the most pronounced are:

- the risk of decreasing the priority of healthcare in the context of fiscal pressure. Fluctuations of this indicator between 11% and 14% indicate that, when budgetary constraints arise (inflation, debt growth, external crises), healthcare becomes a target for cuts, rather than a protected budgetary element. This creates a high risk of underfinancing the healthcare sector;
- the lack of long-term risk planning causes the state to increase funding only during a crisis, instead of building up reserves in advance.
- with limited resources, increased funding is not always directed towards improving the quality of healthcare or towards preventive measures. Without a risk assessment, the structure of expenditures may be irrational - for example, excessive funding of administrative costs, with a lack of investment in infrastructure and human resources.
- Moldova continues to rely on a significant share of external and mixed sources (grants, loans, international programs). This creates a high degree of fiscal dependence and the risk of funding cuts if the foreign policy environment changes.

Table 5. Domestic general government health expenditure per capita (current US$)

Country	2000	2015	2016	2017	2018	2019	2020	2021	2022
Moldova	10.47	84.90	83.53	123.47	156.28	169.65	198.76	267.62	258.10
High income	1252.57	2725.60	2808.37	2906.06	3064.16	3132.20	3611.43	3829.49	3727.58
Low income	4.59	7.30	7.62	7.04	7.19	7.04	7.83	7.59	7.79
Lower middle income	6.61	22.64	22.63	24.33	25.20	26.91	28.97	34.86	34.62
Middle income	24.56	127.21	124.03	133.39	138.54	142.37	146.77	166.33	166.63
World	273.13	588.91	598.68	618.66	644.46	655.20	738.11	785.08	768.48
Upper middle income	40.78	234.85	229.13	247.18	257.60	264.52	272.40	308.32	312.75
European Union	1070.56	2256.29	2323.68	2455.84	2649.59	2611.72	2867.78	3235.13	2987.43
Small states	163.22	385.76	409.38	450.09	484.04	511.18	574.62	679.36	672.23

Source: developed by the authors based on the World Bank World Development Indicators Database

The analysis of the dynamics of public health expenditure per capita based on Table 5 indicates that this indicator has increased in the case of the Republic of Moldova from USD 10.47 in 2000 to USD 258 in 2022, demonstrating a significant increase in public investment in healthcare over the past two decades.

However, compared to EU countries (USD 2,987) and high-income countries (USD 3,728), the gap remains enormous - almost 15 times - indicating a chronic underfinancing of the sector.

Moldova is significantly lagging behind even the average level of small countries (USD 672) and the global level (USD 768), indicating systemic risks in the financing and sustainability of the national health system.

The risks derived from this unfavorable evolution are those mentioned above, in the analysis of the previous indicators: the risk of chronic underfinancing, the risk of dependence on external financing, the risk of inequality and social vulnerability, the risk of limited preparedness for emergencies, the risk of inefficiency and of a gap between spending increases and results.

The analysis suggests the need for a systemic assessment of risks and effectiveness, rather than simply increasing absolute amounts.

The evolution of the share of private (household) health expenditures in the structure of total current health expenditures for the period 2000-2022 (table 6) shows that in the Republic of Moldova, this indicator has decreased significantly - from 47.2% in 2000 to 32.6% in 2022, reflecting a gradual consolidation of the state's role in financing the sector. However, the level of private expenditures remains much higher than in the European Union (23.3%) and in small countries (29.4%), indicating an unequal distribution of the financial burden between the state and the population.

Table 6. Domestic private health expenditure (% of current health expenditure)

Country	2000	2015	2016	2017	2018	2019	2020	2021	2022
Moldova	47.17	47.18	47.51	44.69	40.76	36.92	32.09	31.27	32.60
High income	40.57	37.76	37.74	37.85	37.62	37.55	33.85	34.49	35.33
Low income	58.93	57.45	55.41	54.71	53.49	52.67	49.68	48.84	48.54
Lower middle income	66.99	64.84	64.66	61.54	61.08	60.20	59.00	56.62	57.53
Middle income	59.66	45.90	46.89	47.20	47.31	47.39	46.51	46.61	47.03
World	42.46	39.30	39.42	39.62	39.45	39.43	36.13	36.80	37.60
Upper middle income	58.12	42.40	43.60	44.84	45.09	45.27	44.38	44.86	45.14
European Union	25.24	25.90	25.27	25.20	25.13	25.30	23.36	23.42	23.35
Small states	38.86	37.47	36.68	36.11	36.14	34.68	30.35	28.71	29.37

Source: developed by the authors based on the World Bank World Development Indicators Database

Therefore, approximately one third of total health expenditure in the Republic of Moldova is borne directly by households. This situation signals the existence of a high level of social vulnerability and the risk of catastrophic spending. The most pronounced risks associated with the unfavorable evolution of the share of private (household) health expenditure in the structure of total current health expenditure in the Republic of Moldova are the following:

- the risk of social and financial vulnerability of the population;
- the risk of inequality in access to health services;
- the risk of undermining the preventive system. With a high share of private financing, the emphasis shifts to reactive treatment, rather than disease prevention. This leads to an increase in chronic diseases, higher healthcare costs and a decrease in the overall sustainability of the system;
- the risk of instability in times of crisis;
- the institutional risk of the lack of a sustainable risk transfer mechanism. A high share of private spending indicates insufficient integration of insurance and budgetary mechanisms (e.g., voluntary and mandatory health insurance).

Therefore, the health care system in the Republic of Moldova has a limited potential for redistributing risks between rich and poor, healthy and sick, urban and rural areas.

Table 7. Domestic private health expenditure per capita (current US$)

Country	2000	2015	2016	2017	2018	2019	2020	2021	2022
Moldova	10.09	87.96	81.33	109.01	112.68	104.95	98.40	128.23	129.80
High income	856.01	1648.71	1696.67	1763.40	1839.68	1874.04	1838.91	2005.54	2025.68
Low income	9.63	23.50	21.42	20.28	19.98	18.46	17.81	18.16	18.94
Lower middle income	15.23	47.82	47.34	43.73	44.31	45.95	46.52	51.80	53.80
Middle income	37.12	109.82	111.40	121.04	126.23	130.29	129.47	148.03	151.05
World	202.04	381.96	389.97	406.27	419.96	426.58	417.54	457.50	463.55
Upper middle income	56.92	173.63	177.79	201.71	212.27	219.52	217.93	251.97	258.69
European Union	361.70	788.97	786.08	827.81	890.19	884.88	874.33	989.27	909.67
Small states	110.75	251.42	257.43	275.09	296.36	285.87	254.32	272.64	277.97

Source: developed by the authors based on the World Bank World Development Indicators Database

The dynamics of the level of private (household) health expenditure per capita for the period in the Republic of Moldova presented in Table 7 indicates that the value of this indicator increased from USD 10.09 in 2000 to USD 129.8 in 2022.

At the same time, compared to EU countries (USD 910) and high-income countries (over USD 2,000), this evolution demonstrates low purchasing power and limited opportunities for private co-financing of health services.

On the other hand, the high share of private expenditure in relation to the country's total income makes healthcare financially vulnerable for the population, even with relatively small absolute amounts.

The evolution of this indicator suggests the existence of the following risks, the vast majority of which have been mentioned previously:

- risk of social vulnerability
- risk of inaccessible healthcare.
- risk of economic instability. In times of crisis (e.g., the COVID 19 pandemic crisis), private spending in Moldova has fallen sharply (to 98 USD), demonstrating the sector's sensitivity to external shocks. This dependence on household income makes the system unstable and unable to maintain the continuity of healthcare services during crises.
- risk of territorial and income imbalances. There is a significant gap between urban and rural areas: in cities, private spending covers a significant part of healthcare services, while in rural areas, the population is often completely excluded from the formal healthcare system. This increases regional risks and health inequalities.
- risk of dependence on informal payments. Insufficient funding of the system and low salaries of medical staff create the conditions for shadow payments, which undermines trust in the healthcare system and reduces its transparency.

One of the most important indicators reflecting the level of human development and health system performance is life expectancy at birth. According to the World Bank definition, this indicator indicates the average number of years that a newborn would live under the prevailing mortality patterns at the time of his birth. Being a synthetic indicator, it reflects, at the same time, the cumulative effect of the management of the health care system, its financing system and the general context - economic, social and environmental.

Table 8. Life expectancy at birth, total (years)

Country	2000	2015	2016	2017	2018	2019	2020	2021	2022	2023
Moldova	67.46	70.12	70.18	70.38	70.24	70.18	69.91	68.99	71.55	71.20
High income	76.04	79.52	79.72	79.85	79.97	80.20	79.20	78.80	79.43	80.15
Low income	54.14	60.99	61.40	61.58	62.34	62.80	62.82	62.38	63.46	64.52
Lower middle income	61.75	67.35	67.68	68.00	68.28	68.56	68.04	66.37	69.30	69.60
Middle income	66.50	71.21	71.44	71.66	71.96	72.19	71.52	70.40	72.52	72.74
World	67.65	71.96	72.18	72.37	72.64	72.87	72.18	71.22	72.97	73.33
Upper middle income	70.77	75.18	75.34	75.48	75.82	76.03	75.23	74.73	76.01	76.20
European Union	77.08	80.57	80.95	80.93	81.03	81.32	80.44	80.31	80.71	81.41
Small states	66.99	71.12	71.38	71.66	71.86	72.00	71.83	70.78	72.38	72.90

Source: developed by the authors based on the World Bank World Development Indicators Database

Countries that allocate a higher proportion of their gross domestic product to health tend to have higher life expectancy.

At the same time, this indicator signals the existence of the following risks:

- insufficient financing of the health system, which leads to a shortage of personnel, equipment and essential medicines;
- inefficient management of public spending, and in particular public spending on health;
- pronounced inequitable access to medical services, which can manifest itself between urban and rural areas and between socio-economic groups;
- factors external to the health care system: poverty, corruption, insufficient education, inadequate nutrition, social stress.

At the same time, monitoring and considering this indicator, especially in the framework of risk-based budgeting, is justified by the following aspects:

- life expectancy at birth reflects long-term demographic risks (population aging leads to increased spending on healthcare and social protection);
- indicates the level of efficiency of investments in the health sector: increasing spending in the face of stagnant or worsening life expectancy means inefficiency at the level of the national health care system;
- helps build models for different scenarios associated with the financial sustainability of the health care system.

As can be seen from Table 8, in recent years, life expectancy at birth in the Republic of Moldova has been 71-72 years. For men, the average value of this indicator is 67 years, for women – 75 years. These values are below the level recorded at the global level, below the level of the European Union, below the level of countries with an above-average income, below the level of small countries. Therefore, these developments reflect the complex and chronic deficiencies characteristic of the national health system and the pronounced socioeconomic risks.

The average annual value of expenses borne directly by a person for medical services, from their own resources (out-of-pocket) is reflected in table 9. The category of these expenses includes: expenses for purchasing medicines from pharmacies (not covered by insurance); fees for doctor visits, consultations and surgeries at private clinics; payment for medical goods and services not recovered by insurance; unofficial payments.

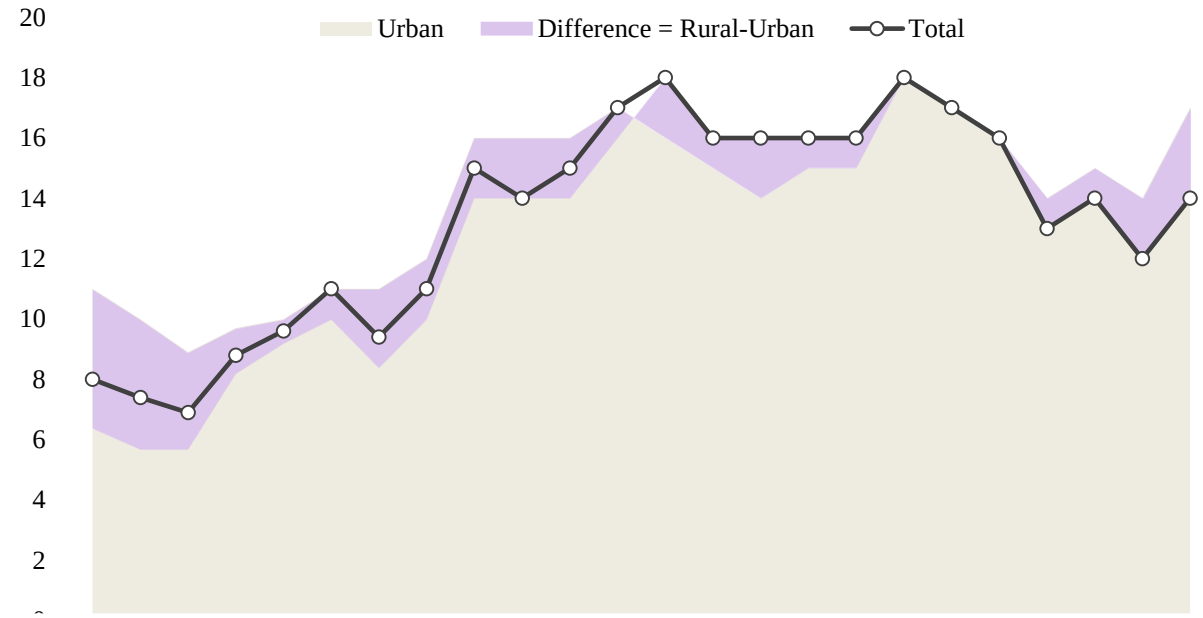
Table 9. Out-of-pocket expenditure (% of current health expenditure)

Country	2000	2015	2016	2017	2018	2019	2020	2021	2022
Moldova	47.17	46.19	46.29	43.63	40.03	35.69	30.93	29.42	31.71
High income	16.32	14.33	14.16	14.08	14.09	13.93	12.36	13.01	13.15
Low income	53.27	53.24	51.31	50.84	49.75	47.87	45.38	44.65	44.41
Lower middle income	60.13	56.43	55.91	52.00	51.48	50.64	49.12	46.57	47.42
Middle income	45.48	35.79	35.88	34.75	34.91	34.75	34.37	33.91	34.16
World	19.21	18.35	18.12	17.99	18.03	17.90	16.33	17.00	17.23
Upper middle income	42.41	31.98	32.17	31.92	32.24	32.12	31.86	31.70	31.78
European Union	15.69	15.99	15.82	15.82	15.74	15.71	14.36	14.45	14.27
Small states	32.60	30.62	30.28	29.78	29.96	28.66	25.30	24.08	24.90

Source: developed by the authors based on the World Bank World Development Indicators

Database

This indicator indicates the financial risks faced by a country's population: the higher the share of out-of-pocket expenses borne directly by a person for medical services, the higher the probability that households will face enormous medical expenses and poverty. As follows from Table 9, in the period 2000-2022 in the Republic of Moldova, out-of-pocket medical expenses were, as a percentage of current medical expenses, between 47.2 (maximum level) and 29.4 (minimum level). These values suggest the conclusion about the existence of high social risks and the unstable nature of health sector financing.



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total	8.0	7.4	6.9	8.8	9.6	11.0	9.4	11.0	15.0	14.0	15.0	17.0	18.0	16.0	16.0	16.0	16.0	18.0	17.0	16.0	13.0	14.0	12.0	14.0
Rural	6.4	5.7	5.7	8.2	9.2	10.0	8.4	10.0	14.0	14.0	14.0	16.0	18.0	16.0	16.0	16.0	16.0	18.0	17.0	16.0	13.0	14.0	12.0	14.0
Urban	11.0	10.0	8.9	9.7	10.0	11.0	11.0	12.0	16.0	16.0	16.0	17.0	16.0	15.0	14.0	15.0	15.0	18.0	17.0	16.0	14.0	15.0	14.0	17.0

Explanation:

<5%	Low risk (green colour)
5-10%	Moderate risk (yellow colour)
10-15%	High risk (orange colour)
>15%	Critical risk (red colour)

Figure 1. Evolution of the indicator Proportion of the population with household expenditure on health exceeding 10% of total household budget in the Republic of Moldova, in %

Source: developed by the authors based on WHO Data. https://data.who.int/indicators/i/B6D043E/A65146D

The indicator "Proportion of the population with household expenditure on health exceeding 10% of total household budget" reflects the financial burden on households and is used by the World Health Organization to assess the risk of catastrophic health expenditures.

According to the data presented, the Republic of Moldova has registered a constant increase in the proportion of the population whose health expenditures exceed 10% of the family budget

from 1998 to 2021: from 6.9% in 2000 to 14% in 2021.

In the periods 2008-2017, this proportion reached a critical level (>15%), which, according to the WHO classification, corresponds to a high risk of financial insecurity.

The distribution by place of residence shows a consistently higher indicator in urban areas compared to rural areas, indicating structural differences in access to and cost of health services.

The evolution of this indicator reinforces the conclusions formulated above regarding the risks faced by the healthcare system in the Republic of Moldova, namely:

- the risk of financial vulnerability of households. The increase in the share of the population with excessive medical expenses reflects the inefficiency of the financial protection system. For the Republic of Moldova, this risk is particularly high due to the limited role of insurance and the high share of direct payments;
- the risk of inequality in access to health services. The higher rate for the urban population is explained by the higher consumption of health services, but also by their high cost. In rural areas, the lower share may reflect a refusal to seek care due to poverty, which masks the true extent of the problem;
- the risk of deterioration of preventive healthcare;
- the risk of instability in times of crisis;
- the institutional risk of inefficient allocation of resources. The lack of risk-based approaches in budget planning leads to reactive redistribution of resources, without prioritizing the most vulnerable groups and regions.

3. Discussion, practical and managerial implications

The analysis carried out in the previous sub-chapter shows that the Republic of Moldova is making some progress in the relative increase of public spending on healthcare, but the financing structure remains vulnerable and unstable. At the same time, assessments show that the Republic of Moldova is exposed to high budgetary and systemic risks, associated with low levels and high volatility of healthcare spending.

Compared to the EU and high-income countries, and in some cases also compared to small countries, the Moldovan system: is less resilient and less protected from shocks. The priority given to health in the budget of the Republic of Moldova remains insufficient to ensure sustainability and equitable access to services.

Healthcare expenditure indicators in the Republic of Moldova reflect a chronic risk of underfinancing and low systemic resilience, especially compared to European countries.

Comparison with the EU and high-income countries shows that the financial burden on the population remains excessive, increasing the risks of poverty, poor health and inequality.

Despite positive trends, structural vulnerabilities, namely - dependence on external financing, a high share of private payments and the lack of risk buffers - remain significant.

Despite temporary increases during the pandemic, the financing structure remains reactive, rather than proactive.

In these circumstances, the implementation of risk-based budgeting (RBB) becomes a strategic tool for improving the efficiency of resource use, increasing the sustainability of the health system and ensuring equitable access to healthcare for all citizens of the Republic of Moldova.

For the Republic of Moldova, the risk-based budgeting approach in the healthcare system of the Republic of Moldova implies the following advantages:

- the introduction of RBB will allow taking into account the possibility of economic and epidemiological shocks when planning expenditures, creating buffer reserves and

scenarios for long-term sustainable financing;

- systematic risk analysis will allow for the redistribution of resources in favor of vulnerable groups and regions, preventing inequalities in access to healthcare and reducing the risk of catastrophic household expenditures;
- RBB requires a regular assessment of the probabilities and consequences of budgetary risks, which increases the responsibility of the Ministry of Finance and the Ministry of Health for achieving target results.
- RBB creates the premises for open reporting on risk management, which strengthens trust between the Ministry of Finance, the healthcare system and international donors;
- RBB will allow anticipating the impact of macroeconomic, demographic and epidemiological risks on spending and building up stabilization reserves in advance, protecting key health programs from sudden cuts;
- incorporating risk assessment into planning will help balance funding between short-term and long-term objectives, ensuring the sustainability of the sector without overstretching the budget;
- using RBB will ensure prioritization of the most vulnerable areas - primary health care, prevention and workforce sustainability - and improve the cost-benefit ratio;
- implementing RBB will allow taking into account the probability and magnitude of increases in private health spending when formulating state budgets, establishing compensation mechanisms and insurance reserves;
- RBB will allow redistributing resources between regions and levels of care, taking into account the degree of financial vulnerability of the population.

4. Results, Limitations, and Future Directions

Under these conditions, in the opinion of the authors, it is necessary to develop a strategy aimed at promoting the concept of risk-based budgeting in the Republic of Moldova. The respective strategy will ensure the consistency and coordination of efforts aimed at implementing this concept, and ultimately, the efficiency of using the limited resources allocated to the health sector, so that the latter becomes sustainable and prepared for the future.

The strategy of RBB in the health sector of the Republic of Moldova should aim to achieve the following four objectives:

- ensuring sustainability. In this regard, the emphasis should be placed on reducing financial losses caused by risks by designing and establishing reserve funds and proactive allocations.
- ensuring efficiency. In this regard, the emphasis should be placed on transferring part of the budget from reactive spending (treatment) to risk-based preventive measures.
- ensuring equitable access. In this regard, regional disparities (for example, in rural areas, where the availability of services is 40% lower) should be reduced through funding directed at vulnerable groups.
- EU integration. In this regard, alignment with the EU Directives on sustainable health, including risk adjustments for cost forecasting based on demographic data and other key factors, must be achieved.

Regarding the content, the Risk-Based Budgeting Strategy in the Health Sector of the Republic of Moldova should have the following key components:

- identification and assessment of risks. A useful tool for this purpose could be the creation of the National Health Risk Registry. It should be periodically updated by the

National Health Insurance Company and the Ministry of Health.

- prioritization and allocation of resources within the budget process. In this regard, it is recommended: - establishment of a risk buffer or a risk-based reserve; - transition to performance-based and prevention-based financing; - increasing the share of financing of family medical centers; - programmatic budgeting for key risks; - development of separate, protected budget programs with multi-annual planning for combating non-communicable diseases and infectious threats.
- management and monitoring mechanisms. In this context, it is necessary to develop a financial risk index for providers; an early warning system to automatically identify regions or population groups at increasing risk; promoting tools to ensure transparency and accountability.

Although risk-based budgeting offers a proactive approach to allocating resources based on risks (e.g., epidemics, demographic changes, climate threats, geopolitical risks, etc.), it is not a one-size-fits-all solution. Limitations may arise from risk uncertainty, data sufficiency and quality, institutional barriers, ethical considerations, and practical implementation challenges.

Although it has some limitations, the Moldovan Risk-Based Budgeting Strategy for the Health Sector can be adapted by integrating flexible scenarios, data can be improved through partnerships with the EU, and regular audits can be carried out to ensure ethical adjustments. Ultimately, these limitations do not negate the value of the strategy, but emphasize the need for pilot testing and monitoring.

Among the areas for further research on RBB in the health sector in the Republic of Moldova, we mention the following as important:

- integrating climate risks into risk-based budgeting models for health system adaptation;
- using digital technologies and big data to improve the accuracy of risk forecasting in RBB;
- benchmarking RBB with practices in other countries to optimize financial sustainability.

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Information aggression as a tool for undermining sustainable development: international political aspect

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Abstract

Introduction: Modern international relations are faced with new threats related to digitalization and globalization. One of the most dangerous is information aggression – the systematic use of media and digital technologies to distort reality, manipulate mass consciousness and undermine trust in institutions.
Aim: The purpose of the article is to analyze the impact of information aggression on the achievement of the Sustainable Development Goals (SDGs) and to determine its international political consequences.
Method: Historical-comparative and discourse analysis, as well as content analysis of UN, NATO, EU and UNESCO documents are used. The empirical base includes cases of the 2016 US elections, the COVID-19 "infodemic" and climate skepticism campaigns.
Findings: It is shown that information aggression undermines trust in state institutions, increases social polarization destabilizes the economy and hinders the implementation of the environmental agenda. Its asymmetric nature allows weak actors to exert large-scale influence on global processes.
Conclusion: Countering information aggression should be considered as part of the strategy for achieving the SDGs, since without strengthening information security it is impossible to ensure sustainable development.
Originality and value: The article reveals information aggression as a systemic barrier to the implementation of international obligations, offering a comprehensive approach to its study in the context of sustainable development.

Key words: information aggression, sustainable development, international politics, information warfare, cyber threats
Jel Codes: F5, O19, D83

1.Introduction

The concept of sustainable development, first clearly formulated in the Brundtland Report (1987), under the auspices of the World Commission on Environment and Development, implies a type of social progress in which meeting the needs of the present generation does not jeopardize the ability of future generations to meet their own needs. In the modern context, sustainable development covers a wide range of areas - from economic growth and social justice to environmental protection, building effective institutions and ensuring peace and security.

Since 2015, after the adoption of the UN Sustainable Development Goals (SDGs), the concept of sustainability has become an integral part of the global agenda aimed at creating inclusive, safe, sustainable and open societies. (United Nations. (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. A/RES/70/1.) However, along with traditional challenges (poverty, inequality, climate change), a new, increasingly urgent threat is coming to the fore - information aggression.

Information aggression is the systematic use of digital and media technologies to distort reality, manipulate mass consciousness, and destroy public trust in government institutions, international

organizations, and scientific authorities. Unlike direct violence or overt acts of war, information influence is carried out covertly, relying on complex psychological and technological mechanisms of influence.

As a key element of modern hybrid conflicts, information aggression deeply penetrates the spheres of political, economic, social, and cultural life. It can cause political destabilization, reduce the level of social cohesion, hinder sustainable economic development, and even undermine the environmental agenda by discrediting scientific data, for example, in matters of climate change.

Thus, information aggression directly and indirectly hinders the achievement of a number of SDGs, such as quality education (SDG 4), sustainable institutions and justice (SDG 16), partnerships for development (SDG 17), as well as goals in the areas of health, sustainable cities, climate action and international cooperation.

In the context of the increasing digitalization of international relations and the spread of information technologies, the study of the nature, mechanisms and consequences of information aggression is acquiring special significance. The study of its international political dimension is becoming especially relevant - how information attacks are used in global geopolitics, which states and actors use them as a strategic resource and how this affects the overall architecture of sustainable development in the world.

This article aims to provide a comprehensive analysis of information aggression as a tool for undermining sustainable development, with an emphasis on the international political aspect. The purpose of the study is to identify the forms, channels and consequences of information pressure on the stability of states, as well as to determine possible approaches to countering these threats within the framework of international cooperation.

Theoretical and methodological foundations of information aggression

In the era of digital transformation, the information space has become one of the most important arenas of global political confrontation. Information aggression is not just a tool of influence, but a systemic mechanism for the destruction of resilience structures in national and international contexts. In scientific literature, this phenomenon is interpreted in different ways: from "cognitive terror" (M. McLuhan) to "information weapons" in the context of hybrid wars (T. Rid, 2020).

The broadest definition of information aggression can be formulated as follows: "Information aggression is a targeted, organized and systematic activity carried out through media, digital and network channels with the aim of manipulating perceptions, distorting reality, undermining trust and destabilizing political, social and economic structures" (Talishinski, E.B. 2021).

Information aggression is thus a multi-layered, targeted activity carried out using digital, media and network platforms to manipulate perceptions, distort reality and undermine resilience structures. This form of non-state or state-sponsored activity is increasingly seen as a threat to national and international security, comparable in scale of impact to military intervention.

Information aggression may include, but is not limited to:

Mass dissemination of disinformation. Disinformation is the deliberate dissemination of false information that creates a distorted picture of reality. Unlike misinformation (the unintentional spread of errors), disinformation is deliberate and usually politically or ideologically motivated. Research shows that disinformation spreads much faster in the digital environment than reliable information (Vosoughi S., Roy D., & Aral S. 2018. P.1146).

Fake news and imitation journalism. One of the key tools of information aggression is the creation of fake news — deliberately false messages that are outwardly designed and presented in the style of professional journalism. Aggressors create special media resources, websites and accounts on social networks that outwardly imitate official news agencies and respected media,

which increases their trust among the audience. However, the true goal of such resources is not to inform, but to have a destructive impact on public opinion. They are aimed at undermining trust in state and international institutions, discrediting official sources, creating panic and social division.

Such methods are actively used in hybrid warfare and information operations. In particular, the European External Action Service (EEAS, 2020) Report describes in detail the mechanisms and consequences of such practices. The document points out that undermining public consensus through fake news and imitation journalism is one of the main goals of hostile information campaigns that can weaken political stability and undermine democratic institutions.

Such operations demonstrate a high degree of professionalism: they use complex visual and verbal techniques, involve bots and automated systems, and distribute content aimed at evoking emotional reactions and increasing social polarization.

Cyberattacks and digital sabotage. One of the most destructive tools of information aggression are cyberattacks and digital sabotage aimed at key infrastructure - government agencies, media, international organizations and critical information systems. The goal of such attacks is to disable information resources, replace or distort data, create chaos and mistrust in society.

Cyber-attacks can take many forms: the introduction of malicious software (viruses, Trojans), DDoS (denial of service) attacks, phishing campaigns to gain access to classified information, as well as interference in the operation of information systems for the purpose of data manipulation and disinformation.

A prominent and widely studied example is the 2016 attack on the Democratic National Committee (DNC). According to Special Counsel Robert Mueller's report (Mueller, 2019), the attack resulted in the theft of sensitive information that was then used to spread disinformation and influence the US presidential election. The case demonstrated how digital hacking can not only undermine a political organization, but also cause widespread distrust in the electoral system, threatening the very foundations of the democratic process.

Such cyber-attacks, accompanied by information campaigns, cause long-term damage to political stability, undermine trust in state institutions and complicate international cooperation on security issues.

Manipulation of digital platform algorithms. In today's digital space, social media and search engine algorithms play a key role in shaping the information field. Aggressors are increasingly manipulating the algorithms of platforms such as YouTube, Facebook, TikTok, and Google to advance certain narratives, amplify disinformation, and create the false impression of mass support or protest.

Search engine optimization (SEO) and targeted advertising technologies can increase the distribution of targeted content by crowding out or reducing the visibility of alternative, often truthful, sources of information. Recommendation algorithms on social media automatically select and offer users content that matches their previous views and interests, which can create "information bubbles" and increase social polarization.

According to NATO StratCom research (NATO Strategic Communications Centre of Excellence (StratCom). 2020), bots and fake accounts are widely used to generate huge numbers of messages and interactions, creating the illusion of mass support or, conversely, public outrage. Such artificial activity can distort the perception of reality, influence public opinion and undermine trust in democratic processes. This phenomenon poses a serious challenge to sustainable development, as it affects political stability and social cohesion, undermining the foundations of information security and public trust.

Targeting vulnerable groups. One of the key strategies of information aggression is targeting psychologically and socially vulnerable groups of the population. With the help of modern big data analysis technologies and machine learning, aggressors are able to identify specific

characteristics of various social strata, such as young people, marginalized communities, the elderly, and representatives of ethnic or religious minorities. Targeted processing of these groups allows for the creation and distribution of content that is maximally adapted to their psychological, cultural, and social characteristics. This contributes to the introduction of radical ideas, increasing feelings of alienation, mistrust, and injustice, which ultimately leads to the polarization of society and the undermining of social unity.

Young people and teenagers, who are the most active users of digital platforms and social networks, are particularly vulnerable to information aggression. Their high involvement in the virtual environment is combined with underdeveloped critical thinking, limited life experience, and a tendency to perceive information emotionally. All this makes this category of the population less resistant to manipulation and propaganda, especially if they are presented in an attractive, interactive, or game form.

Older people, on the contrary, often face the problem of low digital literacy, which makes it difficult for them to distinguish between reliable and false sources of information. A lack of understanding of the mechanisms of digital platforms and the lack of fact-checking skills makes them an easy target for disinformation campaigns and manipulative messages. In addition, representatives of the older generation may have increased trust in traditional and official-looking sources, which makes it easier for them to spread fake news and conspiracy narratives.

Thus, both young people and older people find themselves at risk, although the nature of their vulnerability is different: the former are more often the objects of emotionally charged and visually attractive manipulations, while the latter are victims of deception based on trust and a lack of digital competencies.

A study by Hameleers, Bos, and de Vreese found that targeted campaigns can stimulate protest sentiments, create a sense of crisis, and increase dissatisfaction with the government. This seriously complicates sustainable development processes, as it leads to increased social instability, decreased trust in institutions, and makes it difficult to achieve social consensus goals (Hameleers, M., Bos, L., & de Vreese, C.H. 2020, 653).

Formation of alternative, including conspiracy narratives. One of the key instruments of information aggression is the formation and dissemination of alternative narratives, which often take the form of pseudoscientific theories, anti-globalist and conspiracy theories. These narratives deliberately deny scientifically proven facts and generally accepted international standards, creating a parallel reality that calls into question the achievements of science and social progress.

An example is climate change denial, which portrays efforts to combat global warming as a “myth” or conspiracy. Such narratives discredit environmental initiatives, undermine international environmental cooperation, and hinder the implementation of the UN Sustainable Development Goals (SDGs).

Another striking example is the anti-vaccination movement, which actively uses disinformation about the safety of vaccines. This leads to a decrease in the level of collective immunity, an increase in diseases and social tension. Such conspiracy theories are often spread with the support or indirect approval of state actors seeking to weaken the position of their opponents in the international arena, undermine trust in the scientific community and institutional structures.

As highlighted in the UNESCO report, the spread of disinformation and alternative narratives poses a serious threat to global dialogue and coordination of sustainable development efforts (Information Disorder: Toward an interdisciplinary framework for research and policy making. UNESCO. 2021), as it contributes to the fragmentation of international communities and reduces the effectiveness of multilateral initiatives.

Moreover, these narratives often become the basis for radicalization and political polarization within countries, exacerbating internal conflicts and hindering social cohesion, which in turn

undermines the foundations of sustainable development at the national level.

The peculiarity of information aggression is its asymmetry and low visibility. Unlike traditional forms of armed conflict, it does not require the use of force or mobilization of troops, but is capable of causing damage of equivalent scale to the state or society. Such aggression penetrates political, social and cultural structures, destroying the internal stability of the system by manipulating perceptions and undermining trust in government institutions, the media, science and even citizens themselves.

Asymmetry is manifested in the fact that information impact can come from a weaker actor, who, without military and economic advantages, achieves strategic goals by destructively influencing the enemy's information environment. At the same time, low visibility ensures a high level of anonymity of the attack sources, which complicates legal and political response.

The mechanisms of influence of information aggression are based on scientifically confirmed vulnerabilities of human cognitive architecture, such as the tendency to confirm existing beliefs (confirmation bias), emotional perception of information, the anchoring effect, the phenomenon of the "information bubble" and social contagion. Through these mechanisms, the aggressor forms and disseminates narratives that undermine the legitimacy of power, arouse fear, mistrust and hostility, and provoke radicalization or apathy in society.

Such influence is often carried out with the help of:

disinformation (false content),

information noise (info overload),

emotional triggers (fear, anger),

social bots and trolls,

cyber tools (for example, hacking accounts, distributing falsified documents).

From the point of view of the concept of sustainable development, information aggression causes serious damage to the fundamental pillars that ensure the stability and progress of society. Let us consider in more detail how it affects the key aspects of sustainability:

Institutional stability is a weakening of trust in the government. Information aggression undermines the legitimacy of state institutions, sowing distrust in governments and authorities through the mass dissemination of false information, insinuations and conspiracy theories. Weakening of institutional trust leads to a decrease in the effectiveness of governance, a deterioration in law and order and an increase in political instability. As Bouckaert and Van de Walle note, "low levels of trust in public institutions significantly complicate the implementation of effective public policy and reduce the level of civic support" (Bouckaert, G., & Van de Walle, S. 2003. p.332). Research also shows that the loss of trust in state institutions directly correlates with an increase in the level of corruption, protest sentiments and political fragmentation.

Social sustainability is the polarization of society. Information aggression contributes to the deepening of social divisions and the increase of social tension. Polarization is a consequence of manipulation of public opinion and the deliberate targeting of different groups of the population with opposing views. As Cass Sunstein notes, "polarization intensifies when people find themselves in "echo chambers" where their beliefs are confirmed, and opposing points of view are ignored or discredited" (Cass R. Sunstein. 2017, p. 45). A divided society has difficulty reaching consensus on important issues, which reduces the possibilities for collective action and undermines social cohesion, one of the foundations of sustainable development.

Economic sustainability — destabilization of markets through rumors and fakes. Economic sustainability is significantly undermined by the dissemination of false information, rumors and fakes, which can provoke instability in financial markets and negatively affect the economic behavior of key participants — investors, consumers and businesses. Such manipulative

campaigns generate panic, cause unjustified fluctuations in stock, currency and commodity prices, and lead to a decrease in trust in financial and regulatory institutions. This ultimately slows down economic growth, reduces investment activity and increases the risk of systemic crises.

Environmental sustainability — discrediting scientific data on climate and sustainability. A particularly dangerous aspect of information aggression is the spread of pseudoscientific narratives and climate skepticism, which undermine international efforts to combat global climate change. Information actors — whether state or non-state — use media platforms to create mistrust in the scientific consensus by questioning the reality of climate change and its anthropogenic causes. This hinders the development and implementation of effective environmental policies, complicates international cooperation and distracts public attention from the urgency of environmental challenges, which in the long term threatens the sustainability of ecosystems, food security and the quality of life of future generations.

2.Literature Review

The concept of sustainable development has undergone significant evolution since its formulation in the Brundtland Report (1987), where it was defined as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). Over time, this idea has expanded far beyond environmental protection to encompass a multidimensional agenda that includes economic growth, social justice, peace, institutional development, and international cooperation. The adoption of the United Nations Sustainable Development Goals (SDGs) in 2015 institutionalized sustainability as a universal framework for addressing global challenges such as poverty, inequality, and climate change (United Nations, 2015).

However, while traditional threats to sustainability remain relevant, the rapid digital transformation of global society has given rise to new risks, with information aggression becoming one of the most pressing. Scholars increasingly argue that the information domain has transformed into a central arena of geopolitical confrontation (McLuhan, 1962; Rid, 2020). Information aggression is not merely a communication tactic but a systemic mechanism aimed at undermining resilience structures in political, economic, and social systems (Talishinski, 2021).

Within academic literature, the concept is approached from different theoretical perspectives. McLuhan (1962) emphasized the cognitive and psychological influence of media, often interpreted as a form of "cognitive terror," where media technologies alter patterns of thinking and perception. More recently, Rid (2020) conceptualized information operations as "information weapons," underscoring their role in hybrid warfare and political destabilization. This reflects a growing consensus that information aggression is comparable in scope and destructive potential to traditional forms of conflict.

Empirical studies highlight specific mechanisms of information aggression. Vosoughi, Roy, and Aral (2018) demonstrated that disinformation spreads faster and wider than factual news in digital environments, amplifying social polarization and eroding public trust. The European External Action Service (EEAS, 2020) documented the use of fake news, imitation journalism, and professionalized disinformation campaigns as tools of hybrid warfare aimed at undermining democratic institutions. Cyberattacks, such as the 2016 Democratic National Committee hack (Mueller, 2019), further illustrate how information aggression integrates technological and psychological methods to destabilize political systems.

Scholars also note the exploitation of algorithmic structures in digital platforms. Research by NATO StratCom (2020) shows how bots, fake accounts, and algorithm manipulation create artificial narratives of support or opposition, reinforcing "information bubbles" and exacerbating polarization. Hameleers, Bos, and de Vreese (2020) argue that such targeted campaigns foster distrust, crisis perceptions, and protest sentiments, which directly impede processes of sustainable development.

A growing body of literature also highlights the targeting of vulnerable groups. Younger generations, as active digital users, are particularly susceptible due to underdeveloped critical thinking skills, while older populations often fall victim to disinformation because of limited digital literacy (Bouckaert & Van de Walle, 2003). Sunstein (2017) emphasizes the role of echo chambers in deepening polarization, while UNESCO (2021) stresses that conspiracy narratives—such as climate change denial or anti-vaccination movements—pose significant risks to international cooperation, public health, and environmental sustainability.

Overall, the literature converges on the idea that information aggression undermines multiple dimensions of sustainability: weakening institutional trust, polarizing societies, destabilizing economies, and discrediting scientific consensus on environmental issues. Thus, it emerges not only as a threat to political stability but as a systemic barrier to achieving the UN Sustainable Development Goals, making its study within the framework of international politics both urgent and essential.

3.Materials and Method

This study is based on a qualitative research design that combines theoretical and empirical approaches. The theoretical framework relies on the concepts of sustainable development (Brundtland Report, 1987; UN, 2015) and information warfare (McLuhan, 1962; Rid, 2020; Talishinski, 2021). Academic literature, policy documents, and official reports of international organizations (EU, NATO, UNESCO, UN) were analyzed to identify key definitions, mechanisms, and effects of information aggression.

Empirical material includes case studies of disinformation campaigns, cyberattacks, and manipulation of digital platforms, with particular attention to the examples of the 2016 U.S. presidential election (Mueller, 2019), the COVID-19 infodemic (EEAS, 2020), and climate change denial campaigns (UNESCO, 2021).

The methodological basis of the study is comparative analysis, discourse analysis, and content analysis of media and policy reports. This combination allows for a comprehensive examination of how information aggression undermines the pillars of sustainable development, particularly institutional trust, social cohesion, economic stability, and environmental cooperation.

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Historical significance of the development of science, education and culture in Azerbaijan-Türkiye relations

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Abstract

Introduction: Relations between Azerbaijan and Türkiye have historically been built on the principle of "one people - two states", which ensured their comprehensive development not only in politics and economics, but also in the strategically important areas of science, education and culture.
Aim: The purpose of the study is to identify the historical and modern features of scientific, educational and cultural cooperation between Azerbaijan and Türkiye, as well as to determine its significance for regional integration and strengthening the Turkic world.
Method: The work uses a qualitative approach, including historical and comparative analysis, content analysis of official documents, speeches of leaders and bilateral agreements, as well as case studies of key projects - from the protocols of the 1990s to the establishment of the Azerbaijan-Türkiye Joint University in 2024.
Findings: The study showed that cooperation covers systemic initiatives: the creation of joint research centers (ANAS-TÜBİTAK), educational projects, cultural events through TURKSOY and the introduction of high-tech solutions in the defense industry. These processes have contributed to the strengthening of national identity, the development of human capital and the expansion of cultural diplomacy.
Conclusion: The analysis confirms that Azerbaijani-Turkish cooperation in these areas is of a strategic nature, forming a solid foundation for innovation and cultural integration in the 21st century.
Originality and value: The work contributes to the comprehensive study of bilateral relations, emphasizing their multidimensionality and relevance for strengthening the unity of the Turkic countries.

Key words: Azerbaijan, Türkiye, science, education, culture, historical cooperation, cultural exchange, strategic partnership
Jel Codes: F5, O19, D83

1. Introduction

Relations between Azerbaijan and Türkiye have been built on brotherhood, common culture and linguistic unity throughout history. The principle of "one nation, two states" constitutes the basic philosophy of these relations. These relations have been developed deeply and systematically not only in the political and economic spheres, but also in areas of strategic importance such as science, education and culture. Since the end of the 20th century, especially after Azerbaijan gained independence, cooperation in these areas has entered a qualitatively new stage.

The great Turkish thinker Mustafa Kemal Pasha Atatürk created a rich heritage in the fields of culture, spirituality and mother tongue, both theoretically and practically. Heydar Aliyev said: "Mustafa Kemal Atatürk proved to the whole world that in a Muslim country, in a country that has lived as a religious state for centuries under the influence of religion, it is possible to establish a republic, a worthy republic, and to follow a democratic path." (İsmayılov, İ. 2004. p. 6)

The leaders of both states have repeatedly expressed their views on the history and prospects of Azerbaijan-Türkiye cultural relations and have made statements that these relations will be

permanent and eternal. The national leader of our people, Heydar Aliyev, declared that "the words we have repeatedly said, 'We are one nation, two states,' should ring in the ears of every Azerbaijani. This statement is the program of our future." In his speeches, Heydar Aliyev, who always approached the problems of the Turkic world with a global mindset, always gave such an idea as: "Today, I really want to note that our peoples have been close friends for centuries. (Hüseynova, F. 2007. p. 8)

At the beginning of the last decade of the 20th century, five of the Turkic-speaking peoples found the opportunity to create their own independent states on the basis of the collapse of the USSR, and the Turkic world became much stronger.1 In Azerbaijan, which had gained state independence, President Heydar Aliyev first of all set the task of rewriting history textbooks, and the most important task was the urgent need to write history textbooks for secondary schools: a group of our historians joined this work and certain successes were achieved. However, the defect of delay in writing both the history of the 19th-20th centuries and the fundamental scientific history of Azerbaijan, starting from the most ancient period, has not been completely eliminated. (İsmayılov, İ. 2004. p. 9)

Cooperation in the field of science between Azerbaijan and Türkiye

Cooperation in the field of science between Azerbaijan and Türkiye has been developing intensively in recent years, and these relations have risen to the level of strategic partnership. Both countries are interested in deepening cooperation in the field of science, technology and innovation, based on common historical, cultural and spiritual roots. These relations are implemented not only at the official level, but also widely between scientific research institutions, universities and foundations.

The first steps towards cooperation were taken in the 1990s. In 1992, a protocol of intent was signed between Azerbaijan and Türkiye in Baku, providing for cooperation in the fields of education and science. Later, these relations were continued with a protocol on scientific, technological and cultural cooperation concluded in Ankara in 1994. In 1995–1997, a number of documents were signed between the two countries on the recognition of diplomas in higher education, scientific and educational exchange and other areas. These documents further strengthened the integration of the two countries in the field of science.

On March 22, 1992, Heydar Aliyev, Chairman of the Supreme Assembly of the Nakhchivan Autonomous Republic, left for an official visit to Türkiye at the special invitation of Turkish President Turgut Ozal and Prime Minister Süleyman Demirel. While in Ankara, Heydar Aliyev laid wreaths at the graves of Mustafa Kemal Atatürk, the first President of the Republic of Türkiye, and Muhammad Emin Rasulzade, one of the founders of the Azerbaijan Democratic Republic. On March 24, the Chairman of the Supreme Assembly of the Nakhchivan Autonomous Republic Heydar Aliyev signed a joint cooperation protocol on the provision of financial, economic and technical assistance to the Nakhchivan Autonomous Republic by the Republic of Türkiye, including the allocation of a loan of 100 million dollars to Nakhchivan and the provision of 100 students to study in Türkiye every year. The “Protocol on Cooperation Between the Nakhchivan Autonomous Republic of Azerbaijan and the Republic of Türkiye” stated that the Chairman of the Supreme Assembly of the Nakhchivan Autonomous Republic of Azerbaijan Heydar Aliyev visited Türkiye from March 22 to 24, 1992. During the meetings organized during this visit, the following issues were agreed upon in order to organize better cooperation in all fields, taking into account the existing friendship, cooperation and good neighborly relations between the Republic of Türkiye and the Republic of Azerbaijan, the protocol between the foreign ministries of the two countries, and the historical and cultural fraternal relations between Türkiye and the Nakhchivan Autonomous Republic: (Azerbaijan-Türkiye relations and Heydar Aliyev (1st book), 1991–2001. 2002 p. 31)

1. The Turkish side will promptly take the necessary measures to make the television programs of the TRT Directorate easily accessible in the Nakhchivan Republic. In addition, if requested by Nakhchivan, the TRT Directorate will provide special programs.

2. Within the framework of the credit established for the assessment of the opportunities of the Nakhchivan Autonomous Republic in the field of tourism, the necessary assistance and technical assistance, including the construction of a hotel, will be provided by the government of the Republic of Türkiye.

3. In order to contribute to the development of cultural life in the Nakhchivan Autonomous Republic, the Republic of Türkiye will provide press equipment, including the provision of a printing house, as needed.

4. The education of 100 students from the Nakhchivan Autonomous Republic will be provided by the Republic of Türkiye.

5. The Presidency of the Economic, Cultural, Educational and Technical Cooperation Department with the Ministry of Foreign Affairs of the Republic of Türkiye will be responsible for the coordination and implementation of all cooperation projects (Azerbaijan-Türkiye relations and Heydar Aliyev (1st book), 1991–2001. 2002. p.33)

One of the most important partnership institutions in the field of science is the cooperation between the Scientific and Technological Research Council of Türkiye - TÜBİTAK and the Azerbaijan National Academy of Sciences (ANAS). Since 2022, this cooperation has entered an even more active phase. The opening of the "ANAS-TÜBİTAK Coordination Center" in the building of ANAS at the beginning of 2024 was an important step in this direction. This center has created new opportunities for the implementation of joint scientific projects, joint research, conferences and exchange programs.

In addition, scientific cooperation between Azerbaijan and Türkiye is expanding through the Organization of Turkic States and the Turkic Academy operating under it. Within this framework, joint scientific projects, conferences and symposiums of Turkic-speaking countries are organized. At the same time, organizations such as the Eurasian Universities Union (EURAS) also contribute to the development of inter-university relations between the two countries.

One of the important steps taken in recent years is the Türkiye-Azerbaijan University, which was established in Baku in 2024. This university was established on the basis of cooperation between Azerbaijan Technical University and leading universities in Türkiye - Middle East Technical University (METU), Istanbul Technical University (ITU) and Hacettepe University. It offers educational programs in such fields as computer engineering, industrial engineering and food engineering. Teaching is conducted in Turkish and English. The university aims to provide young people from both countries with educational opportunities in line with international standards.

Within the framework of cooperation protocols signed between the Science Development Foundation under the President of the Republic of Azerbaijan and TÜBİTAK, joint scientific projects are supported, including joint scientific competitions. At the same time, a memorandum of understanding was signed between Azercosmos and TÜBİTAK Space Technology Research Institute. This document creates conditions for the implementation of joint projects in the field of space technologies and satellite communications between the two countries.

Strategic cooperation between the two countries in the field of defense industry and high technologies.

One of the interesting and strategic areas of cooperation is the defense industry and high technologies. In 2023, a protocol was signed on Azerbaijan's participation as a technological partner in the KAAN fighter jet project. According to this protocol, some technological systems of Azerbaijan were included in the project and joint production opportunities were created. In addition, at the 2024 ADEX exhibition, an agreement was reached between the Turkish company ASELSAN and Azerbaijan on the technology transfer and use of the ASELFLIR-500 and TOLUN systems. Baykar Technology Azerbaijan plays an active role in the research and production of unmanned aerial vehicles.

Thus, cooperation in the field of science between Azerbaijan and Türkiye is multifaceted and strategic in nature. This cooperation is not limited to the academic field, but also manifests itself in the fields of high technology, industry, space and defense. It is expected that these relations will deepen further in the coming years and make serious contributions to the scientific integration of the Turkic world.

The historical importance of education issues in Azerbaijan-Türkiye relations is one of the most important aspects of the relations between the two brotherly countries. Cooperation in this field is not limited to the occurrence of mutually beneficial processes in the educational environment, but also occupies a special place in terms of national identity, cultural ties, strategic partnership and the upbringing of future generations.

After the collapse of the USSR, when Azerbaijan regained its independence in the early 1990s, Türkiye became the first state to recognize this independence. Along with the establishment of diplomatic relations between the two countries, important steps began to be taken in the field of education. The cultural and scientific exchange protocols signed on September 19, 1990 laid the foundation for future cooperation. Already in 1992, the Azerbaijani government sent 320 high school students to Türkiye for lyceum education. By 1995, this number had increased rapidly and 1,853 students were admitted to various higher and secondary specialized educational institutions in Türkiye.

One of the most important projects implemented during this period was the Caucasus University, established in 1993. The university was formed by combining the pedagogical potential of both Azerbaijan and Türkiye and was aimed at training personnel at the international level. In addition, hundreds of Azerbaijani young people were sent to prestigious universities in Türkiye within the framework of the "Big Student Project". By 1998, the number of students coming to Türkiye through the state alone reached 2,570, of which 1,101 were provided with scholarships.

1999 was a stage when cooperation strengthened institutionally. That year, at the meeting of the ministers of education, the issue of mutual recognition of diplomas was brought to the agenda, and it was decided to establish a Joint Commission in this direction. At the same time, support was provided for the repair of Azerbaijani schools and the restoration of educational infrastructure after the earthquake in Türkiye.

In the 2000s, Azerbaijani-Turkish educational relations intensified further. During this period, new protocols were signed in the fields of both higher and vocational education. Student and teacher exchanges between the two countries expanded, and joint scientific projects were implemented. In 2017, a Memorandum of Understanding on cooperation in the field of higher education was signed, forming a legal basis for joint programs between universities. In addition, relations in the field of vocational education were strengthened. Based on the Protocol signed in 2021, it was planned to establish vocational schools in Azerbaijan based on the experience of Türkiye.

The newest stage of Azerbaijan-Türkiye educational cooperation began with the establishment of Türkiye-Azerbaijan University in Baku in 2024. A joint project of Azerbaijan Technical University and leading educational institutions such as Orta Doğu Technical University, Istanbul Technical University, and Hacettepe University in Türkiye, classes are held in Turkish and English at this university. 86 students were admitted in the first stage. The main goal of the university is to prepare highly qualified personnel in strategic fields.

The historical importance of this cooperation is manifested in several main directions. First of all, it creates conditions for the development of personnel potential, enrichment of the scientific and research environment and mutual recognition of diplomas between the two countries. Second, it serves to strengthen national and cultural values in the younger generation based on the philosophy of "One nation, two states". Third, strategic cooperation in the field of education forms a solid foundation for the implementation of joint projects in the fields of technology, science and innovation in the future.

Thus, education issues in Azerbaijan-Türkiye relations are not only the development of scientific and academic relations between the two countries, but also the carrier of a historical, cultural and strategic mission. These relations remain one of the strongest manifestations of the bonds of brotherhood stretching from the past to the future.

The historical significance of cultural issues in Azerbaijan-Türkiye relations is one of the deepest and most enduring pillars of the brotherly ties between the two states. These relations are based on historical roots, but in modern times, combined with the concept of strategic partnership, they play a special role both regionally and internationally. Cooperation in the field of culture is of strategic importance not only in terms of the exchange of art and literature, but also in terms of the preservation of common identity, national memory, linguistic unity and spiritual values.

TURKSOY and the revival of common cultural heritage.

The International Organization of Turkic Culture – TURKSOY, established in 1993, has enabled the development of Azerbaijani-Turkish cultural relations in a larger space – within the Turkic world. Through TURKSOY, the two countries have played a leading role in organizing dozens of international events.

Among these events, ceremonies such as the 500th anniversary of Fuzuli, the 1300th anniversary of Kitabi-Dede Gorgud, and the anniversary of Nasimi occupy a special place. These anniversaries were not only commemorations of literary and artistic figures; they carried an ideological meaning for strengthening the common values, historical memory, and spiritual ties of the Turkic world.

It was during this period that the concept of "common roots" began to be systematically promoted in the field of culture. Ministers of culture, artists, and scholars of the two countries held regular meetings within the framework of TURKSOY and prepared plans for future projects.

Legal and institutional basis of cultural cooperation (2000–2010)

Since the 2000s, Azerbaijan-Türkiye cultural relations have moved beyond the level of individual events and entered the stage of systematic cooperation. A number of cultural protocols and agreements were signed during these years.

The areas of cooperation were:

•Library and archive work: Agreements were signed between the National Library and the National Library of Türkiye, digitization and exchange of rare manuscripts were carried out.

•Museum work: The National Art Museum of Azerbaijan, the History Museum and other cultural institutions implemented exhibition projects with institutions such as the Topkapi Palace of Türkiye and the Museum of Anatolian Civilizations.

•Theater and cinema: Joint performances were staged, joint films were shot. Theater projects and historical films on the theme of "Dede Gorgud" became relevant during this period.

•Intangible heritage: Joint work was carried out with UNESCO to protect values such as ashug art, carpet weaving and mugham.

The "Azerbaijani Culture Days" and "Turkish Culture Days" held in 2000–2010 have already become a tradition. These events were organized both in the capitals and in the regions.

After the 2010s, Azerbaijani-Turkish cultural relations gained a new meaning within the framework of the strategic partnership concept. Especially after the 44-day Patriotic War in 2020, the cultural integration of the two countries became more intensive. Documentaries, musical works, exhibitions and theatrical performances related to the Karabakh Victory were prepared. These works reflected the national pride of both Azerbaijan and Türkiye.

Starting from 2021, cultural projects began to be implemented not only in the capitals, but also

in the liberated Karabakh lands. The participation of Turkish artists in the "Xaribulbul" Music Festival organized in Shusha became a symbol of the unity of the cultures of the two countries.

The new cultural cooperation agreement signed in Ankara in November 2023 opened up wider opportunities for the future development of these relations. The agreement covers areas such as theater, cinema, museum work, folklore, book publishing, restoration of cultural heritage monuments, and exchange of artists.

The historical importance of culture in Azerbaijani-Turkish relations can be assessed in several aspects:

1. National identity and common memory: Both peoples have the same historical roots, language, and culture. This makes cultural cooperation not just a gesture of friendship, but a means of protecting national existence.

2. Soft power policy: Joint festivals, exhibitions, and concerts strengthen the international image of the two countries and increase the role of cultural diplomacy in regional stability.

3. Regional leadership: Azerbaijan and Türkiye are the leading forces of cultural integration in the Turkic world. Their joint appearances on TURKSOY and other platforms are an example for all Turkic states.

4. Economic and tourism potential: Cultural projects also give impetus to the development of tourism and strengthen economic relations.

In recent years, the importance of scientific conferences has become more noticeable in the increasing expansion of scientific and cultural relations between Azerbaijan and Türkiye. Let us try to confirm our ideas by listing a few important ones among the numerous examples in this field. For example, a message published on the internet states: On the occasion of the 50th anniversary of the establishment of the Aegean University, in order to recognize and promote language, history and culture research in the Turkic World, to achieve cooperation between relevant scientific institutions and scientists, and to enrich our knowledge base with new research, the Institute of Turkic World Studies of the Aegean University will hold an international cultural congress between 09-15 April 2006, where the issues of "language, literature, folklore, history, geography, anthropology, international relations, culture, etc." in the Turkic World will be discussed. We hope that the scientists who wish to participate in this congress will share their independent scientific research in theoretical and methodological terms, aimed at solving the current problems of the Turkic World in their research fields, with scientists from different countries. (Shahismayil, I. 2025. p.29-31)

The Turkish World Writers' Conference held on 6 November 1996 At the III Congress, Azerbaijani President Heydar Aliyev stated in his speech that Turkic-speaking peoples have lived in a large part of the Eurasian continent throughout their ancient, centuries-old history, making great contributions to world and human culture and enriching it. Throughout ancient history, the lives of Turkic-speaking peoples have been diverse, sometimes encountering wars, battles, and aggressions that threatened the very existence of nations. However, the ancient roots of our peoples and their spiritual attachment to each other have brought them through all these stages, trials, and tests and brought them to the present day. We can be proud of our historical roots, national roots, spiritual values, national-spiritual traditions, and great history (Heydar Aliyev. 1996. p.93).

When we take a general look at the history of Azerbaijani-Turkish cultural relations from the perspective of theatrical art, we see that starting from the 1960s, the interest of Azerbaijani theater in Turkish drama has increased significantly. From this period, in addition to Nazim Hikmet, the works of Orkhan Kamal, Aziz Nesi, Rashad Nuri Gunteki, Turan Ofzanoglu and other Turkish writers began to appear in the repertoires of Azerbaijani theaters (Karimov, I. 2000. p. 119). In October 1989, the visit of the delegation of the Azerbaijan Academy of Sciences to Türkiye was of a rather business-like nature. On November 3, 1990, the first national congress

of Azerbaijani public organizations of the world opened in Istanbul. Delegations of Azerbaijani centers and societies from many countries where our compatriots live came to the congress. Representatives of Azerbaijani creative and public organizations also actively participated in this congress. The visit was organized by the Society for Cultural Relations with Compatriots Abroad of Azerbaijan ("Vatan Society"). While leaving for the Congress, the head of the Azerbaijani delegation, academic secretary of the Department of Literature, Language and Art of the Academy of Sciences of the republic, B.A. Nabiyev, said in an interview: "Azerbaijan will be represented at the Congress by prominent public figures, writers, composers, directors, scientists, journalists, as well as activists of many political movements. Together with other delegations that will participate in the work of the Congress, we must discuss common problems, develop a single concept of the future development of the Azerbaijani people, identify ways to unite the efforts of Azerbaijani centers and societies from different countries, and thus more actively acquaint the world with the history, culture, traditions and modern life of our people. Finally, it is no less important that the Congress should help all Azerbaijanis, regardless of where they live, to feel that they are children of a single ancient homeland, and should spare no effort for the progress and well-being of the Motherland" (Karimov, I. 2000. p.149).

Increasing the number of scientific institutions of neighboring countries ordering books and works from Azerbaijan; improving the equivalence of book exchange, increasing the amount of literature received and given; increasing the importance of international book exchange, ensuring the wide dissemination of economic, scientific and cultural achievements in this way. (Huseynova, F. 2007. p. 183)

Towards the end of the 20th century, the emergence of new Turkic states on the political map of the world intensified not only political and economic relations, but also cultural relations. It is no coincidence that achievements were mostly achieved in the fields of culture and art. Although mutual relations between peoples with the same language, religion, historical roots, and customs and traditions were hindered for a long time, this tendency immediately disappeared at the new stage. If in the first years of independence, caution arising from objective and subjective factors was felt in the relations of the newly formed Turkic states with Türkiye, this should not be applied to the revival of cultural relations. Türkiye implemented a number of urgent measures aimed at the rapprochement of cultures arising from a natural desire, the revival of pan-Turkic values, the renewal of the Soviet science, education, and culture system with modern standards, and the provision of independent states with new qualified personnel. As a result of purposeful action programs, a completely new cultural landscape began to be observed in the cultural integration of the entire Turkic World, but one that was connected to the natural foundations, the historical and national-spiritual values of our peoples. Against the backdrop of globalization and intensification of mutual relations, the foundation for cultural integration among Turkic countries was laid.

2. Literature Review

The historical, cultural, and educational relations between Azerbaijan and Türkiye have been shaped by a shared heritage, linguistic unity, and the principle of "one nation, two states" (Ismayılov, 2004; Huseynova, 2007). Scholars emphasize that these relations are not limited to political or economic cooperation, but encompass strategic areas such as science, education, and culture, reflecting a comprehensive partnership that has deepened since Azerbaijan gained independence in the early 1990s (Azerbaijan-Türkiye relations and Heydar Aliyev, 2002).

The legacy of Mustafa Kemal Atatürk in establishing republican and democratic values has had a profound influence on Azerbaijani-Turkish relations, with Heydar Aliyev highlighting the significance of Atatürk's achievements in shaping modern governance and cultural identity (Ismayılov, 2004). Both leaders of Azerbaijan and Türkiye have consistently underscored the permanence of these relations, framing them as a program for the future and a means of preserving cultural and spiritual bonds (Huseynova, 2007).

In the realm of science and technology, bilateral cooperation has evolved from initial agreements

in the 1990s to a strategic partnership encompassing research institutions, universities, and foundations. Key milestones include protocols on education and science, recognition of diplomas, and student exchanges, which have strengthened integration between the two countries (Azerbaijan-Türkiye relations and Heydar Aliyev, 2002). Recent developments, such as the establishment of the ANAS-TÜBİTAK Coordination Center and Türkiye-Azerbaijan University, further demonstrate a commitment to fostering innovation, high technology, and academic collaboration. Joint projects in space technologies, defense, and high-tech industries illustrate the multifaceted nature of this partnership.

Education has played a central role in Azerbaijan-Türkiye relations, serving not only as a vehicle for academic cooperation but also as a means of reinforcing national identity and cultural continuity. From sending students for lyceum education in Türkiye in the 1990s to the establishment of modern joint universities, these initiatives have strengthened human capital, promoted intercultural understanding, and facilitated mutual recognition of qualifications (Huseynova, 2007).

Cultural cooperation between Azerbaijan and Türkiye is another cornerstone of bilateral relations. Initiatives through TURKSOY and other platforms have emphasized the preservation of shared historical memory, national identity, and spiritual values. Commemorations of literary figures, joint festivals, museum collaborations, and theater projects highlight both the ideological and practical significance of cultural ties (Ismayilov, 2025; Heydar Aliyev, 1996; Karimov, 2000). Recent efforts to implement cultural programs in liberated territories such as Karabakh further underline the strategic importance of culture in reinforcing national cohesion and soft power.

The literature consistently demonstrates that the Azerbaijan-Türkiye partnership is characterized by continuity, strategic depth, and a multidimensional approach that integrates political, scientific, educational, and cultural cooperation. Scholars highlight that these relations not only serve bilateral interests but also contribute to broader regional integration and the strengthening of the Turkic world (Huseynova, 2007; Ismayilov, 2025).

3. Materials and Method

This study employs a qualitative research approach, combining historical, cultural, and policy analysis to examine Azerbaijan–Türkiye relations in the fields of science, education, and culture. The primary sources include official documents, bilateral agreements, protocols of cooperation, speeches of national leaders (Heydar Aliyev, Mustafa Kemal Atatürk), and reports from institutions such as TURKSOY, TÜBİTAK, and ANAS. Secondary sources consist of scholarly monographs, journal articles, and archival materials on Azerbaijani-Turkish relations (Ismayılov, 2004; Huseynova, 2007; Karimov, 2000).

The research methodology integrates content analysis of official documents and speeches, historical-comparative analysis of policy developments, and case study examination of key projects in science, education, and cultural cooperation. This approach allows for identifying patterns, evaluating the strategic significance of bilateral initiatives, and assessing the impact of these collaborations on the long-term development of the Turkic world.

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The Effect of Artificial Intelligence on Travel Agency and Airline Activities: A Survey on Employees' Perspective

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Abstract

Introduction: Artificial intelligence is rapidly transforming all activities and operations in travel agencies and airlines, as well as in other industries. These transformations can be summarized as follows: the impact of AI on activities and operations, its benefits, its impact on customer satisfaction, and its challenges.
Aim: The study aims to determine the impact of artificial intelligence on travel agencies and airline activities based on employees' perspective.
Method: Qualitative research method was used in the study. Data were obtained from travel agency and airline employees through semi-structured interview form. Descriptive analysis method was used in the analysis of the data.
Findings: The use of artificial intelligence in travel agencies makes a significant contribution to pricing, increasing sales, reducing costs, reporting and decision-making, facilitating work, auditing, developing collaborations, analyzing customer preferences, tour management, determining routes, determining vehicle occupancy rates, determining tour and airport vehicle needs and monitoring the fuel needs of these vehicles, customer satisfaction, and reservations. The use of artificial intelligence in airlines enables facial recognition systems in monitoring the fatigue, stress, and mental health of pilots and other employees, flight operations, early detection and repair of aircraft malfunctions with smart maintenance systems, detection of foreign objects on the runway, image processing, air traffic management, general security, safe passenger entry and exit (biometric passage and behavior analysis), dynamic pricing and revenue management, occupancy tracking, personalized customer management, machine learning, and baggage tracking and management.
Conclusion : Artificial intelligence is accelerating transformation in travel agencies, impacting employee competencies, reducing workload in reservations, customer relations, destination selection, and offering recommendations, increasing efficiency, reducing errors, enabling 24/7 customer service, saving time and costs, and facilitating the provision of personalized experiences and recommendations. The results also show that the use of AI has been accelerated automated processes, speed up security checks, increase energy efficiency, and facilitate passenger experiences and data analysis in airlines.
Originality and value: The study makes a significant contribution to the field and stakeholders regarding the impact of artificial intelligence on agency activities and airlines.

Key words: artificial intelligence, travel agency, airline, employees' perspective.
Jel Codes : L80, L83, Z31

1. Introduction

The first research about artificial intelligence began in 1956, when John McCarthy coined the term "AI" at the Dartmouth Conference (Anderson, 2024). With a subsequent project, artificial intelligence entered the scope of scientific research (Reese, 2018), and over the years, it has become a revolution that has dramatically impacted all industries.

Artificial intelligence applications have begun in the tourism industry with smart tourism applications aimed at creating enriched tourism experiences, both physical and non-physical (Peceny et al., 2019). In Tourism 4.0, data on tourist behavior is collected with the help of applications and sensors, creating sustainable and personalized travel experiences (Nugraheni et al., 2021). In smart tourism, tourism-related events, situations, and problems can be understood and resolved more quickly through machines, enabling better service delivery. With these applications, artificial intelligence has largely replaced human labor in the tourism businesses (Lee et al., 2017).

The proliferation of artificial intelligence applications has also impacted airlines and travel companies, which are the most important components of the tourism industry. The first applications in airlines began with innovations in cabin services, passenger services, ground services, and baggage handling (Cam and Durmaz, 2018). Innovations in service marketing strategies and production activities, changes in consumer demand and passengers' expectations and experience perceptions have necessitated the use of digital technologies in airlines (Tuncer, 2021), and this has highlighted customer and company value (Taneja, 2017). With the application of augmented reality in cabin services, passengers' emotional states can be observed, their emotions can be read through facial movements, and information about their previous flight experiences can be obtained (Robertson et al., 2017). Nowadays, robots can also provide passengers with navigation, greeting, consulting, translation, baggage handling, security, cleaning, and shopping support services at airports (Açıksözlü and Bozok, 2021). Robots also provide services such as detecting and scanning passenger faces to identify potential criminals and suspicious individuals, show passengers to gate numbers, weather forecasts, airport maps, and foreign language support (Açıksözlü, 2021). Navigation support, altimeter and runway readings, runway approaches, pressure levels, and other information are provided, and pilots are provided with virtual reality and pilot training for these processes (Karaca, 2022).

The use of artificial intelligence has also become widespread in travel agencies. Two-dimensional visuals created through augmented reality allow tourists to imagine a destination they've never seen before, thus encouraging their preference (Boone et al., 2017). The use of big data within tours allows for personalized tours to be designed and tourists' satisfaction with tours can be measured (Çalhan and Köroğlu, 2022). Digitalization, the use of artificial intelligence, and information technology applications in the travel sector are improving tourists' experiences and travel planning, enabling them to access information more easily and make informed decisions (Mai et al., 2023). ChatGPT and other AI technologies are revolutionizing the marketing practices of travel agencies in the tourism sector because they can offer personalized vacation recommendations. These technologies utilize natural language processing and deep learning algorithms, allowing travel agencies to better understand their customers' needs and, thus, enhance their overall experience and satisfaction (Akpur, 2023). AI-based applications such as maximum optimization and smart travel assistants predict tourists' needs and make recommendations (Bulchand-Gidumal, 2020), optimize prices using maximum likelihood algorithms, and recommend the best prices for transportation, accommodation, and other infrastructure services (Samala et al., 2022). As a result, today AI transforms all activities and operations in travel agencies and airlines, as well as in other industries. These transformations are understood to be fundamentally focused on AI-enabled activities, operations, and customer satisfaction. These developments provide many opportunities, but they also pose various threats.

2. Literature Review

Advanced technologies are one of the most important tools that provide competitive advantage in tourism, as in other industries. A review of the literature reveals a steady increase in studies on artificial intelligence applications in the tourism sector in recent years, some of which involve airline transportation and travel agencies. In order to understand these studies, it would be appropriate to first address the concept of artificial intelligence.

2.1. Concept of Artificial Intelligence

The concept of artificial intelligence is defined as the transfer of human intelligence to machines, thus enabling machines to do things humans can do (Açıksözlü and Bozok, 2021). Artificial intelligence technologies, which also mean creating intelligent computer systems and are heavily involved in daily life (Wisskirchen et al., 2017), enable machines to plan, communicate, learn, and perceive (Demirhan et al., 2010), use algorithms and data analytics, make predictions based on historical data, recognize patterns, and make automated decisions (Sarker, 2022).

AI is capable of replicating from humans, namely mechanical, analytical, intuitive, and empathic intelligence. Mechanical AI can handle repetitive tasks with precision by creating reliability and stability. Analytical AI is capable of executing complex, systematic tasks, leveraging machine learning and data analysis techniques to process large volumes of data. Intuitive AI, on the other hand, excels in creative, holistic tasks that require intuitive intelligence, such as acting as a personal travel concierge (Shuai & Karia, 2024). Artificial intelligence provides businesses with a competitive advantage in creating personalized products and services, selling these products in digital environments, collecting customer information and offering different experiences to customers, and also by saving time (Okutan, 2024). AI also enhances customer relationship management by providing deeper insights, automating routine tasks, and facilitating more meaningful interactions with customers (Antczak, 2025).

Artificial Intelligence (AI) algorithms have proven to be particularly effective in forecasting. In the tourism industry, forecasting is essential for understanding tourist demand, designing marketing strategies, managing finances, allocating human resources, and supporting facilities management and maintenance needs (Shuai & Karia, 2024).

2.2. Use of AI in Travel Acencies and Airlines

AI applications, such as virtual reality, augmented reality, smart room system, travel assistant, maximum optimization system, biometric pass, non-stop check-in (NSCI), robot/kiosk, and chatbot help tourism services at five stages: pre-travel, arrival, lodging, departure, and evaluation (Başer & Olcay, 2022). AI applications, including chat bots for customer support, recommendation systems for personalized travel suggestions, predictive analytics for demand forecasting, and virtual assistants for itinerary planning provide personalized experiences, improve customer satisfaction and loyalty (Antczak, 2025; Gurjar, 2024). According to Shuai & Karia (2024) AI travel service providers encounter challenges in matching customers with travel packages that meet their unique needs. Especially AI applications can help to enhance the travel planning experience by using deep learning techniques to identify customers' travel intentions. AI may also help an efficient air travel planning for airline companies.

AI helps forecasting to demand, pricing optimization, analyzing historical booking data, market trends, and external factors such as weather patterns and events. On the other hand, social media and user-generated content has transformed the way travelers seek inspiration, share experiences, and seek recommendations. Platforms like Instagram, Facebook, and TripAdvisor serve as virtual travel guides, allowing users to discover new destinations, learn from the experiences of others, and connect with like-minded travelers around the globe (Gurjar, 2024). In a study, it has been also revealed that artificial intelligence-supported robots can be used in tourism marketing for purposes such as guest relations, customer service, analysis of customer data and providing personalized service and suggestions, and suggestions for tourism businesses (Ercan, 2020).

In the tourism industry, artificial intelligence applications have been shown to provide significant benefits such as 24/7 uninterrupted service delivery, increased operational and workforce efficiency, increased guest satisfaction, improved service quality, reduced costs, and personalized service delivery (Etçi, Yılmaz & Karamustafa, 2024). Furthermore, artificial intelligence can be used pre-travel, during arrival and departure, and is also being effectively used during the evaluation phase thanks to blockchain technology (Başer & Olcay, 2022).

2.3. Studies on the Use of AI in Travel Acencies and Airlines

In his research on generative AI, Akpur (2023) examined whether ChatGPT could be used as a

travel advisor. He conducted interviews with ChatGPT for this purpose and found that ChatGPT was capable of providing personalized budget-friendly responses through recommendations generally grouped under the headings of accommodation, food and beverage, and other attractions.

Sadou and Njoya (2023) conducted a bibliometric literature review to identify how AI is being applied in the air transportation sector and identify key trends. They identified five key trends: prediction and optimization, cross-sector collaborations, human experience, security-risks and ethical considerations, and ecology and sustainable development. They also concluded that further research is needed to explore ethical implications, legal considerations, integration processes, and employment and environmental impacts in the air transportation sector. They notes that simply praising the technological advantages of AI is not enough; studies are also needed that address its devastating impacts on human life and dignity, ethical concerns, potential risks, legal implications, and privacy and data protection concerns.

The findings of the survey of the Samala et al. (2022) indicate that artificial intelligence enhances experiential tourism services, but cannot replace the human touch, emerging as a complementary dimension in tourism. They also conclude that the emergence of AI has made travel arrangements easier, allowing travel agencies to offer personalized travel experiences tailored to tourists' interests and preferences. Chatbots, virtual reality, language translators, and other AI technologies were identified as the most commonly used in the travel sector.

Keleş et al. (2020) conducted a study on predicting flight prices. Their research results show that it is possible to successfully predict flight prices using two different AI-powered prediction models, "RF-FPPredictor" and "GB-FPPredictor". They suggest that these models would significantly contribute to the economic and strategic aspects of airlines and travel agencies, while also facilitating customer savings.

Karaş (2024) conducted a qualitative study to identify the negative socio-economic impacts of artificial intelligence applications in the tourism and travel sector. The study found that artificial intelligence systems raise concerns about the privacy of personal data, create concerns that they will take people's jobs, require costly hardware and software, and can be exploited by cyber actors for their own gain. It is also emphasized that certain artificial intelligence models may produce incorrect results due to systematic errors, leading to grievances, and that failure to provide services due to problems in artificial intelligence systems may lead to loss of cost, efficiency, competitiveness, and reputation.

Bharadiya (2023) found that artificial intelligence plays a very important role in intelligent transportation systems and concluded that technologies such as modeling and simulation, dynamic routing, traffic congestion management and intelligent traffic control can be applied in railway and road transportation as well as airline transportation.

Başer and Olcay (2022) stated that the application process of AI technologies in smart tourism consists of five stages: pre-travel, arrival, accommodation, departure, and evaluation. They found that kiosks, optimization services, blockchain, and baggage tracking, which reduce labor costs and save tourists time in airlines, are the most commonly used AI technologies. The authors state that AI technologies preferred in travel agencies include applications such as smart maps, natural language processing, and chatbots.

Moghadasnian and Rajol (2025) examined the integration and impact of AI in the airline industry and found that AI has led to positive improvements in operational processes, strategic decision-making, customer satisfaction, and revenue management. The study also explored the challenges, ethical considerations, and future trends associated with AI implementation, emphasizing the strategic importance of AI in airline business management. Practical implications for the airline industry include AI integration strategies, operational improvement guidance, ethical AI frameworks, and preparedness for new technologies.

Narain (2024), in his study aiming to highlight the impact of artificial intelligence in

revolutionizing the travel industry and providing tourists with a better travel experience, concluded that artificial intelligence is a promising technology that has the capacity to provide passengers with a personalized experience and simplify operations, but also has challenges such as ethical issues, data privacy and security, and the potential for bias in artificial intelligence-based algorithms.

3. Materials and Method

The study aims to determine the impact of artificial intelligence on travel agencies and airline activities based on employees' perspective.

In the study, in addition to the data regarding the profile of the participants, answers to the following questions were tried to be found.

- Which AI applications are used in the travel agency or airline they work for?
- What is the impact and benefit of AI technology on agency or airline operations?
- What is the impact of AI on customer experience and customer satisfaction?
- What is the current and future impact of AI on agency or airline?

Qualitative research method was used in the study. Data were obtained from travel agency and airline employees through semi-structured interview form. Descriptive analysis method was used in the analysis of the data.

In order to collect data in the survey, participants classified as agency and airline employee groups. First group interviews were conducted with four agency employees in Istanbul, two employees in Bursa and Çanakkale, and one in Izmir and Bodrum. Second group interviews were conducted with two employees at Balıkesir Airport, two at Edremit Airport, and one at Antalya Airport.

4. Findings and Discussion

Demographic variables and profiles of the participants are in Table 1.

Table 1. Demographic Variable of the Participants

Travel Agency Participants				
No	**Gender**	**Age**	**Working Time**	**Position**
1	Man	42	12	Executive
2	Man	38	6	Executive
3	Man	40	8	Executive
4	Woman	34	5	Operation Manager
5	Man	33	7	Operation Manager
6	Man	39	15	Salesperson
7	Woman	36	10	Salesperson
8	Woman	27	4	Salesperson
9	Man	36	9	Transfer Officer
10	Woman	26	3	Travel Guide
Airline Participantsı				
11	Man	43	13	Manager

12	Man	34	7	Cabin Crew
13	Woman	33	5	Cabin Crew
14	Woman	30	4	Passenger Service Officer
15	Man	29	3	Aircraft Maintenance Technician

The research findings indicate that travel agencies and airlines use a wide variety of artificial intelligence applications with different functions in their operations. Some of them are listed in table 2.

Table 1. Used Applications of AI in Travel Agencies and Airlines

AI Application	AI Name	Description	Benefits
Chatbots and Virtual Assistants	Amadeus, Sabre Virtual Assistant (WhatsApp and FB Messenger for staff)	AI-driven conversational agents that interact with customers in real-time	Enhanced customer service, 24/7 availability, improved response times
Booking and Planning	Amedeus, Expedia and Booking.com	Amedeus AI provides booking, flight information, pricing and recommendations; Expedia AI and Booking.com provides holiday recommendations based on customer profiles and preferences	Increased sales, personalized experiences, recommendations and guided holiday preferences
Recommendation Engines	Travelport & Skyscanner	Systems provide recommendation based on customer profile, pricing and timing advantages	Increased sales, personalized experiences and timing
Customer Service	Zendesk & LivePerson	customer complaint management, supporting services, and automatic resolution	Improved customer satisfaction, quality, and brand loyalty

Chatbots and Virtual Assistants: Conversational systems, such as chatbots and virtual agents, have revolutionized for customer search and information. The research findings show that travel agencies use the Amadeus chatbot for booking, flight information, and customer support. The online Sabre Virtual Assistant is used to facilitate booking and customer service. WhatsApp and Facebook Messenger chatbots are used for personal communication between employees and customers.

Booking and Planning: Amedeus AI is used to provide booking, flight information, pricing and recommendations, Expedia AI is used to provide holiday recommendations based on customer profiles and preferences, and Booking.com AI is used to guide holiday preferences.

Personalized Recommendation: Travelport AI is used to increase sales and provide recommendations based on customer profile and history, and Skyscanner AI is used to provide

special pricing and timing for ski customers.

Customer Service: Zendesk AI is used for customer complaint management, support, and automatic resolution of customer issues with artificial intelligence, and LivePerson AI is used for live support services.

As a result, all these applications such as interpreters, marketing strategies, chatbots, virtual reality, language translation, VR/AR, blockchain for cultural souvenirs, and other cutting-edge applications, travel agencies and transportation services can be significantly improved (Shuai & Karia, 2024: 479).

The research revealed that some agencies also use Sygic Travel AI Planner to create AI-supported personalized routes for private customers. Participants in the study stated that with artificial intelligence, the transformation of roles in the profession has accelerated, employees' classic duties have turned into consultant roles, and customer relations have become more important. Artificial intelligence is also impacting the competencies and skills of travel agency employees. Travel agencies are now seeking employees who are highly data literate, capable of utilizing AI, and able to keep up with technological advancements. However, participants state that despite the technical advantages provided by artificial intelligence, the human factor is still important in luxury and personalized travel and private tours, and that persuasion, trust, and human relations are at the forefront of those who work.

Participants emphasize that artificial intelligence reduces workload in reservations, customer relations, destination selection, and providing recommendations, resulting in increased efficiency, less margin of error, 24/7 customer service, time savings, personalized experiences and recommendations, and reduced costs by reducing the number of employees.

In the survey, respondents indicate that AI provides flight tracking, tour participation analysis, time and cost advantages, facilitates access to information, accelerates collaboration processes, and significantly contributes to route planning, vehicle occupancy rates, determining tour and airport vehicle needs, fuel requirements for these vehicles, customer satisfaction, and tracking reservations. It was also emphasized that this contribution is most pronounced in reservations.

Participants state that pricing is based on AI-supported customer satisfaction data and analysis, and that it facilitates determining which tours are preferred and to what extent, updating new tours in line with customer preferences and satisfaction, determining tour vehicle routes, shortening guests' airport-hotel transfer times, controlling customer lists, analyzing hotel-customer requests, and making agreements based on early-season booking density.

Participants claime that the use of artificial intelligence increases the accuracy rate in statistics and analysis, reduces costs, simplifies and speeds up work, makes reporting and decision-making easier, audits easier, customer satisfaction increases, customer potential increases, and access to customers becomes easier.

The second phase of the research focused on airline employees. Interviews revealed that AI is used at airports in the areas of fatigue, stress, and mental health monitoring for pilots and crew using facial recognition systems; personnel health screenings; flight operations; early detection and repair of aircraft malfunctions through intelligent maintenance systems; detection of foreign objects on the runway; image processing; air traffic management; general security; safe passenger entry and exit (biometric access and behavioral analysis); dynamic pricing and revenue management; occupancy monitoring; personalized customer management; machine learning; baggage tracking and management; and training and simulations.

Participants argue that artificial intelligence reduces the need for human labor, accelerates processes with automated systems, speeds up security checks, increases energy efficiency, simplifies passenger experiences and data analysis, but also increases the risk of data misuse, creates difficulties for those who cannot adapt to technology, and makes human intervention more difficult in times of crisis. These findings are similiar with the research result indicated

(Shuai & Karia, 2024) that AI facilitates automated execution of services and tasks within practical applications, minimizing the need for human intervention. Participants also emphasize that while artificial intelligence will transform the airline industry, human resources will not be completely eliminated, and the human factor will continue to be effective in radar control, field operations, and customer relations. On the other hand, Etçi, Yılmaz & Karamustafa (2024: 2441) argue that artificial intelligence creates some problems for businesses, such as the lack of creativity and human touch, high investment, installation, maintenance and update costs, privacy and security concerns, resistance of employees and guests to change, and employees' job security concerns.

5. Results

Artificial intelligence is accelerating transformation in travel agencies, impacting employee competencies, reducing workloads in booking, customer relations, destination selection, and recommendation, increasing efficiency and reducing errors. It also enables 24/7 customer service, simplifying personalized recommendations, and saving time and money. In airlines, the use of artificial intelligence accelerates service delivery and security checks, increases efficiency, facilitates data analysis, and enhances passenger satisfaction and experiences.

6. Practical and managerial implications

The use of artificial intelligence in travel agencies makes a significant contribution to pricing, increasing sales, tracking reservations, analyzing customer preferences, customer satisfaction, reporting and decision-making. AI is also increase work efficiency, auditing, developing collaborations, reducing costs, helps tour management, determining routes, determining vehicle occupancy rates, determining tour and airport vehicle needs and the fuel needs of these vehicles. The use of artificial intelligence in airlines enables facial recognition systems in monitoring the fatigue, stress, and mental health of pilots and other employees. AI helps flight operations, early detection and repair of aircraft malfunctions with smart maintenance systems, detection of foreign objects on the runway, image processing, air traffic management, general security, safe passenger entry and exit (biometric passage and behavior analysis), dynamic pricing and revenue management, occupancy tracking, personalized customer management, machine learning, and baggage tracking and management.

However many benefits of using AI applications, decision makers in the travel agencies and airlines should take into consideration about ethical concerns, data privacy, transparency, adaptation, labor issues and data protection. Addressing these issues is crucial for building trust and ensuring the sustainability of AI applications in travel agencies and airlines.

7. Limitations, and Future Directions

The research findings are limited to data obtained from limited travel agency and airline employees in the survey. Therefore, the findings may not adequately reflect the different AI applications and their impact across different travel agencies and airlines. Furthermore, the participants' level of understanding of AI applications and their outcomes within their own businesses is unknown. Reaching a larger number of participants through future quantitative studies and comparing them with research findings will make a significant contribution to the literature.

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The Rome Waste Management Plan - Incinerator: A Wrong Choice

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Abstract

Introduction: The recent Rome's waste management plan sets for 2035 the objectives of 70% separate collection with 19% rejects, 54.9% recycling rate, incineration of 600,000 tons/year of undifferentiated waste.
Aim: The Rome's plan does not comply with the EU directives on circular economy and the new incinerator is unnecessary and involves various critical issues, as high CO_2 emissions, water consumption in an area subject to hydrogeological crisis, negligible energy benefits.
Method: analysis of Rome's waste management plan, as well as National and European laws and regulations, and incineration plant characteristics.
Findings: The choice of incinerator, besides being wrong for the reasons mentioned above, would be unnecessary if a different management strategy were adopted. There are serious doubts about the assumed low water requirement, which, if necessary, is expected to be drawn from new wells dug in an area characterized by a clear hydrogeological crisis. Finally, the business plan analysis highlights high costs for residents, which could increase in the event of increased operating costs or a decrease in expected revenues.
Conclusion: The proposed incinerator is unnecessary if a virtuous waste management policy is adopted that aims to maximize high-quality waste collection, particularly organic waste, and utilizes modern technologies for treating residual unsorted waste to recover additional material from it.
Originality and value: This is the first contribution to a desirable debate on the Rome's plan and the new incinerator, in the absence of a comparison between different theses based on technical-scientific considerations.

Key words: waste management, circular economy, waste incineration
JEL Codes: P1, P4, Q2, Q5

1. Introduction

In 2020, the Lazio Region approved a waste management plan for the entire regional population (5,714,745 inhabitants, including 2,746,609 in the city of Rome and 4,222,631 in the entire metropolitan area). It projected significant progress in waste separation and recycling, concluding that by 2035 no additional incinerators would be necessary due to the existing San Vittore incinerator already in operation.

However, in 2022, the national government decided that Rome could have its own independent plan from the regional one: they assigned this responsibility to Rome's Mayor, who had already been appointed as "Extraordinary Commissioner to ensure interventions related to the Catholic Church's 2025 Jubilee.

Rome's Waste Management Plan (2022-2030) was definitively approved by the Extraordinary Commissioner's ordinance on December 1, 2022. Before this, the Mayor had surprisingly announced to the City Assembly the decision to build a mega-incinerator capable of processing 600,000 tons of unsorted waste annually in Santa Palomba, at the southern edge of Rome's territory, exactly on the border with the municipalities of Albano Laziale, Ardea, and Pomezia.

For its implementation, a "project financing" procedure was followed:

- On March 1, 2023, the expression of interest phase closed with a proposal from the TJV (Temporary Joint Venture) led by Acea Ambiente; on November 16, 2023, the tender was officially published, setting the deadline for bids by May 16, 2024, and on August 1, 2024 it was awarded to that TJV.
- In November 2024, the National Agency Invitalia was entrusted with the verification of the technical and economic project feasibility: at the end, the main contract was definitively awarded and the concession contract was signed by the Municipality and RenweRome with the SPV (Special Purpose Vehicle) established specifically for the tender and concession.

The Project involves the concession of the executive design, construction, and management of the Waste-to-Energy Plant and Ancillary Facilities for a total duration of 33 years and 5 months from the signing of the Convention, foreseeing the plant's operation for 30 years.

During all the 30 years operation the plant will be obligatorily fed with 600,000 tons of waste annually, so discouraging the growth of separate waste collection, currently at 45%, which will never reach the high levels recorded in other parts of Italy (e.g., in Veneto, where it reaches 74%).

That is unless, to ensure the plant operates at full capacity, waste from other parts of Italy is burned, making Santa Palomba the waste incineration hub par excellence not only for Rome but for the entire Lazio region, with a devastating impact on the territory, air, and quality of life for residents.

The choice of incineration recalls a model that is outdated and destined to be superseded with the progress of separate collection and technologies for recycling and material recovery. The fact that other European capitals have a high proportion of incinerated waste should not mislead, as this was a choice made several decades ago when the alternative was only between landfills and incinerators. Now the horizon has profoundly changed with the emergence of the circular economy and recycling concept and the related practice of separate waste collection as well as advanced treatment of unsorted residues.

In this paper, after a brief analysis of Rome's waste management plan and its critical issues, particularly with respect to circular economy policies, the characteristics of the incinerator are analysed, which is found to be unnecessary by adopting a different waste management strategy, has critical issues with respect to CO_2 emissions and water consumption, and entails costs that are already high but which could likely increase significantly as early as 2028. Critical issues relating to pollution, people's health, and land management aspects are deliberately not analyzed.

2. Rome's Waste Management Plan

Rome's plan – summarized in following tables - sets goals in 2030 and 2035, and is based on the waste production and management situation of 2019 year, which has not substantially changed in subsequent years

MAIN INDICATORS OF WASTE PRODUCTION AND MANAGEMENT - year 2019		SUMMARY ASSESSMENT
RU PRODUCTION	1,690,303 ton	quantity stable in recent years
TOTAL INHABITANTS SERVED	2,875,679	
PER CAPITA RU PRODUCTION	603 kg/inhabitant/year (ISPRA data)	the value for Rome is imprecise due to the difficulty in expressing 'equivalent inhabitants'
RD %	45.2%	61.3% national average
PER CAPITA RD	266 kg/inhabitant/year 289 from ISPRA National Body	National average 306 kg/inhabitant/year

% SENT TO RECOVERY	39.3%	46.9% national average
RUR PRODUCTION	925,810 ton	
PER CAPITA RUR	322 kg/inhabitant/year	National average 193 kg/inhabitant/year
WASTE TO LANDFILL: FROM PRE-TREATMENT	425,000 ton 25% compared to RU (landfills in the Region, Outside Region, and abroad)	In plants located in Rome, landfilling exceeds 60% of output waste. The value of 25% compared to RU (average across all pre-treatment plants serving Rome Capital) is obtained because thermal treatment inside and outside the Region and additional outside the Region pre-treatment are used. Regulatory objective: 10% by 2035
WASTE TO LANDFILL: FROM RD REJECTS AND TREATMENTS	75,000 ton/2019	Added to what is sent to landfill from pre-treatment, this brings the percentage of RU sent to landfill to 30%.

PLAN OBJECTIVES FOR 2030 AND 2035		
	2030	**2035**
Total waste produced and collected	1,550,000 tons	1,520,000 tons
Separate collection	65%	70%
Recycling rate	51,50%	54.9%
Waste for "energy recovery"	728,868	661,889

RESIDUAL WASTE (tons/2019)	
Material	**Amount**
Paper and Cardboard	177,293
Plastic	163,313
Sanitary textiles (diapers)	64,714
Textile	53,79
Glass	51,938
Wood	24,349
Ferrous cans	26,941
Non-ferrous cans	7,869
Green waste	36,662
Organic	220,621
Underscreen	39,902
Bulky waste	20,183
Inert materials	9,628
WEEE	8,425
Street sweeping waste	0
Other	20,183
TOTAL	**925,810**

RESIDUAL UNSORTED WASTE AND REJECTS FROM SEPARATE COLLECTION TO BE MANAGED IN 2022		**RD t/2019**	**WASTE t/2019**
Dry RD (includes WEEE, Other,...)		448,227	43,548
PL II Selection at En. Recovery.			24,942
RD Green and Wet Fractions		249,91	31,374
Bulky Items		49,907	39,925

2.1 the path to waste management in 2035

The path to 2035 is summarized in the following tables, considering the commodity composition of waste the same as defined by the percentage values measured by AMA analysis for year 2019:

Year 2035: total waste, with the same composition as 2019	Waste Composition (%)	Total Generated by Rome Municipality (t / 2035)
Paper & Cardboard	24.0	365,047
Plastic	14.4	218,403
Sanitary Absorbents	3.9	59,295
Textiles	3.9	59,698
Glass	7.6	115,168
Wood	2.9	45,435
Ferrous Cans	2.3	34,548
Non-ferrous Cans	0.6	8,463
Green Waste	7.0	106,592
Organic	21.6	328,83
Undersize Fraction	3.1	46,593
Bulky Items	3.0	44,878
Inert Materials	1.6	25,419
WEEE - Other RD (only in RI)	1.0	15,595
Street Sweeping Waste	1.1	16,351
Other	2.0	29,685
TOTAL	**100.0**	**1,520,000**

PROGRAMMATIC SCENARIO	Interception for RD at 70% by 2035	Reference values
Paper & Cardboard	65	60 – 65
Plastic	55	37 – 63
Textile	50	17
Glass	95	90 – 93
Wood	90	85 – 94
Ferrous	90	80
Non-ferrous cans	20	15
Green	95	90- 97
Organic	85	72 - 84
Bulky items	98	--
WEEE	60	--
Inert	95	90
Street sweeping waste	100	100
Other	60	--

Material	RU ton/2035	70% SEPARATE COLLECTION (t/2035)	WASTE from SC (various composition)	EFFECTIVE RECOVERY
Paper and Cardboard	365,047	238,463	16,692	221,771
Plastic	218,403	120,122	36,037	84,085 (of which 33,634 for energy recovery)
Sanitary textiles (diapers)	59,295			0
Textiles	59,698	29,849	5,97	23,879

Glass	115,168	109,409	6,565	102,845
Wood	45,435	40,891	1,636	39,256
Ferrous cans	34,548	31,093	1,244	29,85
Non-ferrous cans	8,463	1,693	34	1,659
Green waste	106,592	101,262	15,189	86,073
Organic	328,83	279,505	55,901	223,604
Undersieve	46,593			
Bulky waste	44,878	43,981	30,787	13,194
Inert waste	25,419	24,212	14,527	9,685
WEEE	15,595	9,357	4,678	4,678
Street sweeping waste	16,351	16,351	1,635	14,716
Other	29,685	17,811	5,343	12,468
TOTAL	**1,520,000**	**1,064,000**	**196,237**	**867,762**
	SC	**70%**	**RECYCLING RATE**	**54.9%**

UNDIFFERENTIATED WASTE and REJECTS from WR Waste Recovery and TREATMENTS (tons)								
	Current Status 2022		**SC Plan 2030** Trend Context		**SC Plan 2030** Target Context		**SC Program 2035** Target Context	
	Pre-TR + Rec En	Disc	Rec En	Disc	Rec En	Disc	Rec En	Disc
Rejects from cleaning and selection plants of dry fractions from WR	39,193	4,355	61,847	6,872	56,673	6,297	70,378	7,820
Plastics sent for energy recovery from secondary plastic selection plants	24,942		36,431		33,407		33,634	
Rejects from composting and anaerobic digestion plants	31,374		71,815		65,854		71,09	
Rejects from the recovery of bulky waste (recycling at 30%)	39,925		32,986		30,433		30,787	
Rejects from C&D waste		16,578		17,931		16,481		16,162
Residual undifferentiated waste	905,627		591,499		542,5		456	
TOTAL to MANAGE	**1,045,417**	**20,943**	**794,579**	**24,802**	**728,868**	**22,778**	**661,889**	**23,982**
Waste to landfill – 10% target by 2035	**30%**		**6.1%**		**4.8%**		**3.2%**	

In conclusion, the expected situation in 2035 is as follows:

	Year 2035 - RD 70%				
Waste produced	Non-recyclable waste	Collected waste	Rejects from separate collection	Effective recovery	Waste to incinerator
1,520,000 ton	456,000 ton	1,064,000 ton	196,237 ton	867,763 ton	652,237 ton

Waste production: 1,520,000 ton (current: 1,690,303 ton) *[reduction in waste production: too low]*
Separate collection: 70%, with 19% rejects *[too low, with too many rejects]*
Recycling: 54.9% *[too low]*
Incinerator

- Will burn 600,000 ton/year of unsorted waste for over 30 years, and by contract this waste supply will be guaranteed throughout its operation.
- Will have a gross nominal power (at terminals) of 81.1 MWe, in full condensation mode (without providing thermal energy to third parties) at maximum thermal load.
- Will produce, considering 8,760 hours/year operation, electricity for 710,217 MWhe gross (with emissions of 400,000-680,000 ton CO_2/year), and after deducting the energy used by the plant itself, it will produce electricity provided to customers equal to 618,920 MWhe.
- District heating is minimal, providing energy for 235 MWht.
- A CCS experimental plant is also planned for capturing a maximum of 400 ton CO_2/year.

In particular, as regarding the organic fraction management:
Organic and green fraction production

- Organic fraction production: 328,830 ton
- Green fraction production: 106,592 ton

Main organic Fraction treatment

- Two anaerobic digestion plants will be built for the total treatment of 200,000 ton/year of waste (organic fraction with added green fraction)

Fractions intercepted with separate collection (70%):

- Green fraction: 101,262 ton, of which 15,189 ton of rejects
- Organic fraction: 279,505 ton, of which 55,901 ton of rejects

Effective recovery and recycling:

- Organic fraction: 223,604 ton
- Green fraction: 86,073 ton

Two striking data points stand out:

- Inefficiency and insufficiency and of separate collection: separate waste collection planned at 70% for the year 2035 should be higher, and 196,237 ton of rejects from separate collection, i.e.19% of the waste from separate collection (1,064,000 ton), is a huge amount, resulting from abandoning due attention to door-to-door practice in favor of street collection, while the separation collection could be significantly higher than set.
- Incineration of raw unsorted waste: preventive treatments are avoided that would allow, especially together with intensive separate collection of the organic (wet) fraction, a consistent additional material recovery.

2.2 Critical Issues in Rome's Waste Management Plan

The waste management plan approved by the Extraordinary Commissioner first of all foresees a reduction in waste production that is really too low, while this should be the main objective, and sets separate collection targets that are much lower than what is possible and desirable, and over

inexplicably long timeframes. It is conceived, in our view, according to a minimalist and conservative approach that ultimately identifies waste as an energy source. It reveals a backward vision that looks to the past rather than the future: there is no belief that quality separate collection (i.e., with low percentages of rejects) can progress in reasonably short times to higher levels, nor does it look to mature and emerging technologies capable of greatly increasing material recovery even from the unsorted fraction.

In this way, it effectively renounces the extraordinary economic and environmental opportunity offered by the circular economy, while considering a challenge lost at the outset what is, instead, an opportunity that has already proven successful in many parts of Italy, Europe, and the world: that is, focusing on separate collection – extensive and of high quality – and on facilities for treating separated waste and unsorted residues that minimize the use of landfills and incinerators, maximizing the economic value of what are originally waste.

Separate collection, in the plan proposed for Rome, remains "formally" in play, but according to a logic that completely overturns the European one and the priorities scale provided by the circular economy strategy: first prevention, i.e., limiting waste at source, and recovery, reuse, and recycling of waste produced; only after maximizing the results of these steps can incinerators be used to produce energy, burning residual quantities of waste not usable in any way, moreover only if energy recovery occurs with high efficiency, according to EU directives and criteria.

The Waste Plan for Rome foresees achieving a recycling percentage 10 points below the EU's 2035 objective (54.9% instead of at least 65%), a value that is nevertheless highly overestimated as it is calculated using the same criteria used by Italy and sanctioned by the EU for not having reached the 50% urban waste recycling target by 2020, although for that year ISPRA body had detected a preparation for reuse and recycling rate close to 55%. Applying the new criteria prescribed by the "EU implementation decision 2019/1004," recycling would have been much lower.

For example, for calculating the total quantity of recycled waste, all tons of green and organic fraction indicated in Rome's Waste Plan as "effective recovery and recycling" (86,073 ton + 223,604 ton) are computed and added to other fractions: this leads to overestimating the recycled quantity, also because 200,000 t/year of material is treated in anaerobic digestion systems which, as known, produce less than half of composted substance compared to the aerobic composting process.

This contrasts with what is stated in DIRECTIVE 2008/98/EC, as amended by DIRECTIVE EU(2018)/851, in Art. 11bis "rules for calculating the achievement of objectives" paragraph 4: *to calculate whether the objectives referred to in Article 11, paragraph 2, letters c), d) and e), and Article 11, paragraph 3, have been achieved, the quantity of biodegradable urban waste entering aerobic or anaerobic treatment can be computed as recycled if the treatment produces compost, digestate, or other output with a similar quantity of recycled content compared to the input, intended to be used as a recycled product, material, or substance*.

We therefore contest the plan's approach that leads to the centrality of a new incinerator, moreover of an abnormal size, which is not necessary if a different strategy is adopted: focusing on a new mega incinerator would mean loss of time and money that could be used to boost waste separation, facing a much higher expense (moreover concentrated on infrastructural investments and not on labor) and mortgaging the future of the next 30 years, the time of incinerator operation.

All this after existing incinerators have entered into crisis due to lack of waste to burn because of the advancement of recovery and recycling, and after various EU acts tending to discourage the use of incineration: from the communication of 01/26/2017 (The role of Waste to Energy in the Circular Economy), to the proposal (to be decided in 2026) to include waste incineration in the EU ETS emission credits system.

We cite only the Copenhagen incinerator (more commonly known as CopenHill), which was forced to import waste from abroad to continue operating at full capacity (see "A danish fiasco: the Copenhagen incinerator plant," Johan Magsen, 8-11-2019).

Rome's Plan emphasizes that by 2035 less than 10% of produced waste will be sent to landfill, the threshold provided for by European legislation, but this is done at the expense of recycling by incinerating large quantities of waste.

If it is virtuous to send percentages of waste lower than 10% to landfill, it is not at all virtuous to burn such high percentages, as Rome's plan sets: this is a logic consistent with the approach of 30 -40 years ago, when the only alternative was between landfill or incineration.

Furthermore, it should be emphasized that a plant operating period of over 30 years is foreseen and, therefore, in the perspective of such a long time span, it is reasonable to assume that the separate collection rate will be able to exceed the level of 70% (Milan today is already at 64%, while Veneto is at 74%, Los Angeles in the USA is already at 80%).

Therefore, the presence of the incinerator, which by contract will necessarily have to burn at least 600,000 tons of Rome's waste every year, will inevitably end up being an obstacle to the growth of separate collection in the Capital.

2.3 Alternative Directions to Rome's Current Plan Proposed by the Union of Committees

It is possible to set, within 10 years, the objective of 80% separate collection, and with high quality lowering rejects from separate collection around 8%.

Then, realizing plants designed for promoting growth of separating collection and matter recovery, a completely different situation would be reached, even maintain the same waste production of the Rome Plan, making the construction of a new incinerator for Rome unnecessary:

	RD 80% - rejects 8%				
Waste produced	Non-recyclable waste	Collected waste	Rejects from separate collect.	Effective recovery	Waste to incinerator
1,520,000 ton	304,000 ton	1,216,000 ton	97,280 ton	1,118,720 ton	401,280 ton

Furthermore, using plants designed for additional material recovery from unsorted waste (REMAT), even around 25-27%, the quantity of waste to be disposed of would decrease from 401,280 to less than 300,000 ton, being able to decrease further by decreasing waste production. We need to radically change direction - generally in our country, to progressively dismantle existing incinerators, setting the following objectives:

- Promote the reduction of waste produced through incentive policies and specific initiatives, such as for organic waste, plastics, etc.
- Extend door-to-door collection to the maximum, increasingly limiting rejects.
- Decentralize waste management in the various municipalities, studying the optimal solution for each, creating supporting infrastructures such as collection/exchange centers and plants for recycling and recovery and for repair and reuse.
- Aim to maximize separate collection of the wet fraction, possibly close to 90% within 7-10 years, an essential condition for maximizing further material recovery downstream of separate collection (the residual unsorted waste would be substantially dry).
- Treat the unsorted material downstream of separate collection, using new plants optimized for additional material recovery, characterized by great flexibility for treating materials with different characteristics over time, following the evolution of the rate of separate collection.

- Focus on aerobic treatment of organic matter for compost production, also encouraging proximity composting, to maximize its recycling (which would be at least halved in the case of treatment with anaerobic digestion).
- Stop mega-plants, favoring the construction of medium-small sized ones to increase citizen involvement, and respect the "proximity principle".
- Make the use of landfills and incinerators increasingly residual: no more than 10% of total waste produced to landfill by 2035, and progressively decommissioning incinerators.
- Apply widely the punctual tariff, as a disincentive to produce waste, adopting waste control systems and technologies (as that employed for decades by Priula consortium in Veneto).
- Finally, modify the tariff for incentivizing the differentiation of the wet fraction.

All this leads us to say: No new incinerators, and reduce the potential of the existing ones.

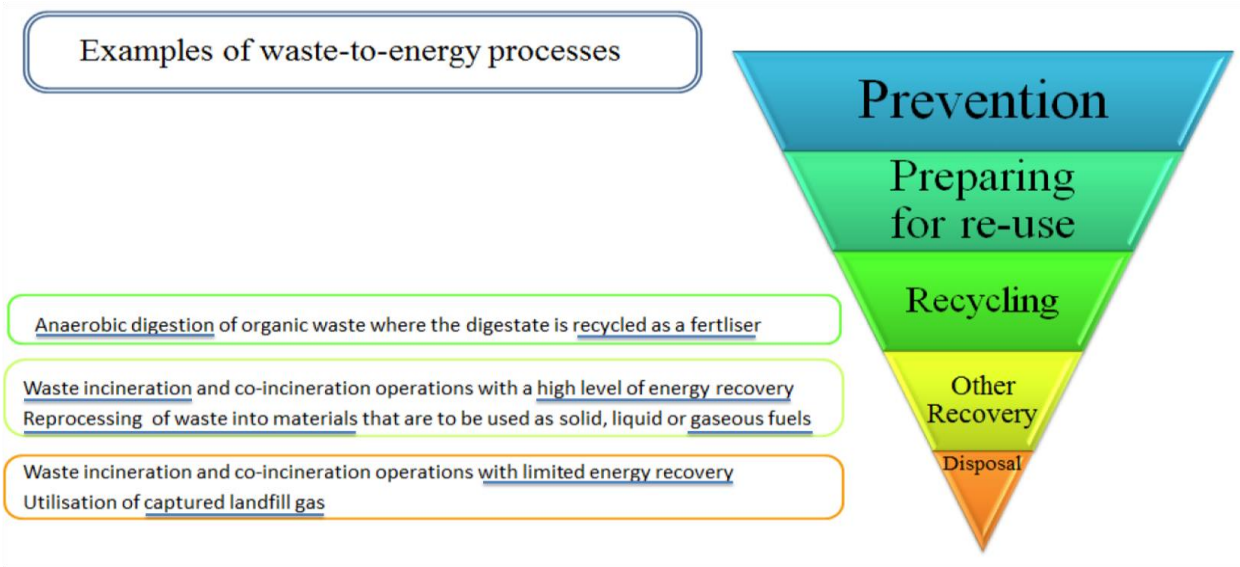
3. Rome's Waste Management Plan Violates Waste Regulations (Waste Hierarchy) and Circular Economy Regulations

Rome's Plan contravenes the priorities of European waste legislation: instead of promoting waste reduction and separate collection with all available tools to maximize recycling, a path has been taken that in the rest of Europe is now being interrupted because it conflicts with the principles of circular economy, the fight against climate change, and the promotion of renewable energy.

The reference point is the EU's 2017 communication on the role of incineration in the circular economy. This document reaffirms the waste hierarchy and states that countries that already have many incinerators should not build more but rather tax incineration, eliminate subsidies in its favor, adopt moratoriums, and consider decommissioning plans.

This is what is being done in Scotland, Wales, Catalonia, Flanders, and Denmark itself, where in recent years a new plant has been activated, the one in Copenhagen that the Extraordinary Commissioner of Rome Municipality has often referred to, but meanwhile seven others are being closed as part of a plan that aims to reduce incineration capacity by 30%. The conflict between these two development models – on one hand the circular economy model centered on waste recycling, on the other the linear model that, by incinerating waste, destroys the resources they preserve – is evident.

The waste hierarchy is an order of priority contained in the waste framework directive (Directive 2008/98/EC) that establishes regulations and policies for waste treatment in the European Union. It is generally represented in the form of an inverted pyramid with preferred options at the upper end and, at the base, disposal as a last resort solution for managing waste.



Waste management hierarchy

Energy recovery – "Waste to Energy" – can be obtained through different technologies, some mature (co-incineration in power plants and in cement and lime production; incineration in dedicated plants; anaerobic digestion of biodegradable waste; production of solid, liquid, or gaseous fuels; other processes, including indirect incineration following pyrolysis or gasification) others still to be optimized, described in EU documents dealing with BATs (best available techniques) and BREFs (BAT Reference Documents) which report all useful information on BATs.

Therefore it is incorrect to say that the energy recovery is a way to get value to wastes, using the term “termo valorization” as many people do in Italy, so introducing the bad and incorrect concept of “circular energy”, considering “termo valorization” a particular form of incineration.

It should be noted that processes such as anaerobic digestion that determine the production of biogas and digestate are considered a recycling operation (Article 2, paragraph 6, of Commission Decision 2011/753/EU) provided that the digestate, possibly after further treatment, is used as a recycled product, substance, or material for land treatment for the benefit of agriculture or ecology.

In this race with its head turned backward, Italy will clash with European directives on climate neutrality to be achieved by 2050, and to have to bear the costs connected to the probable inclusion of incinerators in the list of plants obliged to the EU ETS, the European Emissions Trading System.

3.1 Circular Economy, the 3rd era in Waste Management

The circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended. In practice, it implies reducing waste to a minimum. When a product reaches the end of its life, its materials are kept within the economy wherever possible thanks to recycling. These can be productively used again and again, thereby creating further value. This is a departure from the traditional, linear economic model, which is based on a take-make-consume-throw away pattern. This model relies on large quantities of cheap, easily accessible materials and energy.



The Circular Economy model: less raw material, less waste, fewer emissions

It can be said that waste management has gone through 3 characteristic periods:

First period - last decades of 1900: waste was material to get rid of, and the alternative was to send it to landfill or burn it; many European countries focused on incineration, others, like Italy, much less.

Second period - late 1900/early 2000: waste grows as an increasing problem; focus is on separate collection and waste cycle management; in Italy it coincides with the approval of the "Ronchi decree" of late 1990.

Third period – 2000s: waste is a resource and can be reused and recycled thus limiting the extraction of natural resources and introducing economic advantages; it is the **circular economy**.

By renouncing the maximization of recycling and focusing on incineration, Rome's plan does not respect recent European regulations on circular economy and waste, in particular directive (EU) 2018/851 and directive (EU) 2018/852 transposed in Italy and entered into force on September 26, 2020, which in turn had modified the framework directive on waste (No. 2008/98/EC) and directive 1994/62/EC on packaging and packaging waste, introducing the concepts of circular economy and material recovery: all waste that exits the circuit does not contribute to circularity, and therefore energy recovery through waste to energy technologies (including incineration), does not constitute material recovery, so it does not enter into the concept of circular economy.

This concept was also inserted in the new environmental consolidated law D. Lgs. 152/2006 and subsequent modifications and integrations, adopting all the European directives.

Another important European provision is contradicted by incinerators: the "DNSH" (Do No Significant Harm) principle.

The DNSH principle is a fundamental concept in the Taxonomy regulation (EU 2020/852), which establishes a set of criteria to determine whether an economic activity can be considered sustainable or not, and is directly related to compliance with ESG (Environmental, Social, Governance) criteria.

Specifically, the DNSH is developed in Article 17 of the Taxonomy regulation and refers to the assessment of the environmental and social impacts of economic activities, with the objective of ensuring that no significant harm is caused.

Incinerators "disagree" with DNSH criteria because the principle requires an activity to not cause significant harm to other environmental objectives, and waste incineration, while potentially recovering energy, can lead to significant harm through air and soil pollution, high greenhouse gas emissions, and the production of toxic ash residue that impedes the circular economy.

Moreover, compliance with the DNSH is crucial for obtaining European aid, especially where it is channelled through the Recovery, Transformation and Resilience Plan, - the italian PNRR - promoted by the next Generation EU funds. Compliance with DNSH is a mandatory criterion for all actions included in this plan.

For these reasons the Rome incinerator was not financed with the funds of the PNRR.

It is important to outline the correct positioning of incineration and other waste to energy technologies in the waste hierarchy, encouraging states to adopt strategies aimed at maximizing recycling. This also serves to reaffirm the concept of a "circular economy," since some people consider energy produced by burning waste as circular energy and therefore contributing to the circular economy. This is an oxymoron, since one of the principles of circularity stipulates that material leaving the cycle does not contribute to circularity.

4. CO_2 Emissions from Incinerators: Environmental Problems and Costs – EU ETS System

The climate crisis is now an established reality that affects the whole world, including our country, and risks precipitating further due to the continuous rise in global temperature.

A 2ºC increase compared to pre-industrial temperature is associated with severe negative impacts on the natural environment and human health and well-being, including a much higher risk of dangerous and potentially catastrophic changes to the Earth's ecosystem: for this reason, the international community has recognized the need to pursue efforts to limit it to 1.5ºC.

The European Union - following up on what was agreed at the 2015 Paris Conference (COP 15) -, has developed a series of climate objectives, which have become increasingly ambitious over the years. The most important concerns the limitation of greenhouse gas emissions to limit the increase in global temperature, keeping it below 1.5 degrees Celsius.

The goal is to achieve climate neutrality by 2050, i.e., the stabilization of CO_2 concentration in the atmosphere through the balance between emissions and absorptions. Furthermore, within the framework of "Fit for 55" - a package of legislative measures for sectors such as energy, transport, building, and agriculture - the objective of reducing net greenhouse gas emissions by at least 55% compared to 1990 levels by 2030 is provided.

The ecological transition has therefore imposed itself as the way to halt the climate and environmental crisis and has, among its pillars: a) energy transition towards renewable energies, clean and at much lower prices, also abandoning, in this context, the use of waste as an energy source, also due to the strong CO_2 emissions, which have led to include incineration plants within EU ETS (emission trading scheme); b) circular economy, limiting the use of natural resources by reducing waste, promoting new lifestyles, and focusing on the ZERO WASTE strategy through recovery, reuse, and recycling of objects and materials.

4.1. Carbon Capture and Storage - CCS

CO_2 emissions in thermoelectric plants depend on the type of fuel and the characteristics of the plant itself. Taking an average between the energy efficiency values of coal plants (subcritical, supercritical, and ultra-supercritical) and gas plants (gas turbine, combined cycles with gas turbine and steam cycle), and considering average values of the characteristics (calorific value) of waste burned in incinerators, the following indicative values of tons of CO_2 per MWhe produced are obtained:

	Coal Plants	**Gas Plants**	**Incinerators**
CO_2 Emission (kg/MWh)	900 – 1,000	300 - 400	600 – 1,000

The project we are analyzing includes the construction of an experimental CCS equipment, as well as the incinerator, capturing no more than 400 ton CO_2/year, less than 0.1% of the total CO_2 emitted bay the incinerator. It seems a purely symbolic activity, whose purpose is unclear: such initiatives, albeit very expensive, would make sense if one were thinking of building a demonstration plant (i.e., of real size, for example that of the Santa Palomba plant), or at least a pilot, i.e., with all the characteristics of a real industrial plant but of medium size.
CCSs are very complex and expensive technologies, adopted at industrial level only in particular circumstances, still in the development phase for system optimization and cost reduction.
These technologies have been extensively studied in recent decades, and the EU has also invested in them, co-financing research, pilot and demonstration programs to equip energy plants that heavily emit CO_2, primarily coal-fired power plants, with such technologies, but they have not found concrete application due to problems, not yet resolved, such as:

- high energy consumption for capture processes, with consequent decrease in overall energy conversion efficiency (loss of 8-12 percentage points);
- absence of infrastructure (pipelines) to transport the separated CO_2 to storage sites;
- high overall costs, where the highest costs are for those technologies (post-combustion) that should be applied to the incinerator;
- very significant difficulties for geological storage.

4.2. Costs Related to CO_2 Emissions from Incinerators - The EU ETS System

The European Commission launched, on April 14, a public consultation on changes to be made to the ETS (Emissions Trading Scheme) system and the market stabilization reserve, concerning a series of possible options in various fields of application, as the inclusion of municipal waste incineration plants from 2028: if such a proposal will be approved, incinerators will involve additional operating costs due to CO_2 emissions.
These costs will depend on the "market value" of CO_2 quotas, which the IEA estimates could range from 100 to more than 200 Euro/ton CO_2. For 400,000 ton CO_2/year emitted, there will be an additional cost from 40 to more than 80 M€ each year, which in 30 years of management lead to an additional cost from about 1,200 M€ to 2,400 M€, a figure that disrupts the economic sustainability of the enterprise (Euro 7,033,802).
We are strongly in favor of this proposal, and we have participated in the consultation by sending the following considerations: *« Municipal waste incineration plants, although continuously improved, in addition to emitting pollutants and highly toxic substances now considered by medical science extremely harmful to human health, generate carbon dioxide emissions comparable to coal-fired power plants (up to 1000 kg CO_2/MWhe); they operate with very low thermodynamic conversion efficiencies, further reduced by the energy demand necessary for their operation. Furthermore, these plants destroy material that, by adopting virtuous policies for waste management, could be recovered remaining in the industrial and consumption circuit with significant advantages for the overall economy.*
Incinerators, therefore, tend to counter fundamental guidelines of Community policies, aimed on one hand at achieving carbon neutrality by 2050, on the other at spreading the circular economy.
On the energy level, against the marginal contribution to satisfying the demand for electricity and heat, the existing alternatives are much more advantageous both with respect to emissions of pollutants and climate-altering gases and with respect to costs (€/MWh): just think of the extraordinary potential offered by Renewable Energy Communities for the widespread use of photovoltaic in cities, which would require, for the same electricity produced, much lower investments offering more job opportunities, all with zero emissions.
With respect to the circular economy, incinerators are increasingly a powerful obstacle towards the goal of "at least" 65% recycling by 2035, opposing the diffusion and optimization of quality separate collection and the application of the best available technologies to extract additional material to be recycled from residual waste: little is collected and poorly, and the residual waste is all incinerated as is.

This is even more relevant in realities where the absence of incinerators, wrongly considered a limit to waste management policies, becomes an opportunity for circular economy policies: if for many countries that make extensive use of incineration it is more complicated to restructure the entire system to aim at 65% recycling, where such practice is deficient it is reasonable to hypothesize even higher objectives, up to 70% and beyond.

The inclusion of municipal waste incineration in the EU ETS is also useful to avoid - through an indirect form of economic incentivization - an alteration of competition rules to the detriment of other technologies that do not produce CO_2 emissions (or emit them in extremely low quantities) but which involve other investment and operating costs ».

5. Water

In the operation of the plant at full capacity, the water demand from external sources is about 10 m^3/h (around 87,000 m^3/year), considering that considerable quantities will be recirculated within the process, thus limiting the supply from external sources and therefore water consumption.

In particular, the water requirement is declared to be satisfied by resorting to the following sources:

1. Reuse of water from the wastewater treatment and purification plant operating at Albano Laziale and managed by ACEA ATO2, which will be further purified in a new plant with a treatment capacity of up to 126,000 m^3/year.
2. Recovery of water from partial condensation in the scrubber (flue gas treatment system) of the water steam present in the fumes, thereby also recovering thermal power of about 10, MWt": we have assessed the total amount to be about 120,000 m^3/year.
3. Rainwater recovery: about 25,000 m^3/year of meteorological water are estimated;
4. As a last resort, in emergency situations, wells created on-site can be used, for a declared flow rate of 10 m^3/h, equal to the whole requirement of the incinerator.
5. A connection to the drinking water network present in the area managed by ACEA ATO 2 is planned: specifically, a flow rate necessary for drinking uses of about 2 l/s is estimated.

The declared forecast of 87,000 m^3/year is motivated by the fact that the condensation of steam at the turbine exhaust is carried out with an air system, which therefore does not require water: otherwise, the water demand would have been much higher.

Nevertheless, this forecast could be undersized; in fact, comparing the operating data of other incinerators and the process water demands (excluding condensation water), the Rome incinerator should have a requirement of up to 500,000 m^3/year: this demand would be substantially reduced due to the water recirculation carried out in the process, but at levels higher than that declared.

The air condenser could prove, during testing and/or operation, insufficient to dissipate all the necessary heat, so inducing changes to be adopted with recourse also to hybrid systems (wet/dry) that function mainly on air (like the dry ones), but can be wetted by spraying water on the finned batteries or integrating an evaporative circuit. This would increase the water demand. Evaporative tower systems that require larger quantities of water would be unthinkable.

Secondly, malfunctions or drop in performance of the recirculation system, always possible given the design complexity, would increase the water demand, possibly considerably. Finally, decrease of water condensation from steam in the fumes can occur, given the integration of the system with the entire cycle and the complexity of the various flows of matter and energy.

These crisis elements would force the use of water taken from wells, in an area already characterized by criticalities of the hydrogeological system and for years subject to the total block of withdrawals in the aquifer.

Furthermore, it is emphasized that any rainwater used would be subtracted from the territory's hydrogeological system, and similarly fears can be had for the water taken from the purification plant of Albano Laziale, that would be much more sustainable to reuse for agricultural irrigation.

6. District Heating

District heating - and district cooling - is an important practice to promote energy efficiency in order to achieve climate objectives and reduce energy dependency, as provided for by EU Directive EED (Energy Efficiency directive) 2023/1791 of the European Parliament and Council of 13 September 2023, which modifies and updates directive 2012/27/EU.

District Heating is a complete system of heat production and distribution, which can be efficiently generated by using cogeneration plants (for combined production of electricity and heat) as in this project.
Since in Rome, as in many parts of Italy, the demand for heat would occur for limited periods of time, these cogeneration plants are not convenient.
In the project, it is considered to transfer via district heating an insignificant power, 1 MW out of 250 total generated by combustion, and for only a few months a year.
All this dramatically contrasts with what is provided for in the aforementioned EED directive, which sets the conditions for having an efficient district heating system: a system that, until 2027, uses at least 50% renewable energy, 50% waste heat, 75% cogenerated heat or 50% a combination of such energy and heat; for subsequent years, the prescriptions are even more stringent.

Alternatively, an efficient district heating and cooling system can be considered based on the quantities of greenhouse gas emissions per unit of heat or cold provided to customers, which must be no more than 200 grams/kWh by December 31, 2025, to reach 100 grams/kWh from January 2035, until zeroing from January 2050: these conditions will never be met given the extent of CO_2 emissions generated by the incinerator.

7. Bottom and Fly Ash produced by the incinerator

Bottom ash (IBA, i.e. Incinerator Bottom Ash) is the solid residue produced during combustion, discharged from the moving grate, and collected at the bottom of the furnace. First of all they

must be treated to remove contaminants, then they can be further processed to recover ferrous and non-ferrous metals, which are subsequently refined to eliminate impurities and reach purity levels in line with European specifications for secondary raw materials. The remaining fraction is a finer, inert material that - after appropriate treatments - can be reused in construction. However, this ash is not fully recovered. As Enzo Favoino of Zero Waste Europe notes: *"It's not true that it creates a circular economy; rather, the ash disappears from the radar because it is no longer classified as municipal waste but as special waste, and therefore no longer included in the statistics. In reality, much of it still ends up in landfill."*

Fly ash consists of fine particles carried by the flue gases during combustion and later captured by treatment systems (filters, scrubbers, etc.). Fly ash is highly toxic and must be treated and disposed of in dedicated hazardous waste landfills. Therefore, it is incorrect to claim that incineration is an alternative to landfill: it still requires landfills for fly ash, for non-recycled bottom ash, and for residues from processing.

Finally, it is striking that the construction of a mega-waste landfill - designed also to accommodate bottom ash - has recently been confirmed in the immediate vicinity of the incinerator site.

8. Some aspects of Financial Balance and Business Plan

The Project involves the concession of the executive design, construction, and management of the Facility consisting of the Waste-to-Energy Plant and 4 Ancillary Plants: 1) heavy ash recovery plant; 2) experimental "Carbon Capture and Storage" equipment; 3) district heating

plant and piping; 4) photovoltaic plant.

The duration of the Concession is 33 years and 5 months from September 18, 2024 to February 18, 2058, with a 30 years management period following testing. There is also a Provisional Operation period of a total of 3.5 months starting from October 4, 2027 until the anticipated handover scheduled for January 19, 2028. The investments amount to 1,034.7 while plant's management for 33 years and 4 months generates total revenues of 7,033,802 million euros, EBITDA of 4,208,443 million euros, and net profit of 1,761,424 million euros.

The management includes the provision of Services, the exploitation of the Facility by the Concessionaire, and the Ordinary and Extraordinary Maintenance of the Facility as planned, scheduled, or otherwise necessary to ensure the functionality and availability of the Facility throughout the duration of the Concession. The revenue valuation was developed considering an average annual LHV (Lower Heating Value) of the delivered waste equal to 11,300 kJ/kg.

Investments: they amount to 1.034,70 M€, and are listed in the following table:

CATEGORY	AMOUNT (M€)
Waste-to-Energy Plant	**803.0**
Incineration unit	338.7
Civil infrastructures	289.0
Other systems (electrical system, building services, water/steam cycle, other secondary systems)	169.6
Remote control	5.8
Ancillary Plants	**85.9**
Civil works Slag Treatment	40.9
Civil works CO_2	0.2
Civil plants Slag	4.0
Electromechanical slag treatment	26.2
Electromechanical CO_2	5.8
Photovoltaic system	4.9
District heating	4.0
TOTAL WORKS AMOUNT (INCLUDING SAFETY CHARGES)	**889.0**
Executive design	16.4
Work supervision	12.5
Measurement and accounting	3.4
Daily assistance	8.2
Manager and coordinators for construction site safety	6.3
Project manager	5.1
Laboratory testing and technical verifications, administrative technical testing, static testing and other possible tests	3.4
Other Available Sums	14.4
Contingencies	26.2
Total sums available to the Administration, Contingencies and Executive design	**96.0**
Consulting	1.3
Mobilization Costs	1.8
Insurance to be capitalized as investment (Capex)	20.6
Costs for the expression of interest	2.4
Tender charges	23.7
Total other items	**49.8**
GRAND TOTAL	**1,034.70**

Revenues

The Project revenues considered in the Business Plan total approximately Euro 7,033.8 million € and are divided into the following macro-items:

- Gate Fee: related to the fee applied to each ton of municipal solid wastes delivered to the incinerator, amount to a total of 5,172.6 million €. The gate fee revenues are calculated with a tariff of 209.6 €/ton in 2028, which is revalued by 2% annually: resulting in 240.7 €/ton in 2035, 293.5 €/ton in 2045, 357.7 €/ton in 2050, and 379.6 €/ton in 2058.
- Energy Revenues: energy sale revenues related to the sale of electricity to the market produced by the waste-to-energy process and amount to a total of approximately Euro 1,850.7 million (net of the self-consumption component);
  These revenues are calculated assuming that:
  - The Waste-to-Energy Plant operates for an average of 8,024 hours per year;
  - The gross electrical power produced is equal to 76.14 MWe;
  - The electrical power produced net of the self-consumption is equal to 65.9 MWe;
  - The plant is subject to a physiological degradation of performance starting from 2028.
- Ancillary: related to the sale of energy produced by the Photovoltaic plant and the sale of heat from District Heating. Ancillary revenues total approximately Euro 10.5 million.

Operating Costs

- SPV Operating Costs: related to the operation of the SPV for a total of approximately Euro 115.7 million over the plan period;
- O&M Costs: related to the management and maintenance contract of the Facility for a total of approximately Euro 2,519.8 million over the plan period;
- Other Operating Costs: which include (i) the surface rights to be recognized to AMA S.p.A. as the owner of the land on which the Facility is located for a total of approximately Euro 7.5 million (ii) insurance for a total of approximately Euro 180.7 million

Finally, the whole balance sheet is:

Financial Category	**Amount (k€)**
Contributions (gate fee)	5,172,577
Energy and Gas	1,850,719
Ancillary Receivables	10,502
Revenues	7,033,802
Variable Costs	-17,573
Fixed Costs (Opex)	-2,806,084
Agency Fee	-1,708
EBITDA	4,208,443
Depreciation and Amortization	-1,067,716
Financial Expenses	-619,982
Taxes and Duties	-759,317
Net Profit	1,761,424

The construction and management of the incinerator, with all contractual guarantees, seems to be a financial operation that guarantees lavish and secure profits to private entities, including ACEA which profits twice: once for participating in the enterprise, and a second time as the probable recipient of the service contract (personnel costs, management, O&M, etc.).
Two facts immediately emerge:

- the extremely high cost for the disposal of fly ash and slag (772 M€ and 460 M€), compared to assurances about their valorization (recycling); certainly the fly ash will never be recycled, for the heavy ash it remains to be seen; in any case, no income from their valorization is foreseen;

- the 2% annual increase in the gate fee.

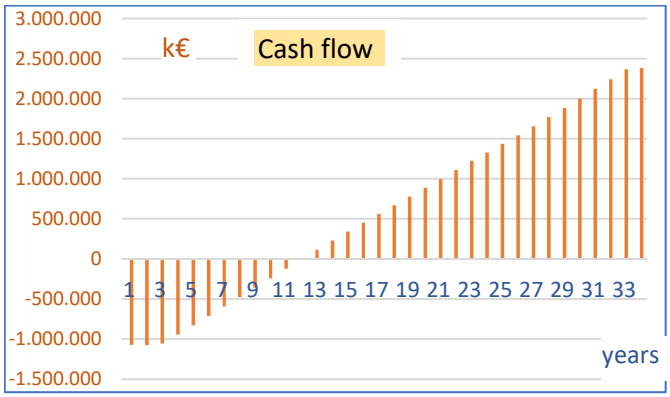
Calculating the NPV (Net Present Value) for different discount rates, we obtain:

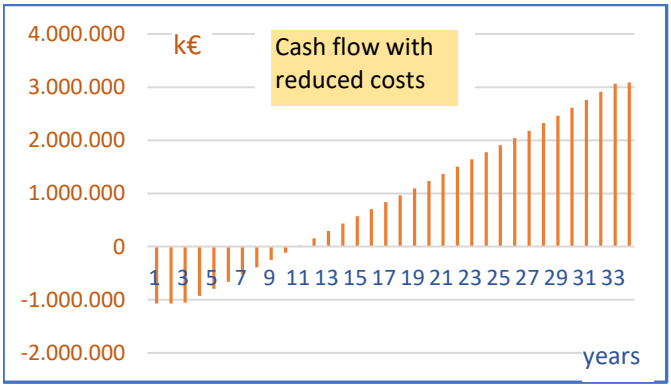
RATE	8.00%	7.00%	5.00%
NPV	49,874 €	185,687 €	540,961 €

If we consider less fixed costs reduced by 25% (2,104,563 instead of 2,806,084), we obtain e net profit of 2,462,927 € with IRR (Internal Rate of Return) equal to 9.95.

Financial Category	TOTAL
Revenues	7,033,802
Variable Costs	-17,573
Fixed Costs	-2,104579
Agency Fee	-1,708
EBITDA	4,909,942
Depreciation	-1,067,716
EBIT	3,842,226
Financial Charges	-619,982
EBT	3,222,244
Taxes	-759,317
Net Profit	2,462,927

The cumulative cash flows, in both cases (declared and reduced fixed costs), result:

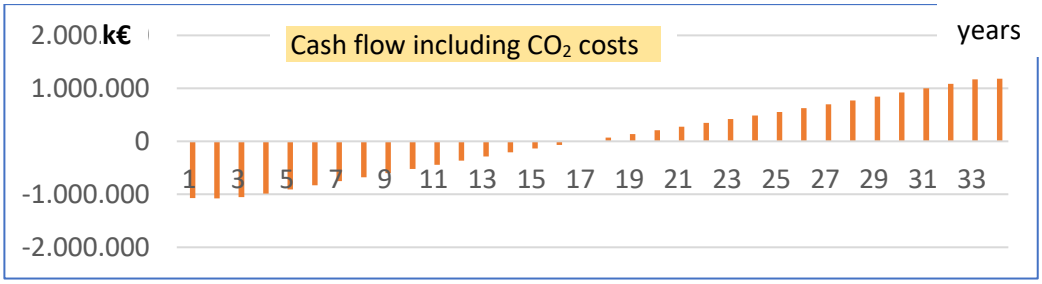




Brief note on effect of likely CO_2 costs

The Business Plan, considering additional costs of 40 M€/year for CO2 emissions from 2028, would give an EBITDA of 3,008,437, a net profit of 561,422 k€, and IRR=4.9% not allowing the investment.

To ensure the profitability of the project, the concession contract stipulated between the Municipality of Rome and RenewRome provides that the budget balance calculated today must be maintained over time: higher charges, as well as lower income (for example from the sale of electricity) will produce an economic loss for RenewRome, which will be compensated by the Municipality and the related costs will end up in the TARI (waste tax).



8. Conclusions

The Rome Plan looks to the past and appears to view waste as a source of energy - 600,000 tons/year of unsorted waste burned and 200,000 tons/year of organic waste treated to produce biogas - rather than as a valuable resource to be exploited in line with circular economy policies.

The proposed incinerator is unnecessary if a virtuous waste management policy is adopted that aims to maximize high-quality waste collection, particularly organic waste, and to utilize modern technologies for treating residual unsorted waste to recover additional material from it. It also does not comply, in addition to circular economy policies, with those to combat the climate crisis and to accelerate the energy transition.

The proposed incinerator raises doubts about its actual ability to operate as designed on paper, i.e. delivering advanced performance in terms of overall efficiency and electricity production. This is due to the complexity of the entire system and the greater difficulty - compared to conventional thermoelectric plants fuelled by natural gas or coal - in controlling the combustion process and ensuring consistent steam characteristics. There are serious doubts about the assumed reduced - though still very high - water requirement, which, if necessary, is expected to be drawn from new wells dug in an area characterized by a clear hydrogeological crisis.

Finally, the business plan analysis highlights high costs for residents, which could increase in the event of increased operating costs - as will likely occur with the inclusion of incinerators in the EU ETS - or a decrease in expected revenues. Even without considering other critical issues not addressed in this paper - pollution, effects on public health, urban planning organization and mobility - this incinerator appears a really wrong choice. Rome, the capital of Italy, should be a model of modernity and innovation; instead, by choosing an old and outdated approach, it renounces its function as a point of reference for the nation.

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Greenwashing in the Era of Sustainability and Its Implications for Food Security

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Abstract

Introduction: Greenwashing is the practice of companies that are practising the promotion of false or exaggerated images of environmental responsibility, thus affecting consumer trust and purchasing decisions. The food industry is a sector particularly susceptible to this phenomenon, due to the emphasis on "eco" products and aggressive green marketing.
Aim: The study aims to analyze the concept of greenwashing, identify its types and strategies, and highlight its impact in the food industry.
Method: The research included a literature review, a classification of greenwashing types, and an assessment of its role in the company-consumer relationship.
Findings: The study reveals the main forms of greenwashing, such as exaggerating environmental benefits, misleading packaging, and omitting relevant information. The food industry is notable for an increased incidence of these practices, which can lead to consumer confusion and damage brand credibility.
Conclusion: The results highlight the importance of strict regulations, consumer education and transparency in promoting sustainable products, contributing to reducing the phenomenon and supporting a more responsible economy.
Originality and value: This study is original in linking greenwashing with food security, an underexplored dimension in the literature, and by applying legitimacy, stakeholder, and signaling theories to the agri-food sector. It contributes value by highlighting how misleading sustainability claims undermine consumer trust and eco-label credibility, while offering policy-relevant insights for aligning Moldova's regulatory framework with European Union standards.

Key words: greenwashing, sustainability, food security, consumer trust, green marketing, circular economy, economy in transition.
Jel Codes: Q56, Q18

1.Introduction

Greenwashing represents a deceptive marketing practice that involves presenting companies or products as more environmentally responsible than they actually are. This term involves exaggerating or misrepresenting sustainability efforts to mislead consumers into believing that they are supporting significant environmental progress. In particular, greenwashing can create a false impression on consumers, leading them to choose food products that are not actually environmentally friendly. The lack of transparency promoted by greenwashing reduces the chances of the end consumer perceiving harmless and safe products. Greenwashing is not only a marketing problem, but also a food and environmental security problem, as greenwashing practices can undermine efforts to achieve food safety, especially in the Republic of Moldova. Greenwashing allows companies to present a deceptively positive product image, masking their real impacts that may be negative. Currently, consumers, including those in the Republic of Moldova, are increasingly becoming more aware of the impact that environmental issues, including food products, have on their health, and are becoming more willing to pay more for products they consider ecological. Thus, there is a growing demand for "*green*", "*eco*" and "*bio*" products, and greenwashing exploits this availability, offering products that only superficially appear ecological. Greenwashing acts as a significant impediment to achieving food security in the world, including the Republic of Moldova, creating a false sense of ecological progress and undermining the effectiveness of genuine sustainability efforts.

The official website of the European Parliament states the following statement: "Natural, eco, environmentally friendly... Many products carry these labels, but very often these claims are not proven". (EU Parliament, 2024). Thus, 86% of European consumers want to be better informed about the sustainability of products (European Commission, 2022).

In January 2024, the European Parliament approved a new directive on greenwashing, which requires member states to introduce stricter rules regarding the use of environmental claims by companies. Even though in 2023 Moldova transposed EU Regulation No. 66/2010 on eco-labeling, establishing a unified eco-labeling system, including the European Ecolabel, it does not include the new European rules that focus on the phenomenon of greenwashing. Thus, the Republic of Moldova must update its existing regulatory framework, in such a way as to correspond to European initiatives and to specifically address greenwashing and hold companies accountable for false environmental claims.

In this context, there is a need for a detailed conceptual analysis and understanding of this phenomenon of greenwashing, especially for agri-food products, as the agri-food sector represents a significant share in the specialization of the Republic of Moldova's economy.

The main purpose of the research was to analyze the concept of greenwashing, identify its types and strategies and highlight its impact in the food industry.

This research was carried out within the framework of the project 25.80012.5107.10SE The phenomenon of greenwashing in the context of food security in the Republic of Moldova: best practices and alignment with the European Union, funded by the National Agency for Research and Development.

2. Literature review

Greenwashing is one of the most complex and problematic phenomena in contemporary marketing, manifesting itself as "a pervasive phenomenon whereby companies promote themselves with misleading claims about their environmental practices, intending to appear more eco-friendly than they actually are" (Netto et al., 2020). Although the term was introduced in 1986 by the environmentalist Jay Westervelt, who criticized hotels for promoting seemingly sustainable programs while hiding less sustainable practices (Netto et al., 2020), the phenomenon has evolved dramatically over the past four decades, becoming a systemic challenge to the credibility of corporate sustainability initiatives, with particularly serious implications for the food sector and global food security.

The food industry is at the heart of this issue, as claims about the sustainability of food production directly influence consumers' perceptions of the safety, quality and environmental impact of food. In the current context, manifestations of greenwashing range from "exaggerating the environmental benefits of specific products to more systematic selective disclosures about their general practices" (Xia et al., 2023; Marquis et al., 2016), creating a complex landscape in which consumers, investors and civil society face increasing difficulties in identifying genuine sustainability initiatives. This reality is amplified by the pressures that companies feel from "external regulators, market forces and societal expectations regarding sustainability" (Rejikumar, 2016), pressures that are particularly intense in the food sector, where consumers associate sustainability with product safety and quality.

The need for an in-depth analysis of greenwashing is justified by several critical dimensions that affect the entire economic and social ecosystem, with particular importance for the food sector where consumer trust in product sustainability is closely linked to perceptions of food safety. The psychological dimension of consumers reveals fundamental contradictions in the perception of sustainability, with research highlighting that "individual consumers may experience a 'greenwashing effect', whereby they may have contradictory beliefs about sustainability that facilitate the acceptance of weak green claims" (Jansen et al., 2021). This psychological dynamic creates a vicious cycle in which deceptive practices are not only tolerated but even facilitated by consumers' cognitive mechanisms, a phenomenon with particularly serious implications in the

food industry where consumption decisions are influenced by both sustainability considerations and concerns about food safety and quality.

The impact on trust and purchasing behavior is documented by studies that demonstrate that "consumers' awareness and scrutiny of green marketing claims have increased, with many expressing skepticism about sustainability narratives presented by companies" (Kim & Lyon, 2015). More critically for the food sector, "a substantial number of green claims are misleading, leading to diminished consumer trust and purchase intentions when greenwashing is suspected" (Valendia & Purwanegara, 2022), with this decline in trust affecting not only the purchase of green products but also overall perceptions of the safety of sustainable food systems.

Critical analysis of the literature reveals that greenwashing cannot be treated as a unidimensional phenomenon, its manifestations including environmental misrepresentation which "generally refers to any form of distortion related to a company's actual environmental impact and practices" (Majeed & Kim, 2022), creating "confusion or disinformation to improve its public image while maintaining unsustainable operations" (Lopes et al., 2023). In the food industry, this misrepresentation can have serious consequences on consumers' perceptions of the safety and sustainability of food systems. Systemic eco-deception manifests itself through "superficial environmentalism and symbolic environmentalism, where the emphasis is more on public relations efforts than on implementing genuine environmental practices" (Ko & Jeon, 2024; Kommuri & Arumugam, 2024), and eco-labeling fraud allows "eco-labels to be misused by companies that engage in greenwashing - labeling their products as sustainable without substantial evidence of eco-friendliness" (Speckemeier & Tsivrikos, 2022; Li & Sun, 2022), with direct implications for consumer confidence in the safety of food products labeled as sustainable.

This research proposes a critical perspective that treats greenwashing as a manifestation of tensions between economic imperatives and sustainability commitments, exploring how these pressures could compromise real food security objectives by promoting seemingly sustainable practices with potentially limited impact. The analysis aims to identify the main typologies of the phenomenon and assess its impact on consumer trust in sustainable food security initiatives, contextualizing the findings for the Moldovan economy in the process of European integration.

3. Materials and Method

The study adopts a mixed methodological approach, combining such methods as critical analysis, synthesis, deduction, induction, content analysis, comparative analysis, graphics. The study database consists of a diverse corpus of scientific articles and specialized studies. Emphasis was placed on articles published in reputable academic journals, indexed in databases such as Scopus, Web of Science and Google Scholar. These provided us with a clearer understanding of the term greenwashing and the existing theories that explain the phenomenon of greenwashing and its manifestation, identifying the typologies of greenwashing. In the research, we also used data from specialized studies and analysis reports from international organizations (European Commission, European Parliament).

4. Results and discussions

4.1.Theories of greenwashing concept and its evolution

The concept of greenwashing has undergone a fascinating evolution from the initial critical observations of an environmentalist to the complex and pervasive phenomenon in contemporary marketing (Figure 1). The term was first introduced in 1986 by environmentalist Jay Westerveld in an essay criticizing the hotel industry's marketing strategy that promoted towel reuse as an eco-friendly initiative (Løhre et al., 2024; Pizzetti et al., 2019). Westerveld argued that this marketing tactic was primarily aimed at reducing laundry costs, rather than making a real contribution to environmental sustainability, thus establishing the conceptual foundation for understanding the discrepancy between corporate claims and actual environmental performance.

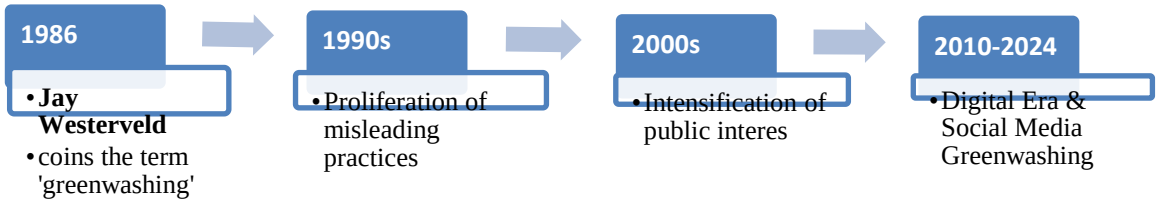


Figure 1. Timeline of the conceptual development of greenwashing (1986-2024)
Source: Elaborated by authors

In the 1980s, greenwashing began to take shape as corporations recognized the potential for marketing products in an apparently eco-friendly manner, often without substantial support (Wang et al., 2022). This period was characterized by a lack of regulation in the field, allowing businesses considerable freedom to market their products as 'green' without substantial responsibility. Companies began to adopt eco-friendly messages, but very often without the necessary sustainable policies or practices to support their claims, creating a fragile foundation for what would become a widespread phenomenon.

Westerveld's observations captured a fundamental contradiction that would define the next four decades: the tendency of organizations to prioritize short-term economic benefits under the guise of environmental responsibility. This dynamic reflects a mismatch between an organization's actual commitments and its marketing narrative, ultimately leading to cynicism and distrust on the part of consumers (Pizzetti et al., 2019; Qayyum et al., 2022).

The following decade marked a significant intensification of the phenomenon as environmental awareness began to grow among consumers. Companies continued to use vague language, use sustainability symbols and nature imagery or green colors in their branding, despite the fact that the actual environmental impact of their products was negligible or harmful (Okbagaber, 2022). This period was marked by the emergence of the first monitoring organizations such as TerraChoice and Greenpeace, which began to publicly address and document misleading environmental claims (Jones, 2019).

A critical aspect of this period was the finding that many green advertisements included at least one misleading claim, highlighting a disconnect between marketing promises and actual eco-friendly practices (Sio et al., 2022). The Federal Trade Commission (FTC) also became involved, emphasizing the need for more transparent advertising standards around green claims, which laid the groundwork for future regulations (Wang et al., 2022).

The 2000s witnessed an intensification of the greenwashing phenomenon, correlated with a significant increase in consumer interest in sustainability and environmental responsibility. As public environmental awareness broadened, business responses included an increase in green marketing claims, leading to growing consumer skepticism (Szabo & Webster, 2020). Researchers have begun to highlight greenwashing as a significant problem, documenting its prevalence and potentially damaging effects on consumer trust and corporate reputation (Yang et al., 2020).

This period also witnessed the emergence of social media, providing a platform for activists and consumers to challenge and expose greenwashing practices more effectively, contributing to a culture of accountability and a deeper scrutiny of corporate claims (Andreoli & Minciotti, 2023). Definitions of greenwashing have begun to capture its insidious nature, emphasizing that it often involves not only the misrepresentation of environmental actions, but also the installation of

misleading narratives that distract from more significant environmental malpractices (Zych et al., 2021).

The transition to the digital age has brought with it the phenomenon of digital greenwashing, using online platforms for marketing that can lack authenticity. Companies have begun to leverage social media and digital marketing strategies to promote their sustainability narratives, but often without concrete engagement with sustainable practices (Lyon & Montgomery, 2015). This included using Instagram, Twitter, and other platforms to convey eco-friendly messages that were superficial at best.

The modern definition of greenwashing has evolved to encompass a broader spectrum of misleading claims that prioritize marketing gimmicks over real environmental benefits (Yang et al., 2020). Researchers highlight the increasingly sophisticated nature of greenwashing, which now includes tactics such as misleading labels, vague language, and the presentation of weak environmental initiatives as substantial commitments (Lyon & Montgomery, 2015).

As environmental issues have become more prominent in public discourse, the strategies used by companies have evolved, leading to more nuanced forms of greenwashing that are harder for consumers to detect (Wang et al., 2023). The interaction between green marketing, misleading environmental practices, and greenwashing reflects an ongoing evolutionary process through which companies' messages and public perceptions influence each other.

The historical evolution reveals not only the evolution of greenwashing tactics, but also the maturation of the societal response to them. From Westerveld's pioneering observations in the 1980s to contemporary digital monitoring, the trajectory of greenwashing illustrates the ongoing tension between commercial imperatives and genuine environmental responsibility. Westerveld's lessons from 1986 remain relevant today, serving as a wake-up call for companies trying to appear green without being, but also as a compass for those who want to practice sustainability in the true sense (Løhre et al., 2024; Pizzetti et al., 2019; Qayyum et al., 2022).

The increasing complexity of the greenwashing phenomenon, highlighted by its historical evolution, however, requires a solid theoretical foundation for a systematic understanding of the organizational motivations, stakeholder dynamics, and communication strategies that facilitate contemporary greenwashing.

Among the multitude of organizational and economic theories available, three theoretical frameworks prove particularly relevant for explaining greenwashing: organizational legitimacy theory addresses the motivations of corporate behavior in relation to social expectations, stakeholder theory explains the dynamics of multiple external pressures, and signaling theory clarifies communication processes under conditions of information asymmetry. These theories complementarily cover the essential dimensions of the phenomenon - from internal motivation to external implementation.

Greenwashing can best be understood through an integrated theoretical framework that combines organizational legitimacy theory, stakeholder theory, and signaling theory. **Legitimacy theory** explains the underlying motivation—organizations seek to align their operations with societal values to gain acceptance and avoid sanctions (Deephouse & Zhang, 2018; Mousa, 2015), but greenwashing occurs when they exaggerate environmental efforts to appear more legitimate than they actually are.

Stakeholder theory clarifies the context of pressures—companies face conflicting expectations from consumers, investors, and regulators, leading them to resort to greenwashing to please all parties without substantial investment in genuine sustainability (Zahid et al., 2023; Mu & Lee, 2023).

Signaling theory reveals the mechanisms of implementation - firms transmit signals about sustainability to reduce information asymmetry, but when these signals are misleading, they risk damaging trust and brand image (Ha et al., 2022; Speckemeier & Tsivrikos, 2022).

The interplay of these theories reveals that greenwashing is not an isolated tactic, but the result of a complex dynamic between the need for legitimacy (motivation), stakeholder pressures (context), and the limitations of authentic communication (implementation). Organizations that understand this theoretical integration can develop real sustainability strategies through transparent engagement with stakeholders (Manetti & Bellucci, 2016), quality disclosure that serves as a credible signal (Ching & Gerab, 2017; Bae et al., 2018), and authentic alignment between practices and communication to maintain long-term legitimacy (Zahller et al., 2015). This integrated framework provides the conceptual tools for understanding and combating greenwashing by promoting transparency, accountability, and authenticity in environmental communication.

4.2.Typology and manifestations of greenwashing

The theoretical understanding of the motivations and mechanisms underlying greenwashing constitutes the necessary foundation for identifying and classifying the concrete manifestations of this phenomenon. Moving from the conceptual framework to typological analysis allows not only to recognize the forms that greenwashing takes in practice, but also to develop tools for critically evaluating corporate sustainability claims.

Table 1. General typology of Greenwashing

Greenwashing type	Main characteristics	Techniques used	Impact on consumers
Misrepresentation	*Strategic distortions and omissions*	*Selective disclosure, exaggeration of benefits*	*Confusion, inaccurate assessment*
Symbolic environmentalism	*Appearance without substance*	*Cosmetic initiatives, vague language*	*Increased skepticism, loss of trust*
Eco-labeling fraud	*Handling certifications*	*Fake labels, unregulated certifications*	*Frustration, difficulty in choosing*

Source: Elaborated by authors based on the analyzed literature

The first major category, **environmental misrepresentation**, is the most widespread form of greenwashing, manifesting itself in “false environmental claims” and “environmental misrepresentations” that allow companies to create a favorable image without substantial changes in operations (Marquis et al., 2016). A prevalent manifestation is selective disclosure, whereby firms highlight positive environmental actions while minimizing or completely omitting adverse impacts, thereby creating a deceptively favorable image of their overall environmental performance, thus differing from product-level greenwashing, which involves exaggerating the environmental benefits of specific products to attract buyers (Marquis et al., 2016; Kim & Lyon, 2015).

The executive aspect of this form involves the use of nature-based imagery and vague claims in advertising that can mislead consumers about a brand's environmental impact, tactics that often exploit consumer biases, especially among those with limited environmental awareness, leading to an inaccurate assessment of a brand's sustainability efforts (Parguel et al., 2015; Schmuck et al., 2018). Research indicates that a significant percentage of corporate environmental claims are misleading, identifying greenwashing as not only widespread but also escalating, with some sources indicating that it has reached "epidemic proportions" in the corporate environment, with considerable financial implications for the firms involved (Kim & Lyon, 2015).

The second major dimension, **symbolic environmentalism**, is critically manifested through initiatives that resemble sincere environmental practices but lack substantial action towards sustainability, reflecting the tendency of companies to adopt practices that serve to support

reputational legitimacy rather than effect real environmental change (Haque & Ntim, 2017). Compliance with regulatory frameworks often manifests itself in activities “oriented towards good environmental performance processes”, such as carbon reduction planning, but may not lead to real emission reductions, highlighting a disconnect between symbolic commitments and real environmental outcomes.

The concept of "shallow environmentalism" and "cosmetic environmentalism" prioritizes appearance over effectiveness, manifesting itself in green initiatives that are performative rather than substantive, such as adopting vague sustainability claims or making minor cosmetic changes to products. Using environmental-themed marketing without genuine product innovation can mislead consumers into believing that a company is making significant contributions to sustainability when it is not, and research indicates that consumers can discern between substantial and symbolic environmental actions, with firms that operate primarily at a symbolic level often facing negative consumer perceptions once the facade of environmentalism is revealed (Zhang & Sun, 2021; Lyon & Montgomery, 2015).

The third fundamental category, **eco-label fraud**, is a particularly problematic manifestation involving the use of misleading labels that either exaggerate the environmental benefits of a product or inaccurately represent it as sustainable, undermining the trust of consumers who rely on eco-labels to differentiate between truly sustainable products and those merely dressed up in “green” marketing (Simion, 2024). Deceptive strategies are characterized by hidden trade-offs and a lack of verifiable evidence, complicating the landscape for consumers seeking truly environmentally responsible choices.

This fraud occurs when companies use fake eco-labels or manipulate environmental standards to appear more sustainable than they actually are, taking advantage of the increased demand for eco-friendly products. For example, a clothing company may create a “100% Eco-Friendly” label without clear criteria or independent verification, applying it to products made from conventional materials with a high environmental impact. Although the clothes are produced under standard conditions, the green label leads consumers to believe that they are purchasing sustainable products, even paying a higher price for this false environmental promise. The misuse of “eco-labeling” extends beyond fraudulent eco-labels to include vague claims and exaggerated benefits that misrepresent the actual environmental impact of the products (Saroja, 2025).

Developing a comprehensive classification requires recognizing the complex nature of this phenomenon and the multitude of deceptive practices that can occur. Seele and Gatti proposed four categories of intensity of greenwashing, which include "greenwashing", "false greenwashing", "potential greenwashing" and cases where there is no greenwashing, reflecting the varying degrees of deceptive practices that can occur depending on the nature of the claims made by companies (Seele & Gatti, 2015). This classification highlights that the assessment of greenwashing depends on the perception of stakeholders on the sincerity of the company, not only on the actual facts (Bernini & Rosa, 2023). For example, if an oil company invests 1% of its budget in renewable energy, but focuses its entire advertising campaign on this minor initiative, it is in the area of "potential greenwashing" - it is not lying outright, but significantly exaggerating its environmental commitment.

This integrated classification highlights that greenwashing **cannot be reduced to just** "true" or "false", but is a **spectrum of practices** with varying intensities - from minor exaggerations to blatant lies. Understanding these nuances is crucial to effectively combatting the phenomenon and promoting authentic sustainability (Figure 2).

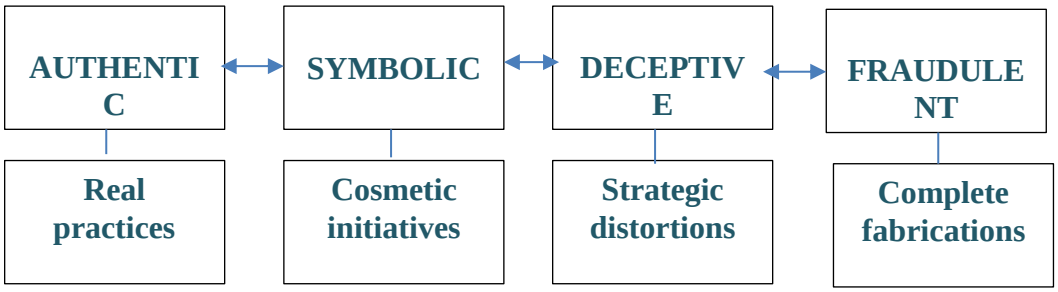


Figure 2. Greenwashing intensity spectrum
Source: Adapted according to Seele & Gatti (2015) and Bernini & Rosa (2023)

At the same time, greenwashing generates complex psychological processes among consumers, mechanisms that fundamentally influence how they perceive, process, and respond to corporate sustainability claims. These psychological dimensions are crucial for fully understanding the impact of greenwashing on consumer behavior and trust in genuine sustainability initiatives (Table 2).

Table 2. The psychological mechanisms of greenwashing

Psychological mechanism	Manifestation	Results	Countermeasures
Cognitive dissonance	Conflict between values and buying actions	Frustration, paradoxical behavior	Education, transparency
Increased skepticism	Skepticism toward green claims	Avoiding sustainable products	Concrete evidence, certifications
Erosion of trust	Generalization of distrust	Abandoning green marketing	Authentic communication

Source: Elaborated by authors based on Wu (2025), Sun & Shi (2022), Wang & Walker (2023)

Greenwashing is a critical sustainability challenge with significant psychological impacts on consumers, manifesting when companies mislead consumers about their environmental practices, leading to erosion of trust and skepticism about corporate claims (Sun & Shi, 2022; Lehr et al., 2021). The psychological effects of greenwashing on consumers are multifaceted, involving perceptions, emotional responses, and behavioral intentions that extend beyond the immediate impact on purchasing decisions.

Research shows that consumer perceptions of greenwashing lead to substantial distrust of corporate sustainability claims, and when consumers become aware of greenwashing practices, their skepticism increases, creating a ripple effect in which they question the validity of environmental claims across the industry. This phenomenon not only affects the company involved in greenwashing, but also tarnishes the reputation of truly sustainable businesses, promoting a general cynicism towards green marketing (Wu, 2025, Janz et al., 2024), given that the psychological contract between consumers and companies significantly influences how greenwashing is perceived.

The phenomenon of greenwashing, whereby companies misrepresent their environmental practices, creates psychological tensions among consumers, leading to cognitive dissonance and discomfort when their beliefs and actions are misaligned, leading them to engage in various strategies to alleviate this unease (Wu, 2025). Thus, as consumers strive to uphold their environmental values but are increasingly confronted with misleading claims made by corporations through greenwashing, consumer trust is undermined and creates skepticism towards all marketing claims related to environmental sustainability.

This skepticism can lead to a paradox in which consumers who hold strong environmental beliefs may

still purchase from companies they suspect of greenwashing, thus struggling with their principles versus their purchasing choices (Wu, 2025). This phenomenon illustrates the consumer environmental paradox (Figure 3), in which favorable attitudes toward sustainable products do not necessarily translate into congruent behaviors, leading to what is commonly called the attitude–behavior gap, while the cognitive dissonance induced by greenwashing can foster a cycle of negative consumer behavior, as consumers become aware of greenwashing, their trust in not only the brand involved but also in the broader green product market diminishes (Wang & Walker, 2023).

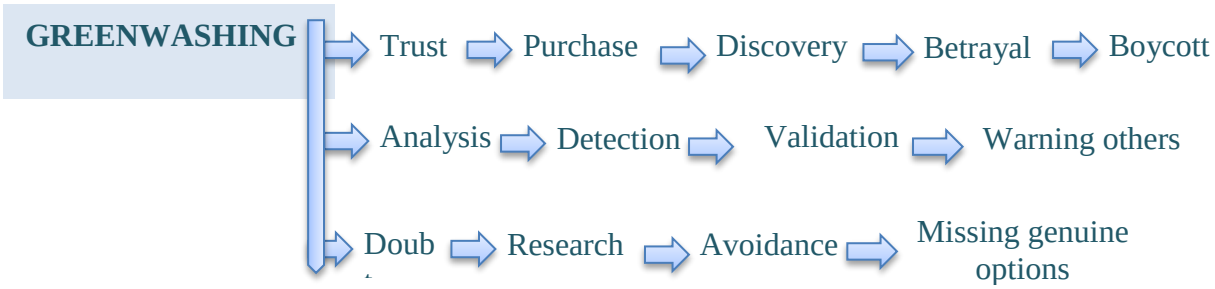


Figure 3. The psychological cycle of greenwashing impact
Source: Adapted from Wu (2025) and Wang & Walker (2023)

In this way, it is observed that consumers process information about green products in a complex way, influenced by their knowledge about the environment and their level of skepticism. The most informed analyze green claims more carefully, asking for concrete evidence and specific details about sustainability. Consumers want to know exactly what companies are doing for the environment. When they encounter vague or exaggerated claims, they become skeptical and stop buying. The prevalence of greenwashing has created a general climate of distrust, making consumers more critical of any green promise.
Trust is built only when consumers see consistency between promises and actual actions. Companies that communicate transparently and demonstrate a genuine commitment to the environment manage to gain credibility, while those that practice greenwashing destroy trust in the long term.
Thus, greenwashing can be defined as the strategy by which organizations exaggerate or falsify their environmental commitment to appear more sustainable than they actually are. This practice creates an information asymmetry that prevents consumers from correctly assessing the real environmental impact, thus compromising the market for truly sustainable products.

5. Why is the agri-food sector a fertile ground for greenwashing?

The agri-food sector possesses specific characteristics that make it particularly vulnerable to greenwashing practices. In contrast to industrial pollution, which is often concentrated and easy to monitor, surface agricultural pollution, such as that caused by pesticide use and animal waste, is “dispersed, random and very difficult to monitor” (Taidi, 2024). This diffuse nature allows companies to more easily engage in greenwashing through “selective disclosure” of information, for example reporting on water-saving technologies but hiding the misuse of pesticides. (Kim and Lyon, 2015). Another mechanism specific to this industry is the “legitimacy arbitrage trap”. This concept describes the situation where there is a systemic gap between the intensity of environmental regulations and market pressure for environmental protection. Companies take advantage of this gap to gain short-term legitimacy through greenwashing, but this practice ultimately leads to reputational capital depletion and systemic financial risks (Zhao and Lee, 2024; Das et al., 2023).

Moreover, greenwashing in the agri-food sector can be a system-wide effort, not just a simple corporate practice. The analysis reveals a common form of greenwashing, carried out through government-subsidized advertising, targeting both consumers and public policies. An experimental study examined such a campaign in Switzerland, aimed at promoting Swiss meat,

which featured an environmentally friendly but highly atypical animal feeding system. The results showed that the ads misled consumers, who significantly overestimated the percentage of farms using the system. This example illustrates that misleading messages can be designed to influence not only purchasing decisions, but also public opinions and policies. (Schläpfer et al., 2025; Markoni at al., 2023). In the context of the climate emergency, a specific and particularly widespread tactic in the agri-food sector is the use of climate-related claims, such as "carbon neutral", "climate positive" and "net zero". (Mirzabaev et al., 2022). Corporations are intensifying their greenwashing efforts to counter any attempt to reduce their greenhouse gas emissions. Food and agri-food corporations are the main actors in this deception. (GRAIN, 2021).

A detailed analysis showed that over 80% of the environmental claims assessed in the food and beverage sector referred to climate impact, and more than half of these were explicitly based on offsetting (Clim-Eat, 2022; Kaupa, 2022).

A central problem is the proliferation of private and "self-referential" certifications. Companies can obtain certifications by meeting minimum requirements without guaranteeing a reduced environmental impact. This situation creates confusion for consumers, giving the illusion of higher sustainability without providing real control over the entire production chain. In many cases, certifications become a mere marketing tool, losing their value as a guarantee of transparency and quality. A recent study found that half of the "green labels" offer poor or no verification. There are 230 sustainability labels and 100 green energy labels in the EU, with very different levels of transparency. (European Commission, 2023; Dreist et al., 2024). Although the national legislation of the Republic of Moldova has already transposed some of the European regulations, such as Regulation (EU) 2018/848 on organic production and labelling of organic products, there are still gaps in effectively combating greenwashing. The legislation of the Republic of Moldova establishes the principles of organic production and establishes the rules on organic production, related certification and the use of indications referring to organic production in labelling and advertising, as well as the rules on additional controls related to the production and labelling of organic products. (Parliament of the Republic of Moldova, 2023). There is also a Regulation on the import and export of organic products, which regulates the rules for the verification of transport, the issuance of inspection certificates, and official controls for organic products and those in conversion, both upon import and export. It is intended to harmonize national legislation with that of the European Union, facilitating trade in organic products and diversifying sales markets. (Government of the Republic of Moldova, 2024). According to the aforementioned legislation, we conclude that in fact the certification system, although designed to guarantee quality and sustainability, has become another vulnerability exploited by greenwashing. Thus, in the Republic of Moldova, as in other countries, the phenomenon of greenwashing has become increasingly visible, especially in the context of increasing consumer demand for "green" and "ecological" products. In the agri-food sector, this practice manifests itself through various marketing strategies aimed at creating an image of sustainability, without a solid factual basis.

6. Limitations and future research directions

The present analysis focused on the substantiation of the concept of greenwashing, on the classification of the main types identified in the specialized literature and on highlighting the particularities of this phenomenon in the agri-food sector.

However, the study has certain limitations, as it did not include an empirical investigation of consumer perceptions or concrete communication strategies used by companies from the Republic of Moldova and other countries in the region. Also, the economic dimension of greenwashing practices and their impact on market competitiveness were not explored in detail. Future research could focus on:

- analysis of real consumer behavior and their level of resilience to misleading environmental messages;
- comparative studies between economic sectors (agri-food, textiles, energy), to identify

differences in the manifestation of greenwashing;

- evaluation of the costs and benefits for companies that adopt authentic sustainable practices in relation to those that resort to greenwashing;
- analysis of the role of public policies and sanctioning mechanisms in reducing the phenomenon;
- integrating quantitative (surveys, experiments, econometric models) and qualitative (interviews, case studies) methods for a more complete understanding of social and economic implications.

Thus, future research directions can contribute to a better understanding of the dynamics of greenwashing and to the formulation of more effective consumer regulation and education policies.

7. Conclusions

The article explores the concept of greenwashing, highlighting how companies create the impression of environmental responsibility without implementing genuine sustainable practices. Based on the analysis of the specialized literature, the main types and strategies of this phenomenon were identified, as well as its impact on consumer perception and trust in the organic market. The study pays special attention to the agri-food industry, a sector characterized by a high vulnerability to greenwashing due to the emphasis on "eco" products and aggressive green marketing. The results emphasize the need for strict regulations, consumer education and transparency in the promotion of sustainable products to prevent the phenomenon.

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Macroeconomic dynamics in the Western Balkans: The relationship between GDP growth, inflation and unemployment

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Abstract

Introduction: This paper investigates the macroeconomic dynamics in Western Balkan countries (WB6—Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, Serbia). The economy of these countries has been through a transitional system, and experienced various crises and shocks that affected their economy.
Aim: Understanding the relationship between real GDP growth, CPI inflation, and unemployment for WB-6, and to assess the three hypotheses: H1 (higher GDP growth reduces unemployment), H2 (higher inflation raises GDP growth), and H3 (higher inflation lowers unemployment).
Method: We compile annual data for WB-6 economies. We report correlation analysis, country OLS regressions of unemployment on inflation and growth, and panel fixed effect (FE) regressions for unemployment and growth. We test Okun's law (growth–unemployment link) and a reduced-form Phillips curve (inflation–unemployment trade off) via country fixed effects.
Findings: Show that there is no systematic unemployment reduction from GDP growth (weak or absent Okun type), inflation and growth co-move positively, and mixed or partial support (Phillips-type trade-off) regarding the reduction of unemployment through higher inflation.
Conclusion: In Western Balkan countries, inflation and growth move together in short run, but growth alone does not reliably reduce unemployment, and the Phillips trade-off is state-dependent.
Originality and value: of harmonized WB-6 panel provides evidence for transparent policy-ready elasticity

Key words: GDP growth, inflation, unemployment, Phillips curve; Okun's law; Western Balkan
Jel Codes: O47, E31, E24, E32, O52

1. Introduction

The Western Balkan region which includes six countries Albania, Bosnia and Herzegovina, North Macedonia, Kosovo, Montenegro and Serbia have a transitional economic system. Their economy has been through many challenges such as wars and civil conflict and other shocks from economic and financial crisis. But from 2000 the economy in these regions has experienced rapid but volatile GDP growth.

The unity of this study lies in the main aim which tends to analyze the relationship of three main macroeconomic indicators such as: inflation, unemployment and GDP growth in the Western Balkan countries (WB-6). In general viewpoint as a determinant that negatively impacts economic growth in WB, we consider unemployment, since that is the main challenge that remains unsolved and a crucial factor for development.

The objective of this study is to understand how these three indicators: real GDP growth (annual percent change), inflation, consumer prices (annual %) CPI, unemployment (% of total labor

force) (modeled ILO estimate) interact with one another in small open economies of WB-6. For understanding this, the paper will direct three questions: (i) does higher GDP growth reduce unemployment in the Western Balkans? how strongly do inflation and unemployment correlate with GDP growth, (ii) is higher inflation associated with higher real GDP growth in the Western Balkans? (iii) does higher inflation reduce unemployment (i.e., an inverse Phillips relationship) in the Western Balkans? By focusing strictly on GDP growth, CPI inflation, and total unemployment, we provide a transparent baseline that can be replicated and updated as new data arrives.

The structure of the paper is organized as follows: In Section 1 we have an overview of the three main macroeconomic indicators for Western Balkan region. Section 2, a literature review is presented, a review of previous relevant empirical research that has discussed the relation between these three macroeconomic indicators. Section 3 explains the materials and methods used, by presenting the descriptive statistics of the variables of interest, including the explanation of the empirical approach and interpreting the results with Fixed effect models. Section 5 presents the discussion and implications of the study. And the last Section 6, shows the results, the limitations, and future directions of the macroeconomic dynamics in Western Balkan region.

1.1. Macroeconomic indicators for countries

In the following we will present the three most important macroeconomic indicators for WB-6 (Albania, Bosnia and Herzegovina, North Macedonia, Kosovo, Montenegro and Serbia). The presentation will be on comparative graphs of GDP growth, inflation and unemployment between these countries for the period from 2000 to 2023.

Table 1. Real GDP growth (Annual percent change)

Year	Albania	Bosnia and Herzegovina	Kosovo	Montenegro	North Macedonia	Serbia
2000	7.46	5.41		3.10	4.55	6.06
2001	8.86	2.42		1.10	-3.07	6.78
2002	4.63	5.03		1.90	1.49	6.54
2003	5.33	3.87		2.48	2.22	4.56
2004	5.27	6.33		4.43	4.67	6.69
2005	5.13	3.90		4.18	4.72	5.90
2006	6.02	5.41		8.57	5.14	3.90
2007	6.50	5.86		6.81	6.47	7.83
2008	6.91	5.44		7.22	5.47	5.16
2009	2.69	-3.00	5.03	-5.80	-0.36	-3.14
2010	2.97	0.87	4.94	2.73	3.36	1.61
2011	2.46	0.96	6.32	3.23	2.34	0.05
2012	0.98	-0.82	1.71	-2.72	-0.46	-0.44
2013	1.71	2.35	5.34	3.55	2.93	0.45
2014	2.24	1.15	3.35	1.78	3.63	-1.80
2015	2.23	4.31	5.92	3.39	3.86	1.30
2016	3.91	3.24	5.57	2.95	2.85	2.98
2017	3.28	3.24	4.83	4.72	1.08	2.36
2018	3.67	3.83	3.41	5.08	2.88	4.65
2019	2.06	2.89	4.76	4.06	3.91	4.75
2020	-3.31	-3.02	-5.34	-15.31	-4.69	-0.95
2021	8.97	7.39	10.75	13.04	4.51	7.95
2022	4.83	4.23	4.28	6.41	2.76	2.63
2023	3.94	1.99	4.07	6.34	2.07	3.85

Min	-3.31	-3.02	-5.34	-15.31	-4.69	-3.14
Max	8.97	7.39	10.75	13.04	6.47	7.95
Average	4.11	3.05	4.33	3.05	2.60	3.32

Table 1 shows the real GDP growth of the Western Balkan countries (WB-6) from 2000 to 2023. For these periods, on average Kosovo records the fastest growth at 4.33% (range –5.34% min to 10.75% max (data from 2009-2023). Albania follows with 4.11% (min –3.31%, max 8.97%). The next highest average is Serbia at 3.32% (min –3.14%, max 7.95%), while Bosnia and Herzegovina and Montenegro each average 3.05%. Montenegro is, however, the most volatile, swinging from a pandemic low of –15.31% (2020) to a rebound high of 13.04% (2021). North Macedonia posts the lowest average growth, 2.60% (range –4.69% to 6.47%).

Western Balkan region faced three clear phases: mid 2000s expansions, the 2009 downturn because of financial crisis of 2008, and 2020 pandemic effect. But this was followed by a 2021 rebound (all WB-6 countries). Overall, the data indicate comparatively higher average growth in Kosovo and Albania, moderate averages in Serbia, Bosnia and Herzegovina, and Montenegro (but with large volatility in the latter), and the most modest average in North Macedonia.

Table 2. Inflation, consumer prices (annual %) CPI

Year	Albania	Bosnia and Herzegovina	Kosovo	Montenegro	North Macedonia	Serbia
2000	0.05	4.97	3.61	29.86	6.61	71.12
2001	3.11	3.21	11.66	23.73	5.20	95.01
2002	7.77	0.31	2.69	19.70	2.31	19.49
2003	0.48	0.55	-1.08	7.50	0.86	9.88
2004	2.28	0.28	-1.06	3.10	-0.45	11.03
2005	2.37	3.58	-1.39	3.45	0.53	16.12
2006	2.37	6.13	0.62	2.92	3.21	11.72
2007	2.93	1.50	4.36	4.35	2.25	6.39
2008	3.32	7.43	9.35	8.76	8.33	12.41
2009	2.27	-0.38	-2.41	3.47	-0.74	8.12
2010	3.63	2.00	3.48	0.65	1.51	6.14
2011	3.43	3.67	7.34	3.45	3.90	11.14
2012	2.03	2.05	2.48	4.15	3.32	7.33
2013	1.94	-0.09	1.77	2.21	2.79	7.69
2014	1.63	-0.90	0.43	-0.71	-0.28	2.08
2015	1.90	-1.04	-0.54	1.55	-0.30	1.39
2016	1.28	-1.58	0.27	-0.27	-0.24	1.12
2017	1.99	0.81	1.49	2.38	1.35	3.13
2018	2.03	1.42	1.05	2.61	1.46	1.96
2019	1.41	0.56	2.68	0.36	0.77	1.85
2020	1.62	-1.05	0.20	-0.26	1.20	1.58
2021	2.04	1.98	3.35	2.41	3.23	4.09
2022	6.73	14.02	11.58	13.04	14.20	11.98
2023	4.76	6.11	4.94	8.58	9.36	12.37
Min	0.05	-1.58	-2.41	-0.71	-0.74	1.12

Max	7.77	14.02	11.66	29.86	14.20	95.01
Average	2.64	2.31	2.79	6.12	2.93	13.96

Table 2 summarizes annual CPI inflation (%, 2000–2023) for the Western Balkans. On average, Serbia records by far the highest inflation, 13.96%, driven by very high early-2000 values (peaking at 95.01% in 2001); its lowest annual rate is 1.12%. Montenegro averages 6.12% (range min –0.71%, max 29.86%), reflecting a sharp spike in 2000 and again in 2022–2023. The remaining economies maintain low, North Macedonia 2.93% (min –0.74%, max 14.20%), Kosovo 2.79% (min –2.41%, max 11.66%), Albania 2.64% (min 0.05%, max 7.77%), and Bosnia and Herzegovina the lowest at 2.31% (min –1.58%, max 14.02%).

Meaning that in early 2000s, Serbia faced high inflation and elevated rates in Montenegro, while others were moderate. Mid 2010s disinflation/deflation: negative CPI in Bosnia and Herzegovina (2013–2016), Kosovo (2003–2005, 2009, 2015), Montenegro (2014, 2016, 2020), and North Macedonia (2004, 2009, 2014–2016); Albania stayed positive but low. As per energy-price there was a spike during 2022–2023, including North Macedonia 14.20%, Bosnia and Herzegovina 14.02%, Montenegro 13.04%, Serbia 11.98%, Kosovo 11.58%, and Albania 6.73%.Overall, inflation has been low and stable in Albania, Bosnia and Herzegovina, Kosovo, and North Macedonia; more volatile in Montenegro; and an outlier in Serbia due to the very high rates at the start of the period.

Table 3. Unemployment, total (% of total labor force) (modeled ILO estimate)

Year	Albania	Bosnia and Herzegovina	Kosovo	Montenegro	North Macedonia	Serbia
2000	19.02	25.19		30.61	32.20	12.60
2001	18.57	26.29		30.74	30.52	12.80
2002	17.89	27.31		30.42	31.94	13.80
2003	16.99	28.45		30.46	36.69	15.20
2004	16.31	29.28		30.37	37.16	18.50
2005	15.97	30.23		30.31	37.32	20.85
2006	15.63	31.11		24.79	36.39	20.85
2007	15.97	28.98		19.40	35.23	18.06
2008	13.06	23.41		17.15	33.93	13.67
2009	13.67	24.07		19.09	32.35	16.12
2010	14.09	27.31		19.65	33.14	19.20
2011	13.48	27.58		19.76	31.50	22.96
2012	13.38	28.01	30.90	19.81	31.10	24.00
2013	15.87	27.49	30.00	19.59	29.02	22.15
2014	18.06	27.52	35.30	18.05	28.22	19.22
2015	17.19	27.70	32.90	17.56	26.40	17.66
2016	15.42	25.41	27.50	17.73	24.31	15.26
2017	13.62	20.53	30.48	16.08	22.86	13.48

2018	12.30	18.40	31.40	15.19	21.21	12.73
2019	11.47	15.69	25.30	15.13	17.41	10.40
2020	11.69	15.87	25.90	17.88	16.58	9.01
2021	11.47	14.90	20.70	16.54	15.80	9.84
2022	10.14	12.66	12.60	14.85	14.48	8.44
2023	10.11	10.67	10.90	14.62	13.17	8.27
Min	10.11	10.67	10.90	14.62	13.17	8.27
Max	19.02	31.11	35.30	30.74	37.32	24.00
Average	14.64	23.92	26.16	21.07	27.87	15.63

Table 3 summarizes unemployment rates (% of total labor force, ILO modeled) for WB6, 2000–2023. Over the whole period, average unemployment is highest in North Macedonia (27.87%), followed by Kosovo (26.16%), Bosnia and Herzegovina (23.92%), Montenegro (21.07%), Serbia (15.63%), and Albania (14.64%).

Albania faced a steadily decline from 19.0% (2000) to a series low 10.1% (2023); average 14.64%. Early 2000s Bosnia and Herzegovina faced very high unemployment rate (peak 31.11% in 2006), then large, sustained reductions to 10.67% (2023); average 23.92%. Among the highest rate had Kosovo in mid-2010s (peak 35.30% in 2014), followed by the sharpest improvement in the region to 10.90% (2023); average 26.16%. Montenegro in early-2000s around 30–31% (max 30.74% in 2001), trending down to 14.62% (2023); average 21.07%. North Macedonia had the highest and most persistent unemployment in the 2000s (peak 37.32% in 2005), then a long decline to 13.17% (2023); average 27.87%. And Serbia, peaks at 24.00% (2012), then falls rapidly to the region's lowest recent level 8.27% (2023); average 15.63%.

All countries saw elevated unemployment in the early 2000s, gradual improvements through the mid-2010s, a modest 2020 because of pandemic, and renewed declines by 2021–2023. By 2023, every economy records its series minimum (ALB 10.11, BIH 10.67, KOS 10.90, MNE 14.62, NMK 13.17, SRB 8.27), indicating broad-based labor-market recovery and convergence from previously very high levels.

2. Literature Review

The most debatable topic between researchers is the relation between GDP growth with the level of the inflation and unemployment in an economy. In this regard, lots of studies conduct an analysis on how these factors influence the economy growth in short and long run for both developed and developing countries. Three methods are used to test the relationship between GDP growth, inflation, and unemployment.

First, the relation between inflation and unemployment is better explained by Phillips (Phillips, 1958). (Samuelson & Solow, 1960), treat the Phillips curve as a useful but unstable short-run guide, lasting price stability with high employment requires structural changes. Also, this was followed with expectations by (Friedman, 1968) and (Phelps, 1967) of the idea of a reliable, permanent unemployment–inflation trade-off. As per Dimovski et al. (2023), the inflation-unemployment trade-off receives mixed support, by confirming this relationship for most Western Balkan countries except North Macedonia. Balliu & Brodzicki (2022) demonstrated that inflation reduces unemployment rates in Balkan region. Vladi & Hysa (2019) found all macroeconomic variables, including inflation, significantly impact unemployment rates in the region.

Second, according to Okun's law which emphasizes the negative relation between output growth and unemployment, where in his original work he states that a one-percentage point reduction in the unemployment rate would produce approximately 3% more output (Okun, 1962). Since we

know that unemployment is known as a negative phenomenon of the economy of a country, many authors published many articles about the relation of unemployment with growth. Balliu & Brodzicki (2022) supported Okun's Law by reporting that economic growth reduces unemployment in their 11-country Balkan sample. According to (Akinboyo, 1987) and (Dornbusch, 2000), they categorized unemployment as one of the most serious barriers to prevent economic progress, representing the loss of labour force in a country as an increase in poverty, meaning that the lowest the output will be, the lower the revenue and the poorer the welfare will be. During the after-crisis period, economies face difficulties with jobless recoveries. Regards to this Ball, Leigh & Loungani (2017), shows that faster growth does not equally deliver a decline in unemployment. Cazes, Verick & Al Hussami (2013), finds that the response of unemployment to growth depends on institutions and informalities. Kapsos (2005), shows that growth can be jobless, but it depends on growth composition, such as migration dynamics. Silvapulle, Moosa & Silvapulle (2004), show asymmetry in Okun's law meaning that unemployment rises quickly in downturns but falls slowly in expansions. In contrast to Okuns law, Arifi et al. (2023) found that GDP growth has no influence on unemployment rates across Western Balkan countries (WB-6). Also, (Živković, 2022) finds a negative correlation between GDP growth and unemployment in EU founders, Visegrad and WB that is statistically significant only in EU founders. Based on empirical analysis of (Sadiku et al. 2015) the VAR methodology and Engel-Granger cointegration test, shows that there doesn't exist a causal relationship between these two variables and a change in the growth rate of real GDP doesn't cause a change in the rate of unemployment and vice versa.

Third, the relationship between inflation and growth emphasizes a positive impact of inflation on growth (Fischer, 1993; Barro, 2013). The relationship between inflation and economic outcomes shows more consistent patterns. As per Dimovski et al. (2023) the rise in inflation positively contributes to GDP growth. Blanchard & Summers, (1986) emphasize that unemployment rises quickly in recession but falls slowly in expansion. As per (Malenković,2022) higher inflation increase GDP growth in WB-6. Therefore, (Akinsola,2017) finds a negative relationship between inflation and economic growth, particularly in developed economies. Also, (Gokal & Harfi 2004) shows negative relationship between inflation and economic growth, leading to higher wages and a reduction in the firm's profit. Fischer (1993), Barro (1996), and De Gregorio (1992) also found evidence of a negative link between inflation and growth.

3. Materials and Method

For realization of this study, first we estimate the correlations between GDP growth, inflation, and unemployment. The dataset includes six economies of WB-6 ((ALB, BIH, XKX, MNE, NMK, SRB). Moving beyond descriptive correlation by applying OLS regression and the Fixed Effect (FE).

3.1. Data

Annual country year panel data for 6 Wester Balkan countries, for the time period of 2000–2023. The data set includes real GDP growth (Annual percent change), Inflation consumer prices (annual %) CPI, Unemployment, total (% of total labor force) (modeled ILO estimate). The available data source is from World Bank. Kosovo excluded due to data gaps.

3.2. Baseline models

For the empirical data analysis we implemented: First, country-level Pearson correlations among GDP growth, inflation (CPI), and unemployment; Second, Country OLS regressions of unemployment on inflation and growth; Third, Panel fixed-effects regression of unemployment on growth and inflation; and Panel fixed-effects regression of GDP growth on inflation and unemployment.

Step 1. Descriptive evidence

It is important to understand the broad statistical picture of growth, inflation, and unemployment in the Western Balkans. Table 1 presents the simple correlation coefficients between the three variables for each country. Correlations provide preliminary evidence on whether GDP growth is associated with unemployment reduction, and whether inflation behaves in line with Phillips curve expectations.

Table 1. Correlations between GDP growth, Inflation, and Unemployment by country (2000–2023)

Country	*GDP–Unemployment*	*Inflation–Unemployment*	*GDP–Inflation*
Albania	+0.29	-0.23	+0.10
Bosnia & Herzegovina	+0.10	-0.32	+0.28
Montenegro	-0.06	+0.55	+0.07
North Macedonia	+0.27	-0.34	+0.04
Serbia	-0.30	-0.15	+0.37

The correlation results suggest very weak or inconsistent relationships. Albania and North Macedonia show a positive correlation between growth and unemployment, which is counterintuitive, as stronger economic growth did not reduce unemployment. Bosnia and Herzegovina shows almost no link between growth and unemployment. Montenegro displays a near-zero negative correlation, but inflation is strongly and positively correlated with unemployment — a surprising result. Serbia stands out as the only country with the expected negative relationship (–0.30), indicating that when GDP grows, unemployment tends to fall. Inflation, however, is positively related to growth in Serbia, suggesting a demand-driven pattern.

Step 2. Econometric Evidence (After Regression Analysis)

Moving beyond descriptive correlations, we apply OLS regressions at the country level to formally estimate the effect of GDP growth and inflation on unemployment. Table 2 reports the coefficients for each country separately. This approach allows us to observe heterogeneity in how each economy's labor market responds to growth and inflation.

Table 2. Regression of Unemployment on GDP Growth and Inflation (OLS by country, 2000–2023)

Country	*Inflation (CPI)*	*GDP Growth*	*Constant*	*R^2*
Albania	-0.400 (0.307)	+0.310 (0.198)	14.42***	0.15
Bosnia & Herzegovina	-0.642* (0.360)	+0.444 (0.469)	24.05***	0.14
Montenegro	+0.422*** (0.136)	-0.105 (0.202)	18.81***	0.32
North Macedonia	-0.748* (0.424)	+0.842 (0.582)	27.88***	0.19
Serbia	-0.009 (0.048)	-0.432 (0.336)	17.19***	0.09

(Standard errors in parentheses. Significance: * p<0.10, ** p<0.05, *** p<0.01)

The regression confirms that growth does not automatically lower unemployment in the Western Balkans. Albania shows no significant results, with GDP even entering with a positive sign. Bosnia and Herzegovina shows weak evidence of a Phillips curve effect, where inflation reduces unemployment (significant at the 10% level). Montenegro is the opposite: inflation significantly increases unemployment, suggesting structural inflationary pressures disconnected from job creation. North Macedonia shows weak evidence of inflation reducing unemployment, but GDP remains positively signed. Serbia is the only case where GDP growth is negatively related to unemployment, in line with Okun's Law, though the effect is statistically insignificant. Overall, labor markets in these countries appear rigid and only weakly responsive to growth.

Step 3. Panel Regression of Unemployment on GDP Growth and Inflation (Fixed Effects)

Table 3. Panel Regression of Unemployment on GDP Growth and Inflation (Fixed Effects, 2000–2023)

Variable	*Coefficient*	*Std. Error*
GDP Growth	+0.056	(0.172)
Inflation (CPI)	-0.015	(0.065)
Constant	20.53***	(0.418)

Observations = 120; Countries = 5.
Significance: * p<0.10, ** p<0.05, *** p<0.01.

At the regional level, the panel model shows no statistically significant effect of GDP growth or inflation on unemployment. This finding reinforces the idea that growth in the Western Balkans does not translate into job creation, while inflation does not consistently reduce unemployment. The constant of around 20.5 suggests a high structural unemployment baseline across the region.

Table 4. Panel Regression of GDP Growth on Inflation and Unemployment (Fixed Effects, 2000–2023)

Variable	*Coefficient*	*Std. Error*
Inflation (CPI)	+0.055***	(0.005)
Unemployment	+0.020	(0.055)
Constant	2.51*	(1.15)

Observations = 120; Countries = 5.

Significance: * p<0.10, ** p<0.05, *** p<0.01.

This regression shows a strong and statistically significant positive effect of inflation on GDP growth. A one-percentage-point increase in inflation is associated with a 0.055 percentage-point increase in growth. This may reflect demand-driven cycles, where moderate inflation signals higher consumption and investment activity. Unemployment remains insignificant, confirming that GDP dynamics are more strongly influenced by price conditions than by labor market slack in this region.

5. Discussion, practical and managerial implications

Although the positive inflation–growth relationship aligns with normalization, or the relative price adjust with stronger activity, doesn't mean that high inflation enhance growth in the long term, but it captures short term growth. Since informality, migration, and labor-market friction weaken the conversion of growth into jobs, country OLS and panel FE haven't provided consistent evidence that faster growth reduces unemployment (weak or absent Okun type). Regards to state-dependent Phillips curve, in several cases the country's evidence points to an inverse relationship between inflation and unemployment.

As policy implications, we should consider the **s**tabilization of prices without reducing the activities. Raising the employment intensity of growth through active labour market policies, skills and apprenticeship programs, and to reduce the informality. By this limiting unemployment spikes when external prices move sharply. Investing in data quality to improve labour force statistics, identify slack and evaluate job creation.

6. Results, Limitations, and Future Directions

In this study, the combined evidence shows that while Serbia displays some signs of Okun's Law, the expected negative relationship between growth and unemployment is weak or absent elsewhere. Inflation plays a more complex role: it reduces unemployment in Bosnia and North Macedonia, increases it in Montenegro, and is insignificant in Albania and Serbia. At the regional level, unemployment appears structurally high and unresponsive to growth. However, inflation significantly boosts GDP growth in the panel model, underlining the role of price dynamics in shaping short-term output.

Hypotheses Revisited

H1. Higher GDP growth reduces unemployment

Assessment: Not supported overall. In the panel fixed-effects model (Table 3), the coefficient on GDP growth is +0.056 and statistically insignificant, indicating no systematic unemployment reduction from growth at the regional level. Country OLS results (Table 2) also fail to support H1: the GDP coefficient is negative only in Serbia (−0.432, ns) and near zero/positive elsewhere (Albania +0.310, Bosnia +0.444, North Macedonia +0.842, Montenegro −0.105; all ns). The pattern suggests weak or absent Okun-type dynamics, consistent with rigid labor markets and structural mismatches that decouple output expansion from job creation.

H2. Higher inflation increases GDP growth

Assessment: Supported. The panel fixed-effects regression with GDP growth as the dependent variable (Table 4) shows Inflation = +0.055* ($p<0.01$), a precise and economically meaningful estimate: a 1 pp rise in CPI is associated with ~0.055 pp higher real GDP growth contemporaneously. Country-level correlations (Table 1) are also mostly positive between CPI and GDP growth (notably Serbia +0.37, Bosnia +0.28), aligning with demand-driven cycles or procyclical price dynamics. While causality may be bidirectional, the evidence here clearly favors H2 within the sample and model scope.

H3. Higher inflation reduces unemployment

Assessment: Mixed/partial support. In country OLS (Table 2), CPI has negative coefficients in Albania (−0.400, ns), Bosnia (−0.642, $p\approx0.09$), and North Macedonia (−0.748, $p\approx0.09$), suggesting a weak Phillips-type trade-off in those economies. However, Montenegro shows the opposite sign and significance (+0.422, *$p<0.01$)—inflation coincides with higher unemployment—and Serbia is near zero (−0.009, ns). The panel FE model with unemployment as DV (Table 3) yields CPI = −0.015 (ns), indicating no region-wide effect. Overall, H3 is not universally supported: any Phillips-curve relationship appears country-specific and fragile.

In conclusion, Western Balkan countries (WB-6) had unfavorable starting positions, meaning that in the nineties the income level was low, and unemployment was high. Thus, the study analyzed the relationship between three macroeconomic indicators, GDP growth, inflation and unemployment. Using data from World Bank from 2000 to 2023. Results show that GDP growth is influenced and explained by inflation and unemployment. Inflation has a positive relation in GDP growth, meaning that the increase in price will increase the output growth. In other hand, as expected the unemployment have negative relation with GDP growth in the Western Balkan countries (WB-6). Even though this region has been through transition system, and each of the six countries has different approaches to macroeconomic parameters, and also faced economic decrease, they always found a way and proved that they have the ability to recover. Regards to this, the main problem that WB-6 is facing is youth unemployment. This region requires a reform followed by political policy that contributes to increasing employment by opening new jobs.

6.1 Limitations

Across the five economies, growth does not reliably lower unemployment, while inflation reliably lifts output but has heterogeneous labor-market effects. These findings point to structural frictions (employment protection, skills mismatch, informality, sectoral composition) that weaken cyclical transmission from GDP to jobs. Policy efforts aimed solely at boosting growth are unlikely to deliver large employment gains without labor-market and institutional reforms (activation policies, training, hiring incentives, and measures that reduce matching frictions).

6.2 Future directions

Future research can be enriched by examining higher frequency evidence to capture whether inflation leads to growth or vice versa. Moving beyond unemployment rate and explaining why

growth often fails to cut unemployment by analysing labour market flow. Analysing the heterogeneity based on country specifics including sectoral or regional levels. Finally, finally have a point in policy evaluation for making specific reforms, improving the data and making forecasts.

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Cryptocurrencies and Global Finance: from Economic Implications and Regulatory Challenges to a Managerial Framework for Co-Creating Sustainable Value

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Abstract

Introduction: Cryptocurrencies represent a shift from traditional financial systems reducing networking costs (Hagiu & Wright, 2015). Interconnected relationships between cryptocurrencies and investors can be explored through stakeholder theory lens (Kanu, 2025). Through this relational portfolio (Pellicano et al., 2016) and considering stakeholders engagement, value can be co-created (Prahalad and Ramaswamy, 2004; Vargo and Lusch, 2004) for actors in cryptocurrency ecosystem (Mitchell et al., 1997).
Aim: The paper provides a comprehensive analysis of cryptocurrencies economic implications, examining volatility and global regulatory challenges also using managerial approaches. This paper proposes a theoretical framework based on stakeholder theory, risk management and value co-creation theory within cryptocurrency ecosystem.
Method: Theory-informed structured review (2017-2025) was developed considering volatility and macro spillovers; regulation/AML–CFT/tax; financial inclusion. Stakeholder-centric evidence, risk categories, value co-creation mechanisms were extracted using codebook. Findings are synthesized through content analysis, regulatory comparison matrix, value/stakeholder co-creation lenses deriving risk management implications.
Findings: Global regulatory landscape remains fragmented creating significant challenges for Anti-Money Laundering, Counter-Terrorist Financing compliance, consumer protection, and effective taxation. The speculative nature of cryptocurrencies is noteworthy.
Conclusion: The research concludes cryptocurrencies' benefits tempered by volatility and regulatory complexities. Globally regulatory approach harnesses technology's advantages mitigating systemic risks. This paper proposes a framework balances innovation with stability and inclusion considering stakeholder theory and stressing the need to transform risks into sustainable value.
Originality and value: The paper connects cryptocurrencies economic analysis and managerial theories providing risk map and perspective on how value can be co-created/shared and recognizing system fragility, and capacity to foster innovation and sustainability.

Key words: **cryptocurrency ecosystem; stakeholder theory; risk management; value co-creation; sustainability**
Jel Codes: B26; G19; M21

1. Introduction

Cryptocurrencies, digital financial assets operating through cryptographic algorithms, have rapidly transformed the global economy since Bitcoin's inception in 2009 (Ramesh, 2025). The rise of cryptocurrencies marks a significant departure from conventional financial structures, offering a decentralized mechanism that fundamentally reduces traditional networking and

transaction costs (An et al., 2021). This transformative technology has introduced a complex, interconnected ecosystem where the success and stability of digital currencies are deeply entwined with the interests and actions of their users and investors (Catalini & Gans, 2020; Radanliev, 2025).

Beyond the technological disruption, this evolution represents a reconfiguration of relationships within the financial system, shifting from centralized coordination to distributed relational architectures (De Filippi & Wright, 2018). The cryptocurrency environment functions as an open and dynamic network where investors, developers, users, and regulators interact continuously (Rehman et al., 2019). As outlined by stakeholder theory (Freeman, 1984; Mitchell et al. 1997), the cryptocurrency ecosystem depends on the alignment of interests and reciprocal accountability among its participants to ensure legitimacy and systemic stability (Rehman et al., 2019). Within this context, value is not created by isolated entities but co-created through interaction (Erevelles, et al., 2022).

Building on this premise, the paper develops a managerial and theoretical framework grounded in three interlinked perspectives:

- *Stakeholder Theory* (Freeman, 1984), which emphasizes the strategic importance of stakeholder engagement.
- *Risk Management Theory* (Dhlamini, 2022), focusing on adaptive governance within decentralized systems.
- *Value Co-creation Theory* (Prahalad & Ramaswamy, 2004; Vargo & Lusch, 2008), linking collaboration and innovation to sustainability outcomes.

Against this background, the present research provides a comprehensive analysis of the economic and regulatory implications of cryptocurrencies, examining their volatility, governance complexity, and contested contribution to financial inclusion. By integrating these perspectives, the research points out the critical role of the stakeholder engagement to transform systemic uncertainty into shared, long-term value. Grasping these dynamics is critical to the understanding of digital assets along with the potential risks to the structural stability of the financial system on a global scale (Azar et al., 2024).

In this perspective, the paper addresses three main research questions:

RQ1: How do heterogeneous national regulatory regimes for cryptocurrencies moderate the effects of market volatility and macro-financial spillovers on stakeholders' risk-management practices?

RQ2: How to enable sustainable value co-creation within the cryptocurrency ecosystem?

RQ3: How can stakeholder engagement within the cryptocurrency ecosystem contribute to the co-creation of sustainable value, mitigating the risks related to volatility and regulatory fragmentation?

This study deepens the understanding of how cryptocurrencies affect the global economy and stakeholder relations. The paper describes the integration of economic, regulatory, and sustainability perspectives within a unified framework clarifies the potential of digital currencies to evolve from disruptive innovations into stable components of the contemporary financial architecture.

2. Theoretical background

2.1. Stakeholder Theory and Engagement

"Stakeholder theory stresses the interconnected relationships between a cryptocurrency, blockchain miners, investors, external auditors, governments (regulators, policy makers and revenue authorities), and others who have a stake in cryptocurrency ecosystem" (Kanu, 2025, pag. 201). Through this lens, the theory highlights the relational dimension (Pellicano et al., 2016) of digital ecosystems.

Stakeholder engagement operates as a proactive mechanism of governance and risk prevention, enabling platforms to anticipate systemic vulnerabilities and sustain long-term legitimacy (Iandolo et al., 2025). Through active participation, transparency, dialogue, stakeholders contribute to building trust, shaping governance mechanisms, and enhancing adoption confidence (Kanu, 2025).

This mechanism of engagement contributes to mitigating the multiple risks inherent in cryptocurrency ecosystems, including extreme price volatility (Böhme et al., 2015), cybersecurity vulnerabilities (Ronaghi, 2023), and persistent regulatory uncertainties (Bojanova, 2024). As cryptocurrencies evolve from speculative assets toward complex socio-technical systems, their long-term sustainability increasingly depends on the quality of interactions and collaboration among ecosystem actors (Davidson et al., 2018).

Stakeholder engagement plays a pivotal role in effective risk management, as it fosters adaptive capacity in complex environments (Eyieyien et al., 2024). Stakeholder engagement mechanisms enable collective risk anticipation and ethical responsiveness (Iandolo et al., 2025; Battaglia et al., 2025).

2.2. Risk Management in Cryptocurrency Ecosystems

Risk management in cryptocurrency ecosystems has become increasingly critical due to the sector's exposure to volatility, technological vulnerabilities, and regulatory uncertainty (Kanu, 2025). These issues comprise of extreme price volatility (Böhme et al. 2015), cyber risks (Radanliev, 2024), speculative and unpredictable nature of regulatory enforcement (Biju & Thomas, 2023). Stakeholder engagement in risk management will integrate system resilience through the incorporation of feedback loops, participatory governance, and anticipatory frameworks (Iandolo et al., 2025). Stakeholders will provide value-adding input in the formulation of co-safeguards which will build operational trust and institutional stability.

More recently, Akhtar et al. (2025) frame cryptocurrency risk management within broader context of financial stability, underscoring the need for integrated strategies balance innovation with investor protection. Building trust mechanisms within blockchain infrastructures is essential to manage systemic and reputational risks (Rehman et al., 2019).

There is a clear need for collaborative, network-driven governance frameworks in the interrelation of stakeholders and risk management. Organizations with stakeholder-centric frameworks will have confidence around the managed risks and with stakeholders who will participate in security frameworks, governance feedback, and incident reporting (Taherdoost, 2025).

2.3. Value Co-creation and Sustainability

Value co-creation (Prahalad & Ramaswamy, 2004; Vargo & Lusch, 2004) within the cryptocurrency ecosystem draws on a relational and participatory paradigm (Abdat & Lesueur,

2019). Such a shift in understanding extends the value creation paradigm beyond the traditional approach of firms producing value for stakeholders to ecosystems value creating with stakeholders (Freudenreich et al., 2020). Users' interactions move the interplay of exchanges far beyond a mere transaction into a complex relational structure of trust, communal purpose, and value co-created (Fakhrullah et al., 2025). Through this relational portfolio (Pellicano et al., 2016) the interdependence among stakeholders becomes the foundation for transforming risks into opportunities for sustainable value creation.

Therefore, in value co-creation within cryptocurrency ecosystems, there is an element of sustainability to be considered. Technological innovation can be transformed in strategic advantage with social progress through ethical governance, stakeholder inclusiveness, and transparency (Zarrin et al., 2021).

Moreover, application of ESG (Environmental, Social and Governance) principles contributes a further layer of sustainability to co-creation (Shin & Li, 2023). Considering the increasing importance of ESG to investors, the adoption of environmentally aware, socially inclusive, and governance transparent practices will create legitimacy improving adoption of the platforms (Zarrin et al., 2021).

3. Methodology

A theory-informed structured review was conducted to examine the evolution of cryptocurrency research from 2017 to 2025, focusing on three analytical pillars: market volatility and macro-financial spillovers, regulation and compliance (AML/CFT and taxation), and financial inclusion. Following the methodological guidelines of Snyder (2019), the review combined systematic rigor with interpretive synthesis to ensure transparency, replicability, and theoretical depth. Peer-reviewed articles were collected from the Scopus and Web of Science databases, integrating conceptual, managerial, and empirical perspectives. Evidence was coded and categorized through a detailed codebook, mapping stakeholder engagement (Freeman, 1984), sustainability dimensions (Adams et al., 2016), and risk management approaches (Almeida & Gonçalves, 2022).

The analysis employed content analysis and a regulatory comparison matrix to identify recurring patterns across different jurisdictions and theoretical frameworks. This multi-layered synthesis connected economic, regulatory, social perspectives, deriving implications for stakeholder involvement, risk mitigation, and sustainable value co-creation.

Overall, the methodological design ensured a robust foundation for interpreting how cryptocurrency ecosystems evolve within the interplay of governance, regulation, and inclusion, offering both theoretical insights and practical implications for sustainable financial innovation.

4. Cryptocurrencies' Economic Foundations and Characteristics, Regulatory Challenges and Potential Role in Financial Inclusion

In this section, we highlight the economics and technology of cryptocurrencies, the problems with regulation and governance attributable to their decentralization, and the questionable impact of cryptocurrencies on financial inclusion.

4.1. Core Principles of Blockchain Technology and Crypto Mechanisms

Cryptocurrencies and blockchain technology represent one of the most significant transformations since financial digitization (Tapscott & Tapscott, 2016). Founded on decentralized architecture, blockchain lowers networking and verification costs while fostering trust among users (Chiu & Koeppl, 2019). Decentralization, however, introduces trade-offs in efficiency, scalability, and energy consumption (Chiu & Koeppl, 2019). By redistributing trust,

blockchain reshapes coordination and competition, enabling ecosystems where users, developers, and investors co-create value (Davidson et al., 2018). Yet, the same openness generates systemic risks, including cybersecurity vulnerabilities, algorithmic failures, and mining power concentration (Li & Chen, 2024).

A major technical constraint is the double-spending problem, solved in Proof-of-Work (PoW) systems through mining competition, where the longest verified chain is deemed valid (Chatterjee et al., 2019). This ensures integrity but reduces speed and energy efficiency, producing an estimated welfare loss of 1.4% of total consumption (Chiu & Koeppl, 2019).

Cryptocurrency ecosystems rely on incentives that balance innovation, risk, and participation (Dapp, 2018). Miners earn through seigniorage and transaction fees, yet competition often leads to centralization. Blockchain also facilitates tokenization transforming assets into programmable digital representations and underpins Decentralized Finance (DeFi), where Decentralized Exchanges (DEXs) and Automated Market Makers (AMMs) enable peer-to-peer trading (Sarumathi et al., 2024). These advances democratize finance but introduce new risks.

The removal of intermediaries redistributes rather than eliminates risk. Persistent volatility stems from market immaturity, speculation, regulatory uncertainty, and behavioural biases (Katsiampa, 2019). Bitcoin's fixed supply amplifies price swings, but declining volatility in mature assets signals growing institutionalization and resilience in decentralized finance (Chen, 2025).

The table 1 below summarizes these key factors contributing to cryptocurrency price volatility.

Table 1. Key Factors Contributing to Cryptocurrency Price Volatility

Category	Specific Drivers	Contribution to Volatility
Market Structure & Dynamics	- Price Discovery - Immature Markets - Supply Concentration ("whales")	Incomplete market depth and ownership concentration amplify reactions to information shocks and delay price stabilization. (Katsiampa, 2019; Chen, 2025)
Regulatory & External Environment	- Lack of Regulation - Regulatory Uncertainty - 24/7 Trading	Regulatory gaps and constant trading heighten systemic exposure, volatility, and contagion risk. (Hermans et al., 2022)
Behavioural & Macroeconomic Influences	- Market Sentiment - Market Speculation - Macroeconomic Factors	Behavioral biases and macro shocks reinforce cyclical volatility and short-term deviations from fundamentals. (Ebrahim et al., 2014; Katsiampa, 2019)
Cryptocurrency-Specific Developments	- Technological Changes	Endogenous technical shifts affect supply–demand dynamics and investor confidence, causing temporary disequilibria. (Li & Chen, 2024; Adhikari et al., 2025)

4.2. Regulatory Challenges in the Global Cryptocurrency Landscape

The lack of a unified global approach continues to foster regulatory arbitrage and fragmented enforcement (Houben & Snyers, 2018). Differentiating itself from other regions, the EU has introduced the Markets in Crypto-Assets Regulation (MiCAR), which lays the groundwork for the regulation of the crypto-assets industry (European Commission, 2023). It incorporates stability and transparency measures, reserve audits for crypto-stablecoins, and clear and standardized disclosure rules. In contrast, the United States maintains a fragmented "patchwork" regulatory regime, divided among agencies such as the Securities and Exchange Commission (SEC), Commodity Futures Trading Commission (CFTC), and Financial Crimes Enforcement

Network (FinCEN), resulting in what scholars define as "regulation by enforcement" (Brummer et al., 2022). China is still the most stringent, with a total ban on private cryptocurrencies (Xie, 2019; Lanteigne, 2022), while Singapore and the UK adopt an innovation-friendly, albeit closely regulated, approach with an emphasis on consumer protection, anti-money laundering (AML) and countering the financing of terrorism (CFT) (Mohamed, 2025).

The global standards on AML and CFT are set by the Financial Action Task Force (FATF), and the OECD has established the Crypto-Asset Reporting Framework (CARF) to improve fiscal transparency. Still, inconsistent applications and varying jurisdictions' standards create gaps around supervision, tax, and investor protection. Much of the remaining regulatory frameworks are still confined to a single jurisdiction, underscoring the tensions that still exist between decentralized finance and country-specific legal frameworks (Adhikari et al., 2025).

The table 2 below summarizes the main regulatory frameworks for cryptocurrencies across key jurisdictions.

Table 2. Comparative Overview of Global Cryptocurrency Regulatory Approaches

Jurisdiction / Region	Legal Classification	AML/CFT Stance	Consumer Protection	Taxation
European Union (MiCAR)	Unified framework under MiCAR for payment, utility, and security tokens (Filimonov, 2024; Budisteanu, 2024)	Harmonized AML/CFT via FATF-aligned VASP registration and KYC (Filimonov, 2024; Butt, 2023)	CASP licensing, mandatory whitepapers, and anti–market abuse rules (Filimonov, 2024; Seok, 2024)	VAT exemption for Bitcoin; direct taxes vary by Member State (Budisteanu, 2024)
United States	Hybrid regime: crypto as property (IRS) and securities (SEC/CFTC) (Alvarez, 2018; Lindsay, 2022)	FinCEN, SEC, and CFTC enforce AML/CFT under the Bank Secrecy Act (Lindsay, 2023)	Clearer SEC/CFTC coordination and ETF approval strengthen oversight (Seok, 2024)	Capital gains and income tax on trading; property-based taxation (Lindsay, 2022; Filimonov, 2024)
United Kingdom	Crypto and stablecoins regulated under FSMA 2023 (Karisma, 2022)	AML/CFT via Money Laundering Regulations (2017) and OFSI compliance (Karisma, 2022)	FCA supervises custody, staking, and bans retail derivatives (Xiong & Luo, 2024)	Capital gains on profits; income tax for frequent trading (Budisteanu, 2024)
China	Total ban on crypto and mining; PBoC prohibits all private tokens (Alvarez, 2018; Xiong & Luo, 2024)	Full prohibition on AML/CFT and speculative activity (Alvarez, 2018)	No crypto framework; Digital Yuan (e-CNY) as state alternative (Xiong & Luo, 2024)	No taxation; activity deemed illegal (Alvarez, 2018)
Singapore	Payment Services Act (2019) defines "digital payment	MAS enforces strong AML/CFT and stablecoin regulation (Lindsay, 2023)	Balances innovation and investor protection via	No capital gains tax; income taxed for regular trading

	tokens" (Lindsay, 2022; Seok, 2024)		licensing and audits (Seok, 2024)	(Lindsay, 2022; Butt, 2023)
FATF (Global)	Defines "virtual assets" and "VASPs" in FATF Recommendations (2021) (Butt, 2023)	Global AML/CFT via Travel Rule and VASP licensing (Seok, 2024)	Promotes transparency and harmonized regulation (Butt, 2023)	CARF for international tax reporting (Xiong & Luo, 2024)

The asymmetries shown underscore the enduring tension between decentralized financial ecosystems and country-specific legal architectures, which hinders the establishment of a coherent global governance model (Zetzsche et al., 2020).

4.3. Consumer Protection, Market Integrity and Financial Inclusion

Governments worldwide are working to regulate cryptocurrencies to protect users and preserve value (Afzal & Asif, 2019). The "same risk, same rule" principle is increasingly applied to DeFi protocols and crypto innovations once operating in legal grey zones. Developing tailored regulations for decentralized financial products and services is essential as the market evolves and presents new challenges for regulators and legal experts. Establishing clear rules and consumer protections for stablecoins and DeFi requires reinterpreting or extending existing legal frameworks rather than merely applying them (Bharanitharan & Kaur, 2024).

Decentralized digital currencies can expand access for unbanked populations with internet connectivity and reduce transaction delays (Adenutsi, 2025). However, evidence of their contribution to genuine financial inclusion remains limited. Cryptocurrencies are rarely used for everyday payments and are primarily speculative instruments, exposing vulnerable users to severe financial risks (Pantin, 2023). Decentralized systems alone cannot resolve structural inequalities; instead, they risk reproducing existing disparities (Pantin, 2023). Ultimately, cryptocurrencies offer limited potential for sustainable financial inclusion and remain largely speculative mechanisms rather than genuine tools for economic empowerment.

Weak consumer protection and speculative dynamics further hinder inclusion (Garz et al., 2023). The tension between cryptocurrencies' promise of access and their inherent risks underscores the need to protect economically vulnerable groups (Pantin, 2023). Speculation, high costs, and limited efficiency evidence collectively reduce cryptocurrencies' credibility as inclusion tools. While innovation in finance can drive exponential growth, it can also increase systemic risk (Mamuti et al., 2025). Therefore, integrating risk management, regulatory oversight, financial literacy, and diversified investment frameworks is essential for ensuring that cryptocurrencies contribute to sustainable and inclusive development (Mamuti et al., 2025).

5. Theoretical framework

The proposed theoretical framework for the cryptocurrency ecosystem is based on Stakeholder Theory (Freeman, 1984) attributing the ecosystem's legitimacy and success to the managing of diverse stakeholders' interrelationships. Stakeholder engagement (Kujala et al. 2022) and relational view (Pellicano et al, 2016) are the frameworks for facilitating active interfacing and the flow of information with stakeholders. This interfacing is central to the co-creation of value (Prahalad & Ramaswamy, 2004) through the joint dynamic of managing systemic risks (Renn et al., 2022) and converting these risks to opportunities for innovation, exclusion, and, ultimately, sustainability (Adams et al., 2016).

The framework suggests that sustainability arises directly through collaboration and value co-creation and, indirectly, through improved risk management and the transformation of threats to lasting benefits. The framework thus captures the essence that a stakeholder-oriented focus is vital to positive remapping of uncertainty to sustainable advantage. Embedding co-creation and participatory risk management in governance will enhance the cryptocurrency ecosystem's ability to sustain value and strengthen resilience and inclusive value generation.

The model' structure is visualized in Figure 1.

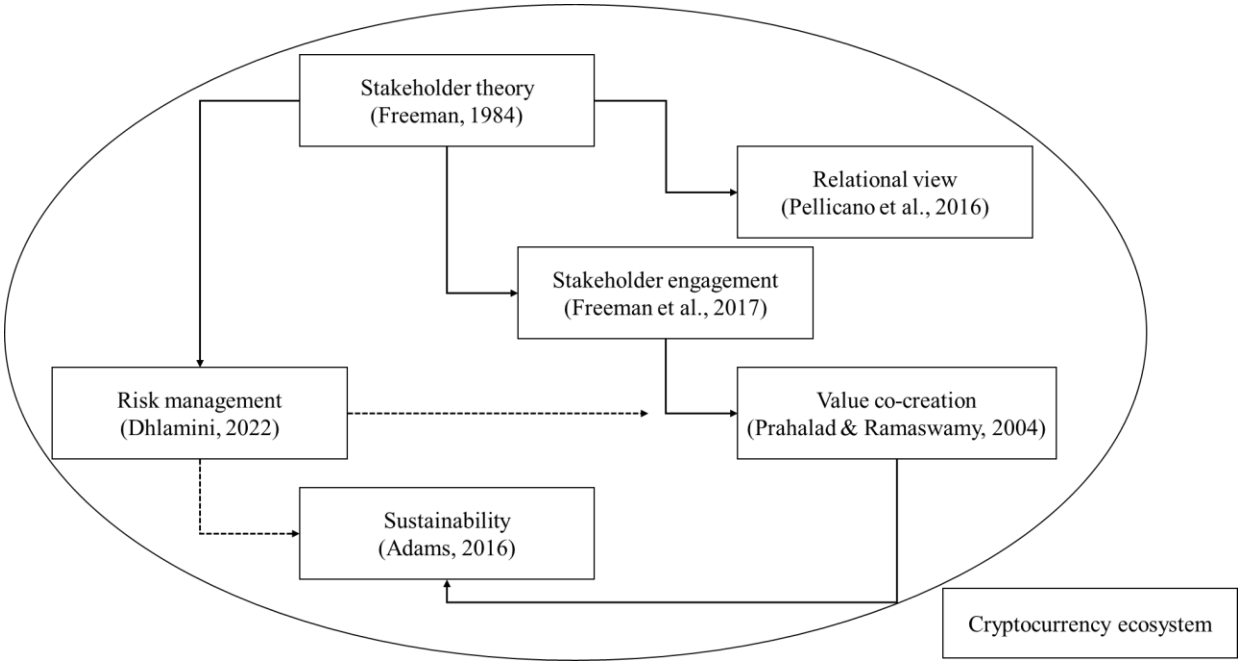


Figure 1. Theoretical Framework

The figure depicts the theoretical connections linking stakeholder theory, risk management, and value co-creation within the cryptocurrency ecosystem. It illustrates how engagement mechanisms and relational governance enable the transformation of systemic risks into sustainable, co-created value.

6. Conclusions, limitations and future research

This study demonstrates that the cryptocurrency ecosystem combines transformative potential with systemic fragility. While decentralization and transparency foster innovation and inclusion (Tapscott & Tapscott, 2016; Adhikari et al., 2025; Afzal & Asif, 2019), they also amplify volatility, fragmentation, and regulatory uncertainty (Alvarez, 2018; Biju & Thomas, 2023; Almeida & Gonçalves, 2022). These dynamics confirm that digital financial ecosystems must be examined through integrated frameworks that link stakeholder engagement (Freeman, 1984), risk management (Rehman et al., 2019), and value co-creation (Prahalad & Ramaswamy, 2004), explaining how trust, legitimacy, and governance emerge in decentralized contexts).

Stakeholder engagement acts as a systemic stabilizer, reducing uncertainty and enhancing adaptive capacity (Sherman & Ford, 2014). Risk management should evolve from a control-oriented model to a collaborative and participatory process, aligning with the principles of network governance (Almen & Dentcheva, 2025). This shift implies a managerial transition from technology-centered to stakeholder-centered governance, embedding transparency, ethics, and

participation into blockchain design (Abdat & Lesueur, 2019; De Filippi & Wright, 2018). Accordingly, sustainability becomes an emergent property of collaborative governance, not merely a by-product of market maturity (Adams et al., 2016; Freudenreich et al., 2020).

About managerial implications there is the need of generating a co-creation process for sustainability, which involves embedding ESG and transparency principles into blockchain infrastructure.

This study is limited by the fast-evolving nature of cryptocurrency regulation, which may not be fully captured in the analysis. The theoretical focus on stakeholder theory, risk management, and value co-creation excludes other relevant approaches. Moreover, the proposed framework remains conceptual and requires empirical validation.

Future research should aim to harmonize global cryptocurrency regulations to reduce volatility and enhance predictability, explore AI-driven risk management tools for systemic resilience, and investigate how different forms of stakeholder engagement influence value co-creation and governance effectiveness across diverse market environments.

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Targeted Trends: Unlocking the Power of Social Media Marketing on Mobile Banking Apps

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Abstract

Introduction: Social media has redefined marketing by allowing organizations to design precise, cost-effective campaigns that influence consumer decision-making across generations. As mobile banking and personal finance applications become increasingly embedded in daily life, it is important to understand how digital marketing strategies drive their adoption.
Aim: The study aims to analyze the relationship between social media marketing practices and mobile banking adoption, with a specific focus on generational differences, geographic contexts, and interest-based targeting. It seeks to explain how these factors enhance user engagement, trust, and long-term loyalty.
Method: Using the Technology Acceptance Model (TAM) as a theoretical lens, the research evaluates how electronic word-of-mouth, informativeness, and interactivity affect perceived usefulness and ease of use. Approximately 200 surveys were collected in Massachusetts, and multiple regression analysis was applied to examine the causal linkages between marketing tactics and mobile banking uptake.
Findings: Preliminary analysis suggests that campaigns tailored to user interests, high-engagement platforms such as TikTok and Instagram, and influencer-led strategies are especially effective in promoting adoption. Differences by age group and geographic setting also significantly shape adoption patterns, highlighting the importance of segmentation.
Conclusion: Customized social media strategies can strengthen user trust, increase engagement, and enhance customer loyalty in mobile banking, positioning them as critical tools in digital finance.
Originality and value: This study advances understanding of how targeted advertising affects financial behavior and offers practical insights for banks and fintech firms to design more effective, evidence-based digital strategies.

Keywords: social media marketing, mobile banking, fintech adoption, consumer behavior
JEL Codes: M31, G21, O33

1. Introduction

Generational differences play a decisive role in how consumers interact with technology and respond to marketing strategies. For example, Baby Boomers typically prioritize product reliability and post-sale support and continue to engage heavily with traditional media channels such as television and print. Generation X tends to value long-term brand consistency and trust and responds well to blended marketing approaches that combine digital and conventional formats. Millennials are more attuned to ethical branding and social responsibility and engage heavily with influencer-driven content. Generation Z—the most digitally-native cohort—prefers rapid, visually-rich content delivered via mobile-first platforms such as TikTok and Instagram.

Social media has transformed brand communication by providing scalable, cost-effective platforms for content dissemination and user engagement. For instance, as M. Saravanakumar

and T. Sugantha Lakshmi (2012) observe, digital tools enable both consumers and brands to share and amplify content with minimal effort, making social media a cornerstone of modern marketing.

In parallel, the development of mobile banking has reshaped how consumers manage their finances. Early collaborations between banks and telecommunications providers in the 1990s laid the groundwork for mobile financial services, transforming mobile devices into tools for real-time transactions and personalized financial management. For example, research shows that online banking usage in the U.S. increased dramatically in the early 2000s.

This study investigates how generational preferences influence the effectiveness of social-media marketing in promoting mobile-banking adoption. Grounded in the Technology Acceptance Model (TAM), our research examines how campaign characteristics such as informativeness, perceived ease of use, interactivity, and electronic word-of-mouth (eWOM) influence user engagement, trust, adoption intention, and ultimately long-term loyalty. Drawing on recent evidence that eWOM significantly shapes technology adoption in the banking context, for instance, in developing markets, we extend the TAM by incorporating targeted digital campaign features.

Using survey data collected from approximately 200 respondents in Massachusetts, we apply multiple-regression analysis to test how interest-based targeting, platform selection (e.g., TikTok vs Facebook/X), age cohort, and geographic context moderate the effectiveness of social media campaigns for mobile-banking apps. The findings generate actionable insights for banks and fintech companies aiming to optimise their digital outreach and enhance user adoption, engagement, and loyalty.

To summarise, this paper advances knowledge in two main ways: (1) by linking specific social media marketing practices (e.g., interest-based targeting, platform choice, influencer-led campaigns) with mobile banking adoption in a generational and geographic context; and (2) by providing practical guidance for financial institutions seeking to refine their digital marketing approaches in a rapidly evolving fintech environment.

Accordingly, we test the following hypotheses:

1. Campaigns aligned with users' personal interests (e.g., fitness, technology) will lead to increased mobile-banking engagement and adoption.
2. Younger users (Gen Z and Millennials) will be more responsive to targeted digital campaigns than older cohorts (Gen X, Boomers).
3. Urban users will exhibit higher adoption rates, suggesting geographic context as a moderating factor.
4. Campaigns on mobile-first platforms such as TikTok and Instagram will generate stronger engagement than those on Facebook or X.
5. Users' trust in the platform will enhance the effectiveness of marketing messages.
6. Frequent exposure to ads will boost adoption rates, though beyond a certain threshold, diminishing returns will appear.
7. Users influenced via TikTok and Instagram will report higher mobile-banking usage than those reached through other platforms.

Collectively, these hypotheses form the basis for a strategic roadmap that banks and fintech firms can apply to refine acquisition and retention strategies across diverse user segments.

2. Literature Review

The rapid evolution of financial-technology (FinTech) firms has significantly reshaped marketing strategies within the banking sector. In particular, social-media marketing has empowered institutions to engage consumers in real time, deliver personalized outreach, and measure campaign performance with unprecedented precision. Unlike legacy advertising, digital

platforms support dynamic feedback loops and data-driven optimisation, enabling financial service providers to fine-tune their messages and targeting strategies.

For example, one recent study found that digital marketing functions as a mediator between FinTech innovation and financial inclusion in the Jordanian banking sector. Another investigation demonstrated that stronger social-media engagement is associated with greater usage of mobile trading and FinTech applications among younger cohorts.

In this light, recent research emphasises three core facets of social-media marketing in the FinTech and mobile-banking arena: platform selection, content style, and personalization. For instance, Sharma, Banerjee, and Paul (2022) found that social-media campaigns affect the cognitive stages of mobile-banking adoption, especially among younger users. Similarly, Addula (2025) highlights how social influence and perceived cost influence Gen Z's adoption behaviour. Further work identifies trust, perceived ease of use, and perceived usefulness as enduring drivers of mobile-banking uptake. The classic Technology Acceptance Model (TAM) remains a foundational theoretical framework for digital service adoption; recent extensions incorporate trust, social influence, and perceived risk to better capture the nuances of user intentions in the FinTech context. (Aliza et al., 2025; Abdou Alamir, 2025)

Another important dimension is demographic segmentation. Empirical evidence suggests that younger, urban populations are more inclined to adopt mobile banking services, underlining the importance of tailored marketing campaigns. For example, Koziel & Shen (2023) and Sharma (2022) document higher mobile-banking uptake among younger users in urban contexts. Yet, fairness perceptions in demographic targeting must be managed, or risk alienating consumers (Shaddy et al., 2025).

Hyper-personalization has emerged as a key strategy in FinTech marketing. Through predictive analytics and deep-learning segmentation, FinTech firms deliver highly tailored experiences that improve brand loyalty and customer satisfaction (Popoola, 2025; Mitra & Paul, 2025). For example, a recent sector-specific review found that digital marketing enhances customer acquisition and engagement in FinTech by leveraging AI, influencer-led content, and short-form video campaigns.

Moreover, social-media platforms are increasingly transforming into transactional ecosystems. Social-media payment platforms (SMPPs) — such as WeChat Pay, Instagram Checkout, and Facebook Pay — allow users to transact while remaining within social interfaces. These innovations are especially popular among younger digital-natives, further blurring the lines between social interaction and financial behaviour (Sukumaran, 2025).

In summary, the literature points to five pillars of effective FinTech marketing: (1) platform selection (e.g., mobile-first, video-led), (2) content engagement (e.g., interactivity, influencer credibility), (3) demographic targeting (especially generational/urban cohorts), (4) hyper-personalization powered by AI/ML, and (5) transformation of social platforms into transactional spaces. These insights underpin the conceptual framework guiding the present study.

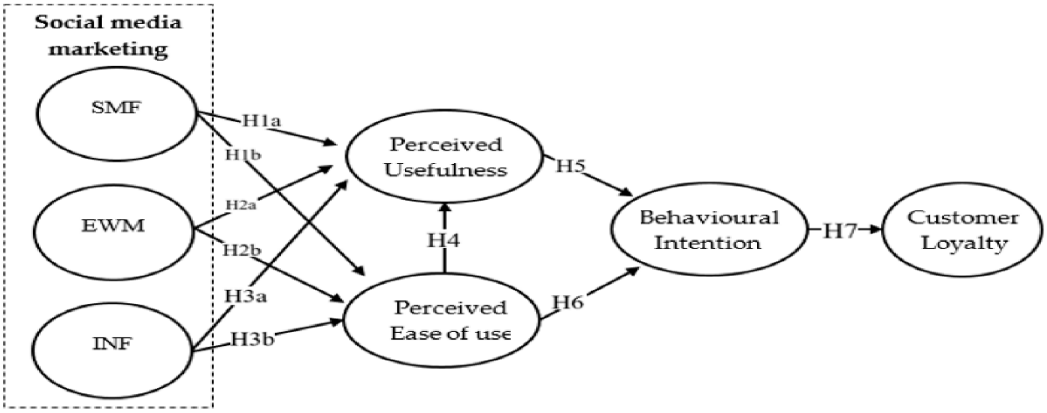


Figure 1. Conceptual framework

Source: Authors' contributions

3. Research Methodology

This study examines the influence of social-media marketing practices on the adoption of mobile-banking applications, thereby addressing a notable gap in the literature regarding how digital marketing campaigns across generational cohorts affect financial-technology behaviours. Although prior investigations have identified social media's role in mobile-banking uptake, especially among younger demographics (Sharma et al., 2022), the specific effects of advertising content characteristics, platform engagement, and demographic segmentation remain underexplored.

To explore this, we adopted a quantitative, survey-based design aimed at capturing behavioural traits, platform-engagement patterns, and mobile-banking usage habits. The survey instrument comprised fourteen Likert-scale items and sixteen multiple-choice questions, targeting constructs such as ad-exposure frequency, trust in social-media influencers, perceived informativeness of marketing content, and mobile-banking usage behaviour. The survey was disseminated via social-media platforms, email outreach, and peer-to-peer sharing. A total of 209 responses were collected; following data-cleaning procedures (removal of incomplete responses and outliers), 155 valid responses were retained for analysis. The sample skewed toward 18- to 24-year-old females, reflecting recruitment via online/social-media channels and attention to target demographic segments.

3.1 Methodological Framework

Our analytical framework integrates empirical data with theoretical foundations drawn from the Technology Acceptance Model (TAM) and current behavioural-marketing literature. We estimated two statistical models:

- A logistic-regression model to examine binary outcomes (e.g., whether a user reported being influenced by social-media ads).
- An ordinary least squares (OLS) regression model to analyse continuous outcome variables (e.g., mobile-banking usage frequency).

Independent variables comprised ad-exposure frequency, age, gender, education level, income, geographic region, and psychographic attributes (such as curiosity and trust in social-media influencers). This multivariate strategy enabled the identification of individual predictor effects while controlling for confounding variables.

3.2 Alternative Methodologies Considered

We considered qualitative methods (such as interviews with bank marketing executives or social-media platform managers) and mixed methods. However, given time and resource constraints and the risk of institutional response biases, we selected the survey-based approach for its scalability and suitability for generating statistically analysable data.

3.3 Limitations

This study has several limitations. First, the sample is predominantly US-based, younger, and active on social media, which restricts generalizability to older or less digitally literate populations. Second, the research does not include direct input from financial institutions or social-media companies, which limits industry-level insights. Third, while regression techniques permit identification of associations, they cannot establish causality. All key assumptions for regression modelling — including linearity, normality of residuals, and absence of multicollinearity — were tested and met, supporting the validity and reliability of the results.

Despite these constraints, the methodology offers a robust foundation for exploring mobile-banking adoption in the context of targeted social-media marketing.

4. Results and Discussion

This section presents our empirical findings on mobile-banking adoption influenced by social-media advertising, followed by a discussion of their implications. A total of 209 responses were collected via the online survey; after cleaning (removal of incomplete entries and outliers), 155 valid cases remained. The sample skewed toward younger, digitally experienced individuals: 67.7% of respondents were aged 18–24, and 52.9% were female. Despite broad exposure to mobile-banking advertisements, adoption was not uniformly high, indicating that visibility alone may not guarantee conversion.

4.1 Research Design

We employed a quantitative, explanatory research design grounded in the Technology Acceptance Model (TAM). Multiple linear regression was used to assess how demographic, psychographic, and behavioural variables predict mobile-banking usage.

4.2 Data Collection and Sample

Data were collected using a structured online questionnaire distributed via social-media platforms, email, and peer referrals. After data-cleaning procedures (removing partially completed responses and statistical outliers), 155 responses remained for analysis. The sample is predominantly young, urban, and technology-savvy, which should be noted when interpreting results.

4.3 Analytical Tools

Statistical analyses were conducted in Python (via Google Colab). We used pandas for data manipulation; statsmodels for regression modelling; matplotlib and seaborn for visualisation; and variance-inflation factors (VIFs) to test for multicollinearity.

4.4 Variables and Recoding

Categorical and ordinal variables were numerically recoded for analysis. The dependent variable, mobile-banking usage frequency, was measured on a 1–5 scale. Independent variables included advertising exposure (frequency), perceived ad-effectiveness, age, gender (male = 1), education level, region, trust in social-media influencers, curiosity toward digital innovation, and peer-recommendation behaviour.

4.5 Hypothesis Testing

Table 1. Hypothesis Testing Results

Hypothesis	Statement	Test	p-value	Result
H1	Interest-aligned ads increase usage	ANOVA	0.166	Not Supported
H2	Usage varies by age group	ANOVA	0.001	Supported
H3	Usage varies by region	ANOVA	0.001	Supported
H4	Usage varies by platform engagement	ANOVA	0.083	Not Supported
H5	Trust in influencers increases usage	ANOVA	0.534	Not Supported
H6	Frequent campaigns increase usage	ANOVA	0.694	Not Supported
H7	TikTok/Instagram ads are more effective	t-test	0.006	Supported

Source: Authors' contributions

4.6 Regression Analysis

Table 2. OLS Regression Results

Variable	Coefficient (β)	p-value	Interpretation
Advertising Frequency	0.181	0.033	Higher exposure is associated with increased usage.
Perceived Ad-Effectiveness	0.277	0.019	Ads perceived as effective significantly boost usage.
Age	−0.165	0.006	Older respondents are less likely to use mobile banking
Gender (Male = 1)	−0.503	0.000	Male respondents report lower usage vs female? *[check coding]*
Curiosity	−0.524	0.000	Lower curiosity about digital innovation correlates with higher usage
Social-Media Influence	−0.194	0.007	Less influence by social media correlates with greater adoption
Recommendation Behaviour	−0.161	0.021	Those more likely to recommend ads tend to use mobile banking less

Source: Authors' contributions

4.7 Discussion

Our findings reveal that demographic and platform-specific factors significantly influence mobile-banking adoption. Hypotheses H2 (age), H3 (region), and H7 (platform effectiveness) were supported, suggesting that younger users, urban settings, and mobile-first platforms (TikTok/Instagram) are key drivers of adoption. In contrast, personalization of ads (H1), general platform engagement (H4), influencer trust (H5), and campaign frequency (H6) were not significant, indicating that simply matching interests, increasing engagement, or exposure does not guarantee higher uptake.

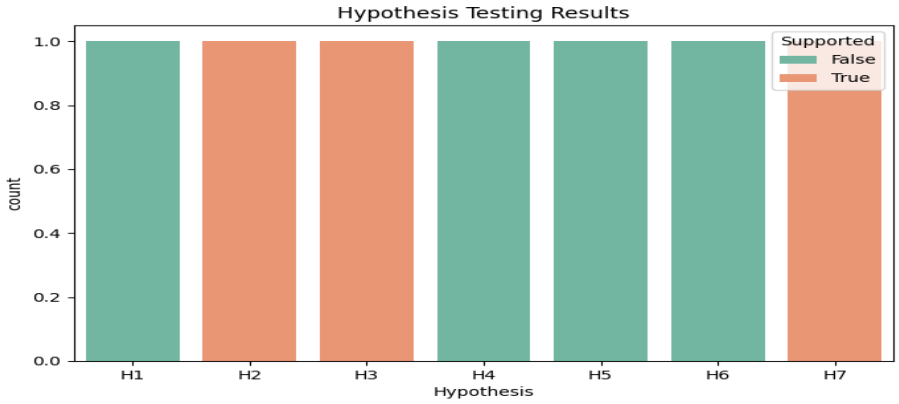


Figure 2. Hypothesis Testing Results

Source: Authors' contributions

The regression results further show that perceived ad-effectiveness and exposure frequency are positive predictors of adoption. Interestingly, higher age, lower curiosity toward digital innovation, and lower social-media influence were each negatively associated with usage. These last findings suggest that users who are less engaged with ongoing digital marketing trends may adopt mobile banking for other reasons (e.g., necessity, reliability) rather than due to campaign stimuli. This nuance refines the Technology Acceptance Model (TAM) in our context by showing that delivery context (platform and demographic fit) matters more than sheer volume or influencer leverage.

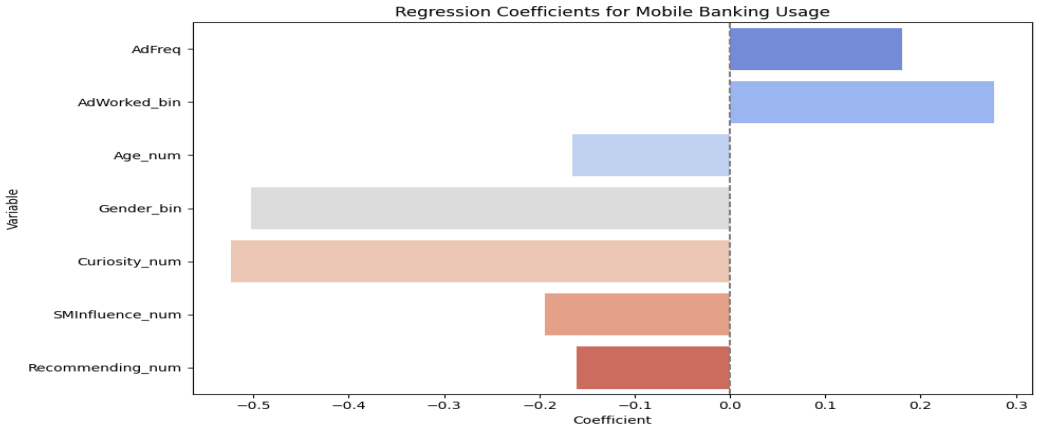


Figure 3. Regression Coefficients for Mobile Banking Usage

Source: Authors' contributions

From a practical perspective, financial institutions and fintech firms should prioritise targeting younger, tech-savvy, and urban users via platforms like TikTok and Instagram, while ensuring that campaign content is perceived as effective rather than merely frequent or broad. Additionally, the negative association of lower curiosity and lower social-media influence with higher usage suggests that campaigns might need to re-frame messaging for older or less digitally engaged cohorts—focusing less on novelty and more on trust, ease-of-use, and reliability.

It is important to acknowledge limitations: the sample's demographic skew (young, digitally literate, U.S.-based), reliance on self-report, and cross-sectional design limit generalisability and causality claims. Future research could expand to cross-country samples, longitudinal designs, and objective usage data to validate and extend these findings.

5. Conclusion and Strategic Recommendations

This study demonstrates that targeted social-media advertising significantly influences the adoption of mobile-banking applications—primarily when campaigns are aligned with specific demographic segments and delivered via mobile-first platforms. The regression model, explaining approximately 87% of usage variance, affirms the theoretical framework and foregrounds platform and cohort context as critical drivers of adoption.

5.1. Strategic Recommendations

- Deploy campaigns on TikTok and Instagram tailored to Gen Z and Millennial users.
- Use analytics to personalize ad content based on behaviour rather than simply increasing exposure.
- Prioritize ad quality—clear value propositions and engaging visuals—over high-frequency messaging.
- Segment by geography and demographic to maximise campaign relevance.

5.2. Managerial Implications

For banks and fintech firms:

- Focus resources on younger, urban users via short-form, visual content.
- Shift away from broad influencer-led campaigns toward brand-led messaging emphasising trust and usability.
- Avoid over-relying on repetitive campaigns; instead, emphasise meaningful, segmented content tailored to user cohorts.

These insights provide a roadmap for digital-finance organisations seeking efficient customer acquisition and retention in a generationally diverse market landscape.

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A Study on the Interaction Between Consumer Choice and Ambience in Pop-Up Restaurants

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Abstract

Introduction: Pop-up restaurants are defined as restaurants that offer temporary services based on a specific theme and concept for a limited period of time. Emerging as a gastronomic trend in recent years, pop-up restaurants offer chefs and restaurant owners the opportunity to attract more investment and grow their business with less financial risk, while also providing guests with a unique and memorable dining experience.
Aim: This study aims to examine the interaction between consumer preferences and ambiance elements in pop-up restaurants from a quantitative perspective.
Method: The study aims to contribute to the sectoral and academic literature by analyzing the impact of these factors on consumer preferences using quantitative methods. In the research, a survey was administered to 30 participants who had experienced pop-up restaurants in major Turkish cities (Istanbul, Ankara, and Izmir). Data were collected using a 5-point Likert scale and SPSS 28.0 software was used for statistical analysis. During the analysis process, descriptive statistics, correlation analysis, and multiple regression models were applied.
Findings: In this context, consumers' motivations for choosing pop-up restaurants have been observed to be closely related to ambiance factors such as spatial layout, lighting, music, design, and atmosphere. It is evident that not only food quality but also the atmosphere, design, lighting, music, and overall ambiance of the venue play a decisive role in consumers' preference for such restaurants.
Conclusion: The findings reveal that ambiance has a significant and positive effect on consumer preferences in pop-up restaurants. In particular, musical harmony, the unique design of the space, and lighting elements are among the factors that most strongly influence consumers' preference intentions. Furthermore, differences were observed between demographic variables (age, income, and education level) and the perception of ambiance. Younger participants were found to be more sensitive to creative ambiance factors, while consumers in the high-income group tended to evaluate gastronomic quality independently of ambiance. As a result of the findings obtained in the study, the research findings emphasize that ambiance is a critical element in creating a successful customer experience in pop-up restaurants.
Originality and value: This research offers a unique contribution by focusing on pop-up restaurants, an area that has been studied to a limited extent in the gastronomy literature. Pop-up restaurants differ from traditional restaurant businesses in that they operate for a short period of time and are experience-oriented. However, quantitative studies on the role of ambiance in consumers' preference for these restaurants are quite limited.

Key words: pop-up restaurant, consumer preference, ambiance, atmosphere, gastronomic experience
Jel Codes: M31, Z32, Z33

1.Introduction

Throughout history, the constant evolution of dietary habits, coupled with humanity's discovery

of fire, has contributed to the introduction of new flavors and the development of taste preferences. The transition to settled life and the advent of agriculture significantly supported this development. Over time, in civilized societies, open-air markets and street vendors became places where different flavors could be discovered. Thanks to public cooking areas called "thermopolia" in ancient cultures, people were able to socialize while also trying foods they were unfamiliar with (Sükan, 2023). The profound changes in culinary culture that occurred with the discovery of the American continent, and the industrial revolution (Mealey, 2018) further triggered people's desire to experience new flavors. Thus, restaurants emerge as an important element that shapes and evolves this experience. It is observed that individuals not only seek innovation in food and beverages but also tend to experience different environments to encounter different cultures and engage in social interaction. Due to this expectation, it is evident that restaurants must continuously strive to renew and improve themselves. It has been observed that venues offering guests cuisines from different cultures around the world and providing diverse experiences increase guest satisfaction through their creative approaches (Uygur and Doğan, 2013). In addition to diversity, ambiance also contributes to enriching the guest experience. It is seen that every detail in creating the ambiance, from the decoration to the story presented by the brand, is aimed at increasing the guests' desire to experience. Furthermore, sharing pop-up restaurants on social media encourages individuals to share their experiences, increasing the pleasure they derive from their own experiences and encouraging others to have these experiences (Bezek and Birdir, 2023). For this reason, the desire to experience new and different flavors contributes to the development of gastronomic tourism by enabling people to travel long distances and visit new generation restaurants, pop-up restaurants, and themed restaurants (Viskovic and Komac, 2023). Pop-up restaurants, which emerged to meet guests' expectations of experiencing new and different flavors, are seen to primarily serve short-term menus in temporary venues (Baras, 2016).

Due to the constant change in venues, individuals are interested in traveling to experience pop-up dining. For this reason, pop-up restaurants and events are considered a persuasive factor in individuals' participation in gastronomic tourism. A review of the literature reveals that the concept of pop-up restaurants, which has emerged as a new trend, and pop-up dining events are covered in a limited body of literature. In line with this information, this study examines how pop-up restaurants, which are becoming increasingly widespread around the world and have quite successful examples in Turkey, came about, their distinguishing features, differences from traditional restaurants, and their advantages and disadvantages. Data was obtained by reaching out to guests, those who prefer pop-up restaurants, and those who have had a pop-up restaurant experience. This study aims to guide chefs, restaurant managers, and those who want to work on the pop-up dining experience, as well as to contribute to gastronomic tourism and the sector.

2.Literature Review

2.1.Definition, Emergence, and History of Pop-Up Restaurants

Many factors, such as increased competition, economic fluctuations, and rapid technological development, influence consumer behavior and preferences. This situation leads businesses to carry out their marketing activities by creating different and memorable experiences. Defined as interaction spaces that create a new environment and perception beyond the conventional, shaped by a different venue and concept each time, pop-up venues are designed to provide customers with a surprising, different, and memorable experience (Cordan and Karagöz, 2013). The first examples of pop-up spaces appeared in New York in 2003 and spread to other cities and states in the United States (US). Over time, they began to appear in European cities such as London, Berlin, and Paris. The fashion and textile industry was the first to use pop-up venues, which were later adopted by other sectors (Karagöz, 2012). The growing interest in pop-up venues attracted the attention of the food and beverage industry, leading to the emergence of pop-up restaurant concepts. Pop-up restaurants are defined as food and beverage businesses that open in temporary locations and generally operate for a few days to a few weeks, attracting attention with their flexible and creative business models (Jones et al., 2017). The origin of this idea lies in dinner

clubs, which became popular in the 1960s as informal dining events where only dinner was served (Jenkins, 2024). The first examples of pop-up dining events and pop-up restaurants, recognized by the American Chefs Federation as a "trend in seeking interesting dining experiences," began to appear in Cuba and the US in the early 2000s and became quite popular in the UK and Australia within a decade (Rodgers, 2011; Taylor et al., 2018). Initially, they gained recognition through events organized by independent chefs or restaurant owners; following increased demand, larger and more established restaurant chains, brands, and chefs also began organizing them. Pop-up restaurants synthesize food, performance, and culture, establishing connections between theater, music, and art during the dining experience (Bishop and Williams, 2012). Known as Underground Dinner Clubs or Guerrilla Restaurants due to their temporary venues, pop-up restaurants can appear in various concepts at home gatherings, public spaces, or festival environments (Tryotter, 2024). Furthermore, depending on the concept, pop-up restaurant events can be organized in very different venues such as streets, parks, museums, art galleries, specially designed gardens, abandoned shops, recycled shipping containers, rooftop gardens, unused dilapidated buildings, or even a boathouse (Bardone and Kannike, 2018). Furthermore, existing restaurants, local eateries, family-run businesses serving only breakfast or lunch, and kitchens and dining areas unused at night can also be utilized for this purpose (Jenkins, 2024). Blogs and social media platforms are cited as important factors in the growing popularity of pop-up restaurants (de Solier, 2013; Tryotter, 2024). Taking advantage of the significant role social media plays in people's lives due to digitalization, restaurants share visually appealing content to encourage potential customers to choose them. In addition, pop-up restaurants frequently use social media platforms to announce their events and facilitate online reservations (Johnston and Baumann, 2014; Tryotter, 2024). This allows high-profile and interesting events to reach larger audiences (Cordan and Karagöz, 2013). The concept of pop-up restaurants has gained increasing attention in recent years as an innovative business model in the gastronomy sector. These restaurants, which operate on a temporary basis, offer flexibility in location selection, and embrace an experience-oriented service approach, enable consumers to enjoy a different gastronomic experience (de Jong & Varley, 2018). In this context, it is seen that consumer preferences are shaped not only by food quality but also by the ambiance and atmosphere elements offered by the restaurant.

Ambiance is one of the critical factors that influence customer perception and behavior in service businesses. Mehrabian and Russell's (1974) environmental psychology model suggests that factors such as spatial layout, lighting, music, and color directly affect consumers' emotional states and behavioral responses. This approach provides a fundamental theoretical framework for understanding the impact of restaurant ambiance on consumer preferences.Wakefield and Blodgett (1996) found that ambiance factors increase customer satisfaction and intention to revisit. Similarly, Ryu and Jang (2008) found that restaurant atmosphere has a strong effect on consumer perception and behavioral intention. It is noted that elements such as space design, lighting, and music contribute to consumers' holistic evaluation of the restaurant experience. Studies on pop-up restaurants are more limited. De Jong and Varley (2018) emphasize that pop-up restaurants offer consumers new experiences and that the temporary nature of the space increases consumer interest. Furthermore, Trendel and Werle (2015) state that experiential marketing is effective on consumer preferences in temporary gastronomic spaces. In this context, it can be said that ambiance is more striking and decisive in pop-up restaurants compared to permanent restaurants.

In conclusion, although the effect of restaurant ambiance on consumer preferences is frequently emphasized in the literature, examining this relationship in the context of pop-up restaurants is quite new. Therefore, the current study aims to fill the gap in literature by analyzing the interaction between consumer preference and ambiance in pop-up restaurants using quantitative data.

2.2. Characteristics of Pop-Up Restaurants and Their Differences from Traditional Restaurants

Pop-up restaurants are distinguished from traditional restaurants by the following characteristics (Tryotter, 2024):

They are generally smaller in size than traditional restaurants and have less seating capacity.They offer unique dining experiences that are significantly different from traditional restaurants in terms of atmosphere.They are temporary and operate in a specific location for a limited period of time.They have a more relaxed and experimental atmosphere, as chefs have the freedom to test new ideas and concepts.Their most important difference from traditional restaurants, which serve a fixed menu, is their creative and experimental, frequently changing, limited menus.Due to their temporary nature, smaller kitchen facilities, and the need to maximize efficiency, they have more limited and specialized menus than traditional restaurants. The menu is usually determined within the framework of a specific theme and the chef's area of expertise. Depending on their concept and target audience, they can serve all meals, including breakfast, lunch, and dinner.

Pop-up restaurants serving breakfast offer special items not found on traditional breakfast menus.

Lunch pop-ups are popular for their quick and healthy menus, catering to workers in urban areas and business districts.Dinner pop-ups are the most popular, featuring guest chefs, themed menus, and experimental dishes.Furthermore, pop-up restaurants do not offer delivery services because they operate on a limited schedule, lack the capacity and infrastructure to fulfill delivery orders, and, most importantly, do not allow customers to experience the atmosphere and concept.

However, with the Covid-19 pandemic, some pop-up restaurants have started offering takeout services.Advantages and Disadvantages of Pop-Up Restaurants Pop-up restaurant events, which are more expensive than traditional restaurants, are mostly run by professional and experienced chefs.

This helps chefs showcase their talents, while also creating opportunities for chefs without their own restaurants to find investors and for those with their own restaurants to create and test new menus and attract customers (Jenkins, 2024).Pop-up restaurants are distinguished from traditional restaurants by their limited duration and the fact that they mostly operate by reservation.

The limited duration of service aims to generate buzz and create a sense of urgency for potential customers (Jenkins, 2024).

This marketing method, known as guerrilla sensation, combined with elements inherent to pop-up restaurants, such as transience, variability, diversity, and uniqueness, creates the perception among customers that they should not be missed (Cordan and Karagöz, 2013).From the customers' perspective, however, this situation can be considered a disadvantage.This is because pop-up restaurants mostly operate in temporary venues, which can make it difficult to find a location.

On the other hand, the fact that they operate on a temporary and reservation-based basis can be a disadvantage in building customer loyalty. This is because visitors must be available at the appropriate time and make reservations quickly during the dates of the event.If these conditions cannot be met, there may be a decline in the loyalty of customers who want to visit pop-up restaurants (Lugosi et al., 2020). However, for chefs and restaurant owners who want to test the market for a newly created restaurant concept, providing service for a few weeks or months is important in terms of identifying and resolving potential problems, ensuring that the right market has been selected, and seeing repeat customer visits.

2.3. Advantages and Disadvantages of Pop-Up Restaurants

Compared to traditional restaurants, the lower financial risk associated with pop-up restaurants is considered an advantage for chefs and restaurant owners. If the expected demand is not met, it is possible to change locations and serve in a different area with less financial burden (Jenkins, 2024). On the other hand, instead of a fixed menu, special menus based on seasonal ingredients

prepared by chefs allow both chefs and customers to discover new flavors.

The temporary nature of pop-up restaurants also provides chefs or restaurant owners interested in pop-up restaurants with the advantage of trying new and different concepts without taking risks. This also contributes to the creation of an environment where people from different cultures can share their common interest in food around a specific theme (Eaton, 2014). From the customers' perspective, satisfying their desire for novelty through unusual concepts and special menus, not wanting to miss out on the experience due to the limited duration of operation, and the social experience of people with similar tastes coming together to create a social environment are among the reasons customers prefer pop-up restaurants (Aaltojarvi et al., 2018). Considering these characteristics and advantages of pop-up restaurants, their unique and original structure is the most important factor influencing customers' preference for them. Studies have also indicated that pop-up restaurants, preferred by individuals, especially Generation Y, who want to experience exciting and unusual dining experiences, have recorded an 82% growth per year (Taylor et al., 2018).

2.4. The Effect of Pop-up Restaurant Atmosphere and Ambience on Guests

Hospitality industry professionals constantly emphasize that they sell “experiences,” particularly “sensory experiences” in restaurants. While a restaurant's core product is food and beverages that appeal to people's sense of taste, its extended product is a much broader concept that encompasses the service it offers, the interaction between customers and employees, and the restaurant atmosphere that appeals to the other four senses (Heung and Gu, 2012: 1167). Kotler (1973: 50) defines atmosphere as “the effort to design a purchasing environment that produces certain emotional effects in the buyer that can increase the likelihood of purchase.” In fact, atmosphere refers to the physical and environmental elements that express the internal and external characteristics of a business. External characteristics include the exterior appearance of the business premises and elements outside the building, such as the parking area and garden layout. The internal characteristics of the business refer to elements such as the table or seating arrangement, the equipment used, and the adopted decor or design (Holder and Berndt, 2011: 391). Today, restaurant customers pay attention not only to good food but also to excellent service and a pleasant dining environment (Heung and Gu, 2012: 1167). For this reason, restaurant managers also use all factors that can contribute to the atmosphere as an argument to help create expectations for the dining experience before serving the customer. Any problem with the atmosphere can disturb customers and cause them to spend less time in the restaurant. It is a fact that physical environment elements, such as providing comfortable furniture in waiting areas or ensuring customers do not feel cramped while eating, positively influence customers (Sulek and Hensley, 2004: 236-237). Numerous studies have identified how customers perceive restaurant atmosphere using different dimensions. In his study, Bitner (1992) identified three dimensions related to atmosphere: environmental conditions, spatial arrangement-functionality-signs, and symbols-artworks, and called this the servicescape (an established environment that encompasses many atmospheric cues, providing individuality through various visual, olfactory, and auditory stimuli to create an image/picture of the entire perceptual image of a service organization). Environmental conditions consist of elements such as temperature, lighting, and scent; spatial arrangement, functionality, and signs consist of elements such as the furnishings and equipment used in the space; and symbols and artifacts consist of explicit or implicit elements with which people interact in an environment. Han and Ryu (2009) stated that the most appropriate dimensions for the physical environment are grouped into three categories: decor-artworks, spatial arrangement, and environmental conditions. Ha and Jang (2010), in their study investigating the mediating role of atmosphere in ethnic restaurants, identified the elements of atmosphere as interior design, music, mood, and order/facility aesthetics. Rosenbaum and Massiah (2011) divided atmosphere into four dimensions: physical, social, social symbolic, and natural. Heung and Gu (2012) identified four dimensions for evaluating restaurant atmosphere: facility aesthetics, ambiance, spatial layout, and staff, adding the attractiveness of the restaurant's view as a fifth element. They explained that the reason for this addition was that restaurants pay particular attention to the view when choosing a location during the establishment phase and that

customers consistently make reservations by the window. Additionally, the fact that the research was conducted in establishments with a view of Victoria Harbor was also cited as a reason. Alongside studies aimed at defining these dimensions of restaurant atmosphere, there are also studies analyzing the effect of restaurant atmosphere perception on customer satisfaction and behavioral intention (Sulek and Hensley, 2004; Han and Ryu, 2009; Ha and Jang, 2010; Lin and Mattila, 2010; Jang, Liu, and Namkung, 2011; Heung and Gu, 2012; Ariffin, Bibon, and Abdullah Raja, 2012; Ünal, Akkuş, and Akkuş, 2014; Temeloğlu, Taşpınar, and Soylu, 2017; Voon, 2017).

Mehribian and Russell (1974) propose that the environment influences individual behavior (M-R model). According to this model, the physical environment affects the individual's emotions and leads to either the performance of the behavior or avoidance of the behavior. The model developed by the authors consists of three components: environmental stimuli, emotional states, and approach or avoidance behavior. Accordingly, the model suggests that the environment will elicit an emotional state (such as satisfaction) in individuals, and this state will cause the individual to approach or avoid that environment. Consumers' emotions and feelings determine what they do and how they do it. Consumers also experience different emotions in different environments. Therefore, these different emotional states encourage their approach or avoidance (Milliman, 1986). Thus, the M-R model provides a theoretical framework suitable for the purpose of this study. Based on the model, it is assumed that the physical environment in restaurant businesses will be effective in eliciting consumers' emotional states. Kotler (1973) defines the concept of physical environment as the conscious design of physical space to create specific emotions in consumers and increase the likelihood of purchase. Bitner (1992) highlights the holistic impact of the tangible physical environment on the development of service quality and puts forward the concept of “service environment.” Accordingly, the physical environment is effective in enriching consumers' perception of service. In this context, he argues that three dimensions are effective in creating the service environment: environmental conditions, spatial layout and functionality, and signs, symbols, and artificial artifacts. However, Bitner (1992) has been criticized for neglecting the social perspective in the physical environment (Ryu and Jang, 2008a). Wakefield and Blodgett (1999) describe tangible physical elements as an indispensable factor in increasing enjoyment. This situation determines consumers' intention to become repeat customers and their desire to recommend the product to others. Similarly, Turley and Milliman (2000) focused on the effect of physical environment elements on consumer behavior. According to the researchers, there are five elements of the physical environment: external elements, internal elements, order and design, point of purchase, and the individual. However, this study has been criticized for its lack of theoretical foundation and empirical support (Gilboa and Rafaeli, 2003). Various studies have been conducted in the literature to measure the effects of the physical environment. For example, Parasuraman, Zeithaml, and Berry (1988) state that five elements are important in service quality: tangible elements, reliability, responsiveness, assurance, and empathy, using the SERVQUAL scale they developed. The tangible elements dimension of the scale includes physical amenities, equipment used, and employees. Similarly, Stevens, Knutson, and Patton (1995) aimed to determine service quality in restaurants with their DINESERV scale. The purpose of both scales is to comprehensively evaluate service quality. However, these scales are limited in terms of evaluating the tangible elements in restaurants in more detail (Ryu and Jang, 2008a). A study was also conducted by Raajpoot (2002) to measure tangible elements in the food sector, and the TANGSERV scale was developed. This scale consists of three dimensions: ambiance elements (such as music and temperature), layout elements (such as location and seating plan), and product/service elements (such as food presentation). However, due to methodological dilemmas, the reliability and validity of the findings of this scale are debated. At this point, existing scales respond only to a limited extent to the needs of restaurant operators (Ryu and Jang, 2008a). In line with these criticisms, Ryu and Jang developed the Dinescape scale in 2005. Dinescape is defined as “the man-made physical environment and the space consisting of individuals in the dining area of restaurants” (Ryu and Jang, 2005: 5). Unlike previous scales, this scale only considers the food environment inside the restaurant and does not address other areas within the restaurant or the environment outside the

restaurant (Ryu and Jang, 2007; Ryu and Jang, 2008a). In other words, the scale emphasizes physical environment elements in improving service quality in restaurants. Based on this, this study sought to determine the effect of the Dinescape scale on consumers' food experience and satisfaction. Research also highlights the direct relationship between the physical environment and consumer satisfaction (Chang, 2000; Chebat and Michon, 2003). Chang (2000) states that the perceived physical environment is a direct determinant of consumer satisfaction and that this satisfaction directly and positively influences consumer behavior. The scale consists of six dimensions: facility aesthetics, lighting, ambiance, order, table arrangement, and service personnel.

Studies aimed at understanding consumer behavior highlight the importance of the concept of atmosphere, particularly in hospitality services (Countryman and Jang, 2006; Robson, 1999). Kotler (1973) defines atmosphere as the conscious design of a space to produce certain emotions that increase the likelihood of purchase by consumers. The concept of ambiance, one of the dimensions of atmosphere, refers to abstract factors in the background of a space, such as temperature, lighting, scent, and music. These abstract factors are generally not noticed without conscious effort on the part of the consumer (Baker, 1987). However, they have a significant effect on emotions. Emotions are important determinants of purchasing decisions and our level of satisfaction with a business (Zhang, Ma, & Li, 2008; Ladhari, Brun, & Morales, 2008; Ryu & Jan, 2008). Lighting is one of the ambiance factors that has been researched for many years for its effect on people's mental states and emotions. Ambient lighting is thought to affect a person's level of mental arousal, cognitive connections, and overall behavior, making it a potential and effective tool for those working in marketing. It is also relatively inexpensive and easy to change among other atmospheric components (Biswas, Szocs, Chacko, & Wansink, 2017). Various studies have been conducted in different sectors to understand the effect of lighting on consumer behavior. Kurtich and Eakin (1993) found that the type of lighting in an environment directly affects the space a person occupies and their perception of quality, as well as factors that influence a person's mental, physical, emotional, and psychological awareness. Summers and Hebert (2001) noted that people touch more products and spend more time examining them in brightly lit environments. Areni and Kim (1994) revealed that consumers examined more wine bottles in bright light than in soft light environments. The study indicated that individuals examined more products in brighter environments, but this had no effect on sales or the time spent in the store. Gal, Wheeler, and Shiv (2007) stated in their laboratory research that participants preferred to drink stronger coffee in bright environments and lighter coffee in dim environments. As a general approach, it is thought that people are more comfortable in dimly lit restaurants, stay longer, and order more food. However, a study by Wansink and Van Ittersum (2012) reached the opposite conclusion. In a fast-food restaurant, adjustments were made to play softer music and provide dim lighting, and it was observed that people eating in these conditions consumed less food than those eating in the main dining area. In brightly lit environments, they ate more. Various studies examining eating behavior in environments with and without light, i.e., in darkness and in light (Scheibehenne, Todd, & Wansink, 2010; Wansink, Shimizu, Cardello, & Wright, 2012), found that participants consumed more food in completely dark environments. Participants were able to better control their consumption behavior in a well-lit environment and ended their eating behavior earlier. In this study, where the same foods were offered to all participants, how the light in the environment affected food choices was not investigated (Scheibehenne et al., 2010). Biswas et al. (2017) suggested in their research that mental alertness levels decrease in dim light, leading to unhealthy food choices, while brighter light leads to healthier and lower-calorie food choices. Research indicates that in environments where mental alertness levels decrease, such as dim lighting, we tend to make more impulsive decisions, and these impulsive decisions lead to unhealthy food choices (Wansink, Just, & Payne, 2009).

3.Materials and Method

In this study, a quantitative research method was used to examine the interaction between consumer preferences and ambiance in pop-up restaurants. A cross-sectional survey model was

adopted in the research, and data were collected using a questionnaire technique. In the quantitative approach, the relationships between ambiance factors and consumer preference intentions were analyzed using statistical methods. The quantitative approach allows for the analysis of the relationships between ambiance factors and consumer preference intentions using statistical methods. The population of the study consists of individuals who have experienced a pop-up restaurant in the last year in Turkey's three major cities (Istanbul, Ankara, and Izmir). Since it was not possible to reach the entire population, convenience sampling was used. The sample size was determined based on reliability and statistical validity criteria, and a total of 30 participants were reached. The participants' demographic information, such as age, gender, income, and education level, was also taken into account in the analysis process.

A questionnaire consisting of three sections was used as the data collection tool:

Demographic Information: Questions measuring participants' age, gender, income level, educational status, and frequency of pop-up restaurant experience were included. Ambience Scale: Statements adapted from the DINESCAPE scale developed by Ryu and Jang (2008) were used to measure restaurant atmosphere. This section included a total of 18 items related to sub-dimensions such as lighting, space design, music, smell, signage, and ergonomics.

Consumer Preference Scale: Seven items consisting of statements measuring participants' intention to choose pop-up restaurants were used. The scale included behavioral intention variables such as “intention to revisit,” “willingness to recommend,” and “satisfaction with the experience.”

All items were evaluated on a 5-point Likert scale (1=Strongly Disagree, 5=Strongly Agree).

The surveys were collected in person over a two-month period in 2025. Data was collected from participants on a voluntary basis, with attention paid to the principles of anonymity and confidentiality. The collected data were analyzed using the SPSS 28.0 statistical package program. During the analysis process, Cronbach's alpha coefficients were calculated to measure the internal consistency of the scales in the Reliability Analysis. Descriptive statistics presented the demographic characteristics of the participants, along with mean and standard deviation values.

Correlation Analysis examined the relationships between ambiance factors and consumer preferences. Multiple Regression Analysis tested the predictive power of ambiance factors on consumer preferences. Ethical principles were adhered to in the research, and informed consent was obtained from the participants. Participants' personal information was kept confidential and used solely for scientific purposes.

This study was structured based on explanatory and descriptive quantitative research methods. The main objective of the study was to statistically analyze the effect of ambiance elements (lighting, music, decoration, spatial arrangement, etc.) in pop-up restaurants on consumer preferences. A cross-sectional data collection method was used, and a correlational survey model was adopted.

4.Discussion, practical and managerial implications

The findings of this study reveal a strong and dynamic relationship between consumer choice behavior and the ambience of pop-up restaurants. Ambience—defined through sensory cues such as lighting, music, décor, spatial design, and scent—emerges as a central determinant of consumers’ affective responses and overall dining satisfaction (Bitner, 1992; Kotler, 1973). The temporary and experiential nature of pop-up restaurants amplifies this effect, as guests perceive ambience not only as part of the physical environment but also as a unique experiential narrative that differentiates pop-ups from traditional restaurants (Holloway et al., 2016).

The results indicate that atmospheric design significantly influences consumers’ emotional engagement, perceived authenticity, and willingness to pay premium prices. The ephemeral character of pop-up venues encourages novelty-seeking behavior and enhances the sense of

exclusivity, which in turn affects consumer decision-making. These findings are consistent with the "servicescape" theory (Bitner, 1992) and prior research emphasizing the role of multisensory stimuli in shaping consumer evaluations within experiential dining contexts (Spence et al., 2014).

Moreover, the study identifies that social interaction and brand storytelling act as mediating variables in the ambience-choice relationship. Consumers are not only influenced by aesthetic and sensory factors but also by the perceived social atmosphere—how they connect with other guests, chefs, and event organizers. Pop-up restaurants thus function as social and cultural spaces, where ambience serves as both a marketing and community-building tool (Han & Hyun, 2017). This duality of commercial and experiential purpose differentiates pop-up restaurants within the contemporary hospitality landscape.

Practical Implications

From a practical standpoint, the findings highlight several strategic considerations for practitioners and entrepreneurs in the pop-up restaurant sector. First, design coherence—ensuring consistency among sensory elements such as color, sound, and aroma—is crucial in creating a memorable dining experience. Restaurateurs should view ambience not as decoration, but as a strategic branding asset that shapes consumer perception and emotional connection (Ryu & Jang, 2008).

Second, pop-up organizers should invest in story-driven ambience design, aligning visual and sensory cues with the thematic concept of the event. For instance, a local cuisine-themed pop-up can integrate traditional music, regional décor, and storytelling menus to evoke cultural authenticity. Temporary venues can also leverage sustainable and modular design elements to enhance both aesthetic appeal and operational efficiency.

Additionally, digital engagement before and after the event—via social media teasers, influencer collaborations, and interactive online content—extends the sensory experience beyond the physical space. This integration between digital storytelling and physical ambience enhances anticipation and post-event loyalty among consumers (Harrington et al., 2017).

Managerial Implications

For managers and decision-makers, this study emphasizes the importance of adopting a holistic ambience management framework. Managers should conduct sensory audits prior to events to ensure the alignment of sound, lighting, and spatial arrangement with the intended emotional outcome. Employee training should also focus on emotional intelligence and service behavior, as staff interactions form an integral part of the perceived atmosphere (Harris & Ezeh, 2008).

Furthermore, data-driven approaches—such as tracking customer sentiment through digital feedback, eye-tracking technologies, or on-site behavioral analytics—can help managers better understand which atmospheric elements most strongly influence consumer choices. Such insights can inform the design of future pop-ups and help build scalable experiential models for brand expansion.

Finally, the managerial implication extends to strategic partnerships: collaborations with local artists, designers, and food producers can enrich the ambience and enhance community engagement. This approach not only reinforces brand authenticity but also contributes to sustainable local development, positioning pop-up restaurants as both cultural and economic catalysts.

5. Results, Limitations, Future Directions and Conclusions

This study explored how ambience influences consumer choice within pop-up restaurant contexts. The results confirm that ambience—encompassing sensory, spatial, and emotional components—significantly shapes consumers' evaluations, perceived value, and behavioral intentions. Consistent with servicescape and experiential consumption theories (Bitner, 1992; Spence et al., 2014), the temporary and novel atmosphere of pop-ups heightens visitors' sense

of excitement and exclusivity.

Moreover, the findings indicate that emotional engagement, social interaction, and perceived authenticity mediate the relationship between ambience and consumer satisfaction. In pop-up settings, ambience operates not merely as background aesthetics but as a core experiential stimulus that co-creates meaning between brand and guest (Holloway et al., 2016). Hence, ambience becomes both a differentiator and a strategic driver of consumer choice.

Limitations

Several limitations must be acknowledged. First, the study focused on a limited sample of urban pop-up restaurants, which constrains the generalizability of the findings to other geographic or cultural contexts. Second, the reliance on self-reported survey data may introduce common-method bias and subjective interpretation (Creswell & Poth, 2018). Third, the cross-sectional research design does not capture how consumers' perceptions of ambience and choice evolve over time or across repeated visits.
Future research incorporating longitudinal or experimental designs could better isolate causal effects of specific atmospheric cues—such as lighting intensity, music tempo, or scent—on consumer decision-making. Finally, external factors like pricing strategies, social media influence, and brand familiarity were outside the study's scope but may meaningfully interact with ambience in shaping consumer responses.

Future Research Directions

Future investigations should adopt **mixed-methods** approaches that integrate behavioral tracking, sensory testing, and emotional analytics to deepen understanding of multisensory dining experiences. Comparative cross-cultural studies could reveal how cultural norms affect ambience preferences and purchasing behavior in temporary restaurant settings (Han & Hyun, 2017).
Moreover, research on the **digital-physical interface**—how pre-visit online imagery, influencer marketing, or augmented-reality menus affect ambience expectations—could expand the theoretical boundaries of servicescape research (Lin et al., 2021). Sustainability also deserves more scholarly attention: examining how eco-friendly materials, zero-waste design, and local sourcing influence consumer trust and satisfaction in pop-ups.
By addressing these directions, future scholarship can strengthen the theoretical and managerial understanding of ambience as a multidimensional construct that integrates sensory design, consumer psychology, and experiential marketing.

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Fiscal Reforms in North Macedonia for fiscal sustainability and economic growth

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Abstract

Introduction: Fiscal reforms are very important issue in achieving sustainable economic growth and reducing inequality in the distribution of income in North Macedonia . For better social and economic development more than neccessary are the fiscal reforms in Western Balkan countries especially in North Macedonia.

Aim: This paper aimes to analyze the tax system in North Macedonia by a comparison made with the tax systems of Western Balkan countries , and the conclusions and recommendation for the best solution in the fiscal system in North Macedonia.

Method: Empirical analysis of the paper is based on quarterly date for the period 2010q1-2023q4 and offers a comprehensive overview on the impact of the direct taxes and indirect taxes effect on country's economic growth.

In the empirical analysis we used multiple linear regression, OLS , with VAR method.

Findings: Using these methods leads us to results which reveal that taxes affect economic growth, and the country should be focused on progressive direct taxes for sustaible economic and social development.

Conclusion: The tax direct and idirect rate has a positive sign in all models, which means that these variables are statistically significant, which means that a light increase of direct taxes affects economic growth. While in the long term tax rates may have impact on economic growth, but not by itself but in conjunction with other variables analyzed in the paper.

Originality and value: The focus of the originality of this paper is on fiscal reforms in a transition economy which will offer an effective analysis of fiscal reforms by analysing their short and long term impacts using updated data which will help policymakers to be focused on designig better fiscal reforms for having better fiscal sustainability.

Key words: direct taxes, indirect taxes , economic growth, linear regression, OLS,VAR.
Jel Codes : C32 ,H25, H26, H60

1. Introduction

The liberalization and globalization of the free trade of goods, services, capital, and people as well as financial systems, especially in the conditions of advanced information and communication technology, caused the economic environment to change significantly all over the world.

The crises of the latest ages that almost all countries faced with , especially the countries of Western Balkan and also North Macedonia , had a great impact on the economic and social aspects of these countries.

The consequences of recent crisis of Covid-19 , the war in Ukraine and the energetic crisis which affected the economic system of North Macedonia and were followed by high inflation and shock prices , and due to these consequences is more than necessary to reform the fiscal system for having better sustainability and stable economic growth .

The government was oriented in creating the policies which supported the economic stability of the country for ensuring full and stable supply of electricity for its citizens , for having lower inflation and avoiding the price shocks from the crisis and also providing some measurements to the most affected citizens and companies to protect their social status and living standard and

also to protect the liquidity of the most affected companies. Also as a field that had great importance was also the support of the government for the investments of renewable energy sources and energy efficiency.

The reforms toward implementation of economic policies for supporting macroeconomic stability, fiscal sustainability, economic growth and economic development are more than necessary for North Macedonia.

The main focus of the reforms should be on managing the after crisis process and revitalizing the economic system starting from the period after Covid 19 crisis , energy crisis and inflation, for having a sustainable fiscal and monetary system aiming the fiscal consolidation and sustainability and also creating an economic environment which will provide fair and equal distribution of income among different classes of people and stable economic and social environment for them.

Fiscal system in North Macedonia have to be restructured aiming to achieve the goals of reducing the informal economy and the level of corruption , so in that way will be easily to collect taxes in the right way which will improve the budget revenue collection . As important point in the process of the fiscal sustainability is also the focus on reducing the budget expenditures, and managing the expenditures in effective way and on appropriate projects for the public goods and effective investments for innovations , supporting the businesses which are investing in innovations and having better control and revision systems for allocating the subsidies and transfers .

Parallely to fiscal reforms also more than necessary are and juridiciary reforms for financing the right projects, for better allocation and diversification of sources financing the budget deficit and also for including projects through public-private partnerships and also to use the fiscal consolidation measures for keeping the public debt under the maximum threshold of 60% of GDP.

2. Literature Review

The fiscal sustainability term until now has not an exact meaning. Different authors define it in different ways theoretically and practically. Fiscal sustainability, or public finance sustainability, is the ability of a government to sustain its current spending, tax and other policies in the long run without threatening government solvency or defaulting on some of its liabilities or promised expenditures. There is no consensus among economists on a precise operational definition for fiscal sustainability, rather different studies use their own, often similar, definitions. Krejdl, Ales (2006).

The European Commission defines public finance sustainability as: the ability of a government to sustain its current spending, tax and other policies in the long run without threatening the government's solvency or without defaulting on some of the government's liabilities or promised expenditures. Sustainability report 2009. European Commission.

Also by European Commission the concept of the sustainability of the public finances is related to the ability of a government to assume the financial burden of its debt currently and going forward. In the report is also concluded that there is no clear-cut definition of a sustainable fiscal position, though the concept is rather intuitive. At a first instance it involves a debt level that does not entail – either now or in the foreseeable future – interest payments so large that they cannot be paid. Sustainability report 2009. European Commission. So as from the theory into practical aspect the most optimal tax system does not exist, even though different economist see it form different perspectives. Brummerhoff suggests choosing the optimal combination and the balance between the inefficiency of the market on one side and the state on the other. (Brummerhoff 2000). The tax system in the Republic of North Macedonia is characterized by a tax rate which is based on proportional rate dominant consumption taxes. Tax burden falls more on the middle class and the poor than on the rich classes. System of income and profit taxes is flat. (Bexheti,2007,2017).

The first substantive changes of the tax system in the Republic of North Macedonia, in the part of direct taxes, occurred in 1994 based on the study "New Concepts of the Tax System" (Bogoev & Atanasovski, 1992) when the entire cedar system of income taxes (out of seven types) was conceived in only two basic types - that of taxes on income and profit tax.

The next substantive change occurred in the sphere of indirect taxation, in 2000 (April 1 2000), when the system was completely replaced by a phase of turnover tax on goods, and services in a multi-phase value added tax (VAT) system. Again in 2006, for the first time in the direct tax system, income from the progressive system was transferred to the system with a single tax rate and which remained in force until 2019, only for one year because from 2020 to the end of 2022 this system was also suspended. Throughout this period, there have been continuous interventions and changes of dimensions depending on economic circumstances and cycles (the global financial crisis, the health).

The need for constant change comes from the need for closing the gap that exist and must be closed to ensure the fiscal sustainability through using the fiscal measures for managing better the expenditures , to control the government debt and also to have effective tax system.

Using data from the Ministry of Finance in North Macedonia in the table below is the Budget of North Macedonia from 2015 till 2023, which contains the Central Budget and the Budget of the Funds.

Table 1. Budget of the Republic of North Macedonia

Budget of the Republic of North Macedonia (Central Budget and Budget of the Funds)									
Denar million	2015	2016	2017	2018	2019	2020	2021	2022	2023 Budget
TOTAL REVENUES	**161,207**	**169,356**	**179,673**	**188,505**	**203,822**	**189,554**	**218,021**	**243,085**	**282,052**
Tax Revenues and Contributions	140,826	150,362	157,537	170,994	178,895	173,464	196,317	220,186	250,689
Taxes	91,357	98,457	103,217	112,774	116,729	105,713	125,690	140,518	160,330
Contributions	47,900	50,300	52,890	56,538	62,166	66,564	70,627	77,619	88,089
Non-Tax Revenues	**12,859**	**12,973**	**13,396**	**12,260**	**18,687**	**11,173**	**13,882**	**17,189**	19,894
Capital Revenues	**2,265**	**1,977**	**1,316**	**2,197**	**2,369**	**1,846**	**1,928**	**2,273**	2,800
Foreign Donations	**4,733**	**3,648**	**7,171**	**2,978**	**3,871**	**3,071**	**5,894**	**3,437**	8,669
Revenues on the basis of loan repayment	**524**	**396**	**253**	**76**	**0**	**0**	**0**	**0**	0
TOTAL EXPENDITURES	**180,632**	**185,407**	**196,561**	**200,071**	**217,445**	**243,421**	**256,906**	**278,596**	**324,810**
Current Expenditures	**161,965**	**168,433**	**176,698**	**187,924**	**199,633**	**227,306**	**233,496**	**249,959**	**276,059**
Wages and Allowances	24,685	25,958	26,204	26,355	27,752	29,775	31,010	32,459	34,880
Goods and Services	18,088	16,702	15,344	14,554	16,266	15,423	20,110	21,001	23,631
Transfers	112,734	118,902	126,762	139,323	147,513	174,077	121,439	187,659	204,625
Transfers (SRA)	1,592	1,517	1,879	1,779	1,932	4,330	2,343	1,955	1,439
Social Transfers	82,903	89,005	94,690	100,678	108,129	117,799	121,439	131,758	144,951
Pensions	50,285	54,622	58,084	61,243	65,179	68,824	71,522	78,394	86,799
Unemoloyment Benefits	1,482	1,216	1,305	1,922	2,498	2,691	2,753	2,702	2,976
Social Benefits	7,489	7,571	8,261	8,566	9,654	11,591	12,120	12,505	13,111
Health Care	23,647	25,596	27,040	28,947	30,798	34,693	35,044	38,157	42,064
Other Transfers	28,239	28,380	30,193	36,866	37,452	51,948	49,510	53,946	58,235
Tranfers to Local Government	16,323	16,647	17,014	18,057	19,097	21,373	21,218	23,365	26,687
Agricultural Subsidies	6,583	5,596	6,600	7,039	7,399	7,088	7,987	7,682	7,490
Other	5,333	6,137	6,579	11,770	10,956	23,487	20,305	22,899	24,058
Interest	6,458	6,871	8,388	7,692	8,102	8,031	9,086	9,140	12,923
Capital Expenditures	**18,667**	**16,974**	**19,863**	**12,147**	**17,812**	**16,115**	**23,408**	**28,637**	**48,751**
BUDGET BALANCE	**-19,425**	**-16,051**	**-16,888**	**-11,566**	**-13,623**	**-53,867**	**-38,885**	**-35,511**	**-42,759**
Financing	**19,425**	**16,051**	**16,888**	**11,566**	**13,623**	**53,867**	**38,885**	**35,511**	**42,759**
Inflow	**47,846**	**36,836**	**34,470**	**39,706**	**29,691**	**95,695**	**81,480**	**46,869**	**94,876**
Other Inflows	45	125	371	287	609	960	540	906	0
Foreign Loans	19,866	30,892	3,464	32,499	8,814	65,247	61,258	24,895	66,876
Deposits	10,265	-5,318	10,549	-9,636	1,210	-6,859	-3,467	6,387	-5,626
Domestic Borowing	17,654	11,116	20,086	16,539	19,028	36,347	23,136	14,681	33,616
Sell of Shares	16	21	0	17	30	0	13	0	10
Outflow	**28,421**	**20,785**	**17,582**	**28,140**	**16,068**	**41,828**	**42,595**	**11,358**	**52,117**
Repayment of Principal	28,421	20,785	17,582	28,140	16,068	41,828	42,595	11,358	52,117
Foreign	22,131	11,609	8,281	15,928	5,754	26,567	36,472	5,787	36,506
Domestic	6,290	9,176	9,301	12,212	10,314	15,261	6,123	5,571	15,611

Share in GDP									
Denar million	2015	2016	2017	2018	2019	2020	2021	2022	2023 Budget
TOTAL REVENUES	28.8%	28.5%	29.1%	28.5%	29.4%	28.3%	30.3%	30.6%	31.8%
Tax Revenues and Contributions	25.2%	25.3%	25.5%	25.9%	25.8%	25.9%	27.3%	27.7%	28.3%
Taxes	16.3%	16.6%	16.7%	17.1%	16.9%	15.8%	17.4%	17.7%	18.1%
Contributions	8.6%	8.5%	8.6%	8.6%	9.0%	9.9%	9.8%	9.8%	9.9%
Non-Tax Revenues	2.3%	2.2%	2.2%	1.9%	2.7%	1.7%	1.9%	2.2%	2.2%
Capital Revenues	0.4%	0.3%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
Foreign Donations	0.8%	0.6%	1.2%	0.5%	0.6%	0.5%	0.8%	0.4%	1.0%
Revenues on the basis of loan repayment									
TOTAL EXPENDITURES	32.3%	31.2%	31.8%	30.3%	31.4%	36.4%	35.7%	35.1%	36.6%
Current Expenditures	29.0%	28.3%	28.6%	28.4%	28.8%	34.0%	32.4%	31.4%	31.1%
Wages and Allowances	4.4%	4.4%	4.2%	4.0%	4.0%	4.4%	4.3%	4.1%	3.9%
Goods and Services	3.2%	2.8%	2.5%	2.2%	2.3%	2.3%	2.8%	2.6%	2.7%
Transfers	20.2%	20.0%	20.5%	21.1%	21.3%	26.0%	16.9%	23.6%	23.1%
Transfers (SRA)	0.3%	0.3%	0.3%	0.3%	0.3%	0.6%	0.3%	0.2%	0.2%
Social Transfers	14.8%	15.0%	15.3%	15.2%	15.6%	17.6%	16.9%	16.6%	16.3%
Pensions	9.0%	9.2%	9.4%	9.3%	9.4%	10.3%	9.9%	9.9%	9.8%
Unemoloyment Benefits	0.3%	0.2%	0.2%	0.3%	0.4%	0.4%	0.4%	0.3%	0.3%
Social Benefits	1.3%	1.3%	1.3%	1.3%	1.4%	1.7%	1.7%	1.6%	1.5%
Health Care	4.2%	4.3%	4.4%	4.4%	4.4%	5.2%	4.9%	4.8%	4.7%
Other Transfers	5.1%	4.8%	4.9%	5.6%	5.4%	7.8%	6.9%	6.8%	6.6%
Tranfers to Local Government	2.9%	2.8%	2.8%	2.7%	2.8%	3.2%	2.9%	2.9%	3.0%
Agricultural Subsidies	1.2%	0.9%	1.1%	1.1%	1.1%	1.1%	1.1%	1.0%	0.8%
Other	1.0%	1.0%	1.1%	1.8%	1.6%	3.5%	2.8%	2.9%	2.7%
Interest	1.2%	1.2%	1.4%	1.2%	1.2%	1.2%	1.3%	1.1%	1.5%
Capital Expenditures	3.3%	2.9%	3.2%	1.8%	2.6%	2.4%	3.2%	3.6%	5.5%
BUDGET BALANCE	-3.5%	-2.7%	-2.7%	-1.8%	-2.0%	-8.0%	-5.4%	-4.5%	-4.8%

Here is analyzed the percentage of total revenues as % of GDP and also the percentage of total expenditures as % of GDP where we see that %of total revenues is lower than the percentage of the total expenditures in the share of GDP that's why the budge balance is with negative percentage. So the fiscal reforms are more than necessary for the fiscal sustainability and the measures of the fiscal consolidation of the budget for cutting some expenditures.

Revenues and Expenditures Structure									
In milion denars	2015	2016	2017	2018	2019	2020	2021	2022	2023 Budget
TOTAL REVENUES	161,207	169,356	179,673	188,505	203,822	189,554	218,021	243,085	282,052
Tax Revenues and Contributions	87.4%	88.8%	87.7%	90.7%	87.8%	91.5%	90.0%	78.1%	88.9%
Taxes	56.7%	58.1%	57.4%	59.8%	57.3%	55.8%	57.7%	49.8%	56.8%
Contributions	29.7%	29.7%	29.4%	30.0%	30.5%	35.1%	32.4%	27.5%	31.2%
Non-Tax Revenues	8.0%	7.7%	7.5%	6.5%	9.2%	5.9%	6.4%	6.1%	7.1%
Capital Revenues	1.4%	1.2%	0.7%	1.2%	1.2%	1.0%	0.9%	0.8%	1.0%
Foreign Donations	2.9%	2.2%	4.0%	1.6%	1.9%	1.6%	2.7%	1.2%	3.1%
Revenues on the basis of loan repayment	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
TOTAL EXPENDITURES	180,632	185,407	196,561	200,071	217,445	243,421	256,906	278,596	324,810
Current Expenditures	89.7%	90.8%	89.9%	93.9%	91.8%	93.4%	90.9%	89.7%	85.0%
Wages and Allowances	13.7%	14.0%	13.3%	13.2%	12.8%	12.2%	12.1%	11.7%	10.7%
Goods and Services	10.1%	9.0%	7.8%	7.3%	7.5%	6.3%	7.8%	7.5%	7.3%
Transfers	62.4%	64.1%	64.5%	69.6%	67.8%	71.5%	67.5%	67.4%	63.0%
Transfers (SRA)	0.9%	0.8%	1.0%	0.9%	0.9%	1.8%	0.9%	0.7%	0.4%
Social Transfers	45.9%	48.0%	48.2%	50.3%	49.7%	48.4%	47.3%	47.3%	44.6%
Pensions	27.8%	29.5%	29.6%	30.6%	30.0%	28.3%	27.8%	28.1%	26.7%
Unemoloyment Benefits	0.8%	0.7%	0.7%	1.0%	1.1%	1.1%	1.1%	1.0%	0.9%
Social Benefits	4.1%	4.1%	4.2%	4.3%	4.4%	4.8%	4.7%	4.5%	4.0%
Health Care	13.1%	13.8%	13.8%	14.5%	14.2%	14.3%	13.6%	13.7%	13.0%
Other Transfers	15.6%	15.3%	15.4%	18.4%	17.2%	21.3%	19.3%	19.4%	17.9%
Tranfers to Local Government	9.0%	9.0%	8.7%	9.0%	8.8%	8.8%	8.8%	8.4%	8.2%
Agricultural Subsidies	3.6%	3.0%	3.4%	3.5%	3.4%	2.9%	3.2%	2.8%	2.3%
Other	3.0%	3.3%	3.3%	5.9%	5.0%	9.6%	7.9%	8.2%	7.4%
Interest	3.6%	3.7%	4.3%	3.8%	3.7%	3.3%	3.5%	3.3%	4.0%
Capital Expenditures	10.3%	9.2%	10.1%	6.1%	3.6%	6.6%	9.1%	10.3%	15.0%

In milion denars	Annual Growth Rates 2015/2014	2016/2015	2017/2016	2018/2017	2019/2018	2020/2019	2021/2020	2022/2021	2023/2022 Budget
TOTAL REVENUES	10.5%	5.1%	6.1%	4.9%	8.1%	-7.0%	15.0%	11.5%	16.0%
Tax Revenues and Contributions	8.9%	6.8%	4.8%	8.5%	4.6%	-3.0%	13.2%	12.2%	13.9%
Taxes	9.0%	7.8%	4.8%	9.3%	3.5%	-9.4%	18.9%	11.8%	14.1%
Contributions	8.4%	5.0%	5.1%	6.9%	10.0%	7.1%	6.1%	9.9%	13.5%
Non-Tax Revenues	20.9%	0.9%	3.3%	-8.5%	52.4%	-40.2%	24.2%	23.8%	15.7%
Capital Revenues	20.9%	-12.7%	-33.4%	66.9%	7.8%	-22.1%	4.4%	17.9%	23.2%
Foreign Donations	39.9%	-22.9%	96.6%	-58.5%	30.0%	-20.7%	91.9%	-41.7%	152.2%
Revenues from repayment of loans	-28.0%	-24.4%	-36.1%	-70.0%					
TOTAL EXPENDITURES	7.5%	2.6%	6.0%	1.8%	8.7%	11.9%	5.5%	8.4%	16.6%
Current Expenditures	7.7%	4.0%	4.9%	6.4%	6.2%	13.9%	2.7%	7.1%	10.4%
Wages and Allowances	6.9%	5.2%	0.9%	0.6%	5.3%	7.3%	4.1%	4.7%	7.5%
Goods and Services	16.9%	-7.7%	-8.1%	-5.1%	11.8%	-5.2%	30.4%	4.4%	12.5%
Transfers	5.6%	5.5%	6.6%	9.9%	5.9%	18.0%	-30.2%	54.5%	9.0%
Transfers (SRA)	65.5%	-4.7%	23.9%	-5.3%	8.6%	124.1%	-45.9%	-16.6%	-26.4%
Social Transfers	5.8%	7.4%	6.4%	6.3%	7.4%	8.9%	3.1%	8.5%	10.0%
Pensions	4.6%	8.6%	6.3%	5.4%	6.4%	5.6%	3.9%	9.6%	10.7%
Unemoloyment Benefits	-12.9%	-17.9%	7.3%	47.3%	30.0%	7.7%	2.3%	-1.9%	10.1%
Social Benefits	15.9%	1.1%	9.1%	3.7%	12.7%	20.1%	4.6%	3.2%	4.8%
Health Care	6.9%	8.2%	5.6%	7.1%	6.4%	12.6%	1.0%	8.9%	10.2%
Other Transfers	2.8%	0.5%	6.4%	22.1%	1.6%	38.7%	-4.7%	9.0%	8.0%
Tranfers to Local Government	2.1%	2.0%	2.2%	6.1%	5.8%	11.9%	-0.7%	10.1%	14.2%
Agricultural Subsidies	-0.2%	-15.0%	17.9%	6.7%	5.1%	-4.2%	12.7%	-3.8%	-2.5%
Other	9.4%	15.1%	7.2%	78.9%	-6.9%	114.4%	-13.5%	12.8%	5.1%
Interest	26.9%	6.4%	22.1%	-8.3%	5.3%	-0.9%	13.1%	0.6%	41.4%
Capital Expenditures	5.9%	-9.1%	17.0%	-38.8%	46.6%	-9.5%	45.3%	22.3%	70.2%

Source : Ministry of Finances of North Macedonia



Graph 1.North Macedonia's external and government debt to GDP 2000-2023

According to the data from the Ministry of Finance in North Macedonia the general government

debt at the end of the second quartal of 2023 was equaled to 7,254.2million Eur or as 50,4% of the projected GDP. If we compare it to the previous period before the Covid19 crisis it was lower on percentage. As we see it on tables for the period from 2015 to 2020 it has been 34.9% on average , and if we compare it with the percentage of other countries in Western Balkan it has been below the average of the Western Balkan countries 38.0% of GDP.

In the table below is a comparison of the total expenditures of General government as % of GDP in six countries of the Western Balkan , where we see a lower spending level in Kosovo in average from 2015 to 2022 with 29,5% which is the lowest average from all the Western Balkan countries and the highest level of total expenditures during that period is in Montenegro with 47.7%. Albania has an average of 30.4%, Bosnia and Hercegovina 41.4% and Serbia 43.9%. North Macedonia has a level of 34.9% . As a comparison made from the data of the table we can conclude that there is a high spending level in all the countries due to the Covid19 crisis, energy crisis and the price shock and inflation in these countries. That's why we suggest using the measures to the fiscal consolidation of the total expenditures with the reduction policy in the spending, promotion of renewable of energy sources and innovation , support for new businesses who promote entrepreneurship and competitiveness , reallocating the expenditures from non-effective to effective ones in education, culture, health, sport and providing the social support for the people who need it.

Table 2. Total Expenditures of General Government as % GDP

Total Expenditures of General Government as % of GDP - comparative analysis

	2015	2016	2017	2018	2019	2020	2021	2022	Average 2015 - 2022
Albania	30.5	29.5	29.8	29.1	29.1	32.6	32.1	30.4	30.4
Bosnia and Herzegovina	44.0	41.5	40.8	39.6	40.6	43.4	40.8	40.0	41.4
Kosovo	27.6	27.7	27.8	29.2	29.7	33.0	28.9	32.4	29.5
Montenegro	50.0	46.2	46.8	46.2	45.4	55.7	46.2	44.8	47.7
North Macedonia	34.4	33.2	33.8	31.5	33.5	38.1	37.8	36.9	34.9
Serbia	42.7	41.9	40.4	40.9	42.2	49.0	47.4	46.9	43.9
Western Balkan (average)	38.2	36.7	36.6	36.1	36.7	42.0	38.9	38.6	38.0

Source: Ministry of Finance and Statistical Offices of the respective countries

3. Materials and Method

This paper analyzes the tax ratio , direct and indirect taxes and data of other determinants of the real sector as determinants of economic growth in Macedonia. In this way, its impact on economic growth is measured.

Quarterly time series from 2010 Q1 to 2023 Q4 have been used and 45 surveys have been achieved. The main source of data is the National Bank of the Republic of Macedonia (NBRM), the State Statistical Office (SSO) and the Ministry of Finance (MoF). The indicators included in the analysis are real GDP growth, real GDP, direct taxes, indirect taxes, government expenditures, Trade openness (exports, imports) employment rate , anti corruption rate and income inequality . All indicators were pre-adjusted for the effect of seasonality, using ARIMA X12. The table below presents the variables examined in the paper as well as their description

Table 3. Data Description

Abbreviation	Variable	Description	SOURCE
RGDP	REAL GDP	GDP with constant prices (based year 2010)	SSO
DT	Direct taxes	Direct taxes for a period of time from 2010- 2023	NBRM
GOVEXP	Government expenditures	Government expenditures for the period of time 2010-2023	SSO,MF
IT	Indirect taxes	indirect taxes for a period of time from 2010- 2023	NBRM
TO	Trade opeeness	Trade openess	SSO, NBRM
IN	Income inequality	Income allocation	SSO, NBRM
EMP	Employment	Rate of employment 2010-2023	SSO
AC	Anti corruption factor	Anti corruption ratio	SSO
Inf	Inflation	Inflation over the years 2010-2023	NBRM

Source : Authors calculation

Model Specification

To test the relationship between economic growth and the taxes, as well as other macroeconomic indicators described above, we present the general linear regression model as follows:

$$\ln\text{RGDP}_i = c + \beta_1 lnDT_i + \sum_{m=2}^{M} \beta_m lnX_{im} + \gamma D_s + \varepsilon_i$$

where GDP represents real GDP at the time period of time from 2010-2023; With c we have presented the term constant; DT – is the explanatory variable representing the Tax rate; with Xm – we present the explanatory variables of the macroeconomic environment. The data used has been transformed into logarithmic. As seen in the model, the dummy variable is also included to capture the effect of the crisis. The dummy variable is the separation period:

- D=1 if the data belong to the crisis period
- D=0 if the data belong to the non-crisis period

With 'ε' we represent the error term, or the stochastic factor that is supposed to be with a conditional mean of zero and constant variance, i.e. E(ε_i)=0 for every period i.

Var Model

The VAR model has been proven to be particularly necessary to describe the dynamic behavior of time series as well as predict the impact of variables over a longer period of time. So, it is a dynamic system of equations where the current level of each variable in the system depends on the movements of that variable and other variables in the past period. Also, after evaluating the coefficients of the VAR model, the impulsive responses of the VAR model results are performed. A general VAR model system can be expressed as in the following form:

$$Z_t = \mu + A_1 Z_{t-1} + A_2 Z_{t-2} + \cdots + A_p Z_{t-p} + \varepsilon_t$$

Where Zt is a vector of endogenous variables at time t, Ai (i=1.....p) is the matrix of coefficients, p is the number of time delays included in the system, μ is the vector of the term constant, and ε_t is the vector of the term of residuals. So, the VAR model is a set of k-regressions of time series, where regressive are the time delays of all k-series.
The specification of the equation from the econometric system of the VAR model for economic growth and interest rate, as well as other determinants of economic growth, can be expressed asfollows:

$$\begin{aligned} lnY_t = c + \alpha_{1i} \sum_{i=1}^{k} lnRGDP_{t-i} \\ + \alpha_{2i} \sum_{i=1}^{k} lnDT_{-i} \\ + \alpha_{3i} \sum_{i=1}^{k} \ln EXP_{t-i} \\ + \alpha_{4i} \sum_{i=1}^{k} lnIT_{t-i} \\ + \alpha_{5i} \sum_{i=1}^{k} lnTO_{t-i} \\ + \alpha_{6i} \sum_{i=1}^{k} lnIN_{t-i} \\ + \alpha_{7i} \sum_{i=1}^{k} lnEMP_{t-i} + \alpha_{8i} \sum_{i=1}^{k} lnAC_{t-i} + \alpha_{9i} \sum_{i=1}^{k} lnINF_{t-i} + \varepsilon_t \end{aligned}$$

Where Yt is a vector of endogenous variables which are RGDP, DT, EXP, IT,TO,IN,EMP,AC and INF; c is the vector of the terms of the constant; α_i – represent the vector of the coefficients and ε_t represents the vector of the terms of error (white noise vector) that is assumed not to correlate with the variables with delays in the corresponding equation.

Stationary analysis

Before presenting the results of the regression models, we will provide the results related to the testing of the stationiness of variables through the Augmented Dickey-Fuller (ADF) and Philip-Perron (PP) tests, based on the methodology explained above. The results are given in the table below:

Table 4. Results of Adf test

Variable	T-Statistic	P-value	Confidence level	Decision	
RGDP DRGDP	-1.669 -2.630	-2.958 -2.613	5% 10%	I(1)	No trend
DT	-1.900	-2.958	5%		No trend

DDT	-4.186	-2.961	5%	I(1)	
IT	-2.647	-2.958	5%		No trend
DIT	-3.081	-2.961	5%	I(1)	
TO	-1.566	-2.958	5%		No trend
DTO	-3.201	-2.961	5%	I(1)	
IN	0.021	-2.958	5%		No trend
DIN	-3.021	-2.961	5%	I(1)	
AC	-1.722	-2.958	5%		No trend
DAC	-3.391	-2.961	5%	I(1)	
EMP	-0.565	-2.958	5%		
DEMP	-3.107	-2.961	5%	I(1)	No trend
GOVEXP	-1.821	-2.958	5%		
DGOVEXP	-3.201	-2.961	5%	I(1)	No trend
INF	0.634	-2.958	5%		No trend
DINF	-2.418	-2.961	5%	I(2)	
D2INF	-4.093	-2.964	5%		

Table 5. Results of PP test

Variable	T- Statistic	P-value	Confidence level	Decision	
RGDP	-0.819	-2.947	5%	I(1)	No trend
DRGDP	-9.556	-2.950	10%		
DT	-2.939	-2.947	5%		No trend
DDT	-4.396	-2.950	5%	I(1)	
IT	-3.002	-2.947	5%		No trend
DIT	-6.354	-2.950	5%	I(1)	
TO	-1.551	-2.947	5%		No trend
DTO	-6.005	-2.950	5%	I(1)	
IN	-1.694	-2.947	5%		No trend
DIN	-9.313	-2.950	5%	I(1)	
AC	-0.641	-2.947	5%		No trend
DAC	-5.412	-2.950	5%	I(1)	
INF	0.390	-2.947	5%		No trend
DINF	-6.569	-2.950	5%	I(2)	
D2INF	-12.943	-2.952	5%		
EMP	-0.043	-2.947	5%		

DEMP	-5.786	-2.950	5%	I(1)	No trend
GOVEXP	-1.175	-2.947	5%		
DGOVEXP	-10.932	-2.950	5%	I(1)	No trend

Based on the analysis of stationarity, we see that based on the two ADF and PP tests, all data are untrended and at the level of 5% weighting, they are all in the first margin, except for the inflation variable, which is in the second difference.

Table 6.Regresion models with OLS

Variable	Model1	Model 2	Model 3	Model 4	Model 5	Model6
log_rgdp						
log_dt	1.13	1.38	1.20	1.34	1.75	3.14
log_it	8.16	8.50	4.58	2.09	4.96	4.66
log_to	-0.63		0.70			
log_in	2.66	2.88	2.47	4.46	3.58	3.69
log_ac	6.07	6.16			6.36	6.22
log_inf						
log_govexp				3.21	3.50	3.64
log_emp						0.97
R^2	0.9735	0.9732	0.9485	0.9585	0.9796	0.9807
Adj R-squared =	0.9701	0.9705	0.9433	0.9543	0.9770	0.9774

Based on the above-mentioned regression results, model 6 represents the most preferred model because more variables in this model turn out to be statistically significant. In this model we have the variable RGDP as the dependent variable and the variables DT,IT,TO,IN,GOVEXP,AC,INF,EMP as independent variables. All variables are logarithmic and are in their logarithmic form, but they are at the level, they are not differentiated. The direct tax and indirect tax variable are positively signaled in all models, which means that these variable are statistically significant, which means that the increase in the direct taxes affects economic growth. For every 1% increase in the direct taxes, real GDP growth will increase by 3.14% on the basis of model 6 and on indirect taxes 4.66%.

We have also introduced the dummy variable in the model as an artificial variable to examine the effects of the global financial crisis. As for the dummy variable that characterizes the crisis period (2010Q1-2023Q4), it is positively and statistically significant at the level of 1%. This means that there are structural differences between the two time periods, i.e. during the crisis and outside it. The positive sign shows that taxes have had an impact on economic growth during the crisis period.

3.1.Empiric results of Var

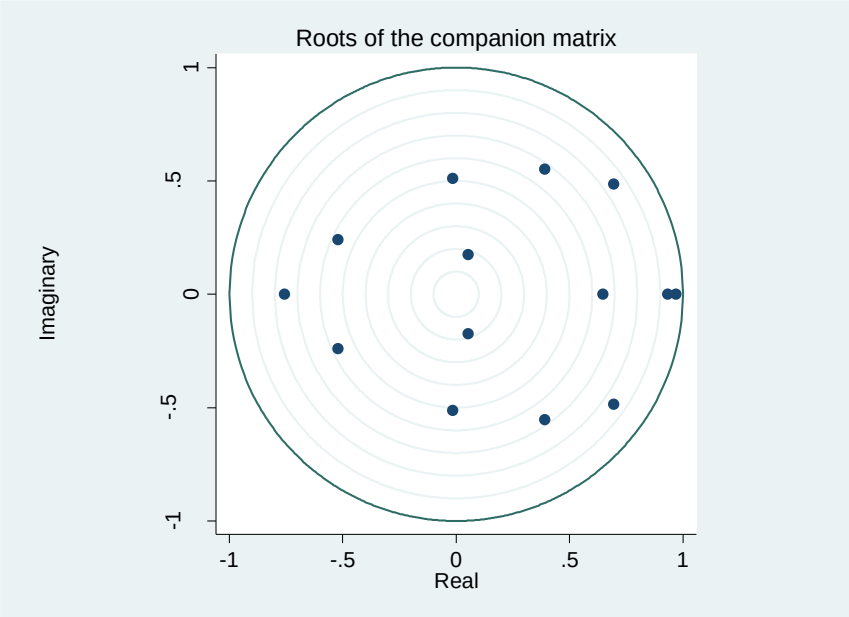
The optimal number of time delays both of the initial models where we have the variables only calculated and of the models where in addition to the logarithm we have also tested the stationarity of the variables as the optimal number of time delays is the number p=3, that is, three

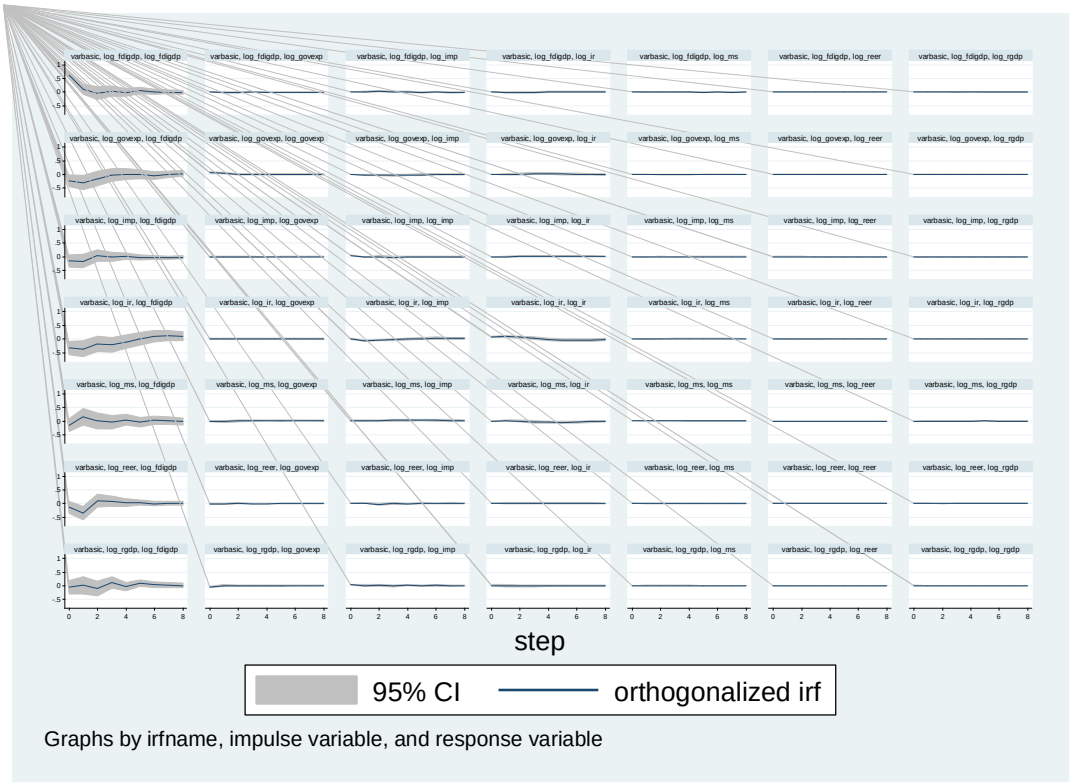
variables are framed for each endogenous variable included in the model based on the Akaike criterion (AIC).

In model 6 we have 7 variables and the Var model consists of 7 equations. As the most interesting equation included in the model is the equation where we have the variable RGDP as a dependent variable and the other independent variables and here we have included the three time delays of this variable and the three time delays of the independent variables.

As for the empirical results, at least one of the time delays for each endogenous variable is statistically significant that is, hypothesis zero is rejected and the alternative one is accepted. So there is a long-term relationship between real GDP, direct taxes, indirect taxes, trade openness, anticorruption factor, income inequality, inflation, government expenditures, and the employment ratio. Also, based on the stability test, the VAR model is stable and meets the criteria so that it can be used as a predictor of economic growth in the long term. This can also be seen from the following figure, as the reverse pattern has no unit roots, i.e. all the roots lie within the circle.

Figure 1.Roots of the companion Matrix





5. Discussion, practical and managerial implications

For having higher revenue collection and higher economic growth in North Macedonia is more than necessary the tax system optimization which will enhance its efficiency and effectiveness.

The main objective for having a fair, transparent , effective, neutral and efficient modern tax system in North Macedonia can be achieved using and implementing the fiscal measures and activities for the fiscal consolidation , expansion of tax base, reduction of tax evasion and also increase of the tax transparency. In the other side is very important to have modern and digital administration capacities , improvement of institutional coordination and digital technologies and innovations in the field of taxation for having sustainable economic and social growth.

The fiscal measures for tax base consolidation have to be used for evaluation of the effects from the legal amendments for the direct taxes (personal income tax and profit tax) and further application of increase in these taxes for having better economic growth.

Also the provisions have to be harmonized with the specific tax laws respective with the EU legislation provisions, so as to be revised the list of goods and services which are taxed with preferential tax and to be harmonized respective with the EU legislation.

Another important issue also is the tax evasion and the corruption that exist in North Macedonia, we also see it from the results from the analysis where the corruption rate is very high. Tax evasion has negative effect on the economy in one side it leads to loss of tax revenues and in the other side it creates unfair competition among the taxpayers. That's why for the purpose of reduction of the tax evasion should be applied the measures for having effective administration by enhancing the capacities of inspection services, expanding the scope of fiscalisation of the supply of goods and services, introducing tax system digitalization, strengthening the cross-border cooperation and coordination among tax administrations by adoption of a legal framework, and also strengthening the public administration capacities for detecting, monitoring, controlling, revising and addressing the tax evasion and the informal economy.

The main purpose of the sustainable economic and social system in North Macedonia can be achieved only through implementing more than necessary the tax reforms in the Republic of North Macedonia, as the main basis of the current reform strategy, to achieve equality in the tax system, which is proven in both analysis through empirical analysis and through the comparative analysis, where we recommend that the Republic of North Macedonia have to focus on introducing progressive tax rates on income tax and on profit tax in order to better collect revenue , to be focused on effective spending and fair and transparent allocation of revenues for having more equality in income allocation and also to reduce the tax evasion by implementing efficient and effective control and effective tax administration, as well as digitalization of tax services in order to avoid tax evasion and achieve equality in income distribution and sustainable economic and social development.

6. Results, Limitations, and Future Directions

According to the results this study is focused on fiscal sustainability for better economic growth, and there are more than necessary the fiscal reforms. The fiscal system of North Macedonia has to be focused on deficit reduction to fulfill the deficit rule 3%. Also the public spending should be improved by better managment of spendings by optimizing the public administration of spendings, better management of local government spending and invensting in the fields and sectors where is more than neccessary to be invested in such as health, education,and social assistance. As very important field is also the focus on strengthenin the fiscal institutions by using the fiscal strategy for having digital services and avoiding the tax evasion.

6.1 Limitations

As all the studies also this study has some limitations. First, although the data are taken from National Bank of North Macedonia there were some complications with the data because they aren't regularly updated or some of them are partially estimated and we had to take them from other legitimated institutions. Second, North Macedonia is an open economy which is vulnerable to external shocks which can distort the fiscal and growth outcomes, and can have an impact on the reforms and the fiscal system. Third , implementation of the reforms depends also on the political and institutional constraints, which can be faced by resistance from interest groups and realized by some other groups and depend very much on the political will.

6.2 Future directions

Firstly the reforms is more than necessary to be focused on introducing progressive property taxation and green taxes , to reduce tax evasion and the informal economy for having more stability on the economic system. Secondly, North Macedonia has to improve the public spending efficiency for using the government spendings in effective and efficient way. Thirdly, North Macedonia has to improve transparency for strengthening fiscal rules and digitalization of the administration and services.

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Recycling Efficiency of Composting and Integrated Waste Plants: Evidence from Rome

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Abstract

Introduction: Biological waste is important to circular economy because, if well managed, offers environmental benefits, among others, resource recycle in the soil (compost). In Italy, composting is not supported by public funding. However, large biodigesters (called *integrated* plants) to recover energy from waste and composting are subsidized as renewable.
Aim: In Rome, large scale integrated plants appear to contradict the European waste management hierarchy, neglect recycling, the possible decentralization and the local self-reliance.
Method: Tender documents and from the ISPRA waste report (2023 data) for comparisons between technologies. Data from literature and the emissions trading for a proposal to support composting.
Findings: On average, composting plants treated 9,258 tonnes per year each, while integrated systems treated 64,311 tonnes per year. The composting plants yield, in terms of material recycling, is approximately 35% while 15.6% is achieved by integrated plants. Under a mass balance point of view, a model integrated plant essentially produces waste (44% of municipal waste input). Cost per ton are double for integrated plants.
Conclusion Recycling efficiency of large integrated plants, considered highly technological, appears to be half that achievable by simpler, smaller composting plants. Large plants change the type of waste from urban (200108) to industrial (191212). Small proximity and community composting plants could be supported by the public subsidy around 35 euro/[t local compost used]. Compost plants are cheaper,
Originality and value: A first data-based critique of the large integrated plant model

Key words: waste management, compost, biogas
Jel Codes : O21, O33, Q53

1. Introduction

1.1 Material flow

The waste sector, with its problems, is an emblematic example of the unsustainability of our production and consumption model. Material flow analysis (MFA) provides a framework and fundamental information on resource use and waste generation, supporting the achievement of sustainable development goals, in particular SDG 12 (Responsible consumption and production) and SDG 9 (Industry, innovation and infrastructure), enabling more efficient and sustainable management of materials in all economic systems. According to material flow data processed by ISTAT (ISTAT “Economia e Ambiente 2023”), biomass accounts for approximately 19.5% of Italy's Domestic Material Consumption (DMC), equal to approximately 98 million tonnes out of a total of approximately 500 million tonnes. With 59 million residents, there is a material flow of over 4.7 million tonnes per capita per year, of which 1.6 tonnes is biomass. Materials are used, accumulated and released. Of this material flow, only a small part is then classified as municipal waste (29Mt in 2023 according to the ISPRA 2024 Municipal Waste Report), another part as industrial waste (according to the ISPRA report on Special Waste, 161.4 Mt in 2021) or simply released into the environment.

1.2 The hierarchical order of the EU

The European priorities in waste management, outlined in the Waste Framework Directive (2008/98/EC) and transposed in Italy by Legislative Decree 152/2006 (Consolidated Environmental Act. Here and after, in the text, TUA from the Italian Testo Unico Ambientale), are defined in hierarchical order (Art. 179 of the TUA) a) prevention, b) preparation for reuse, c) recycling, d) other types of recovery (such as energy recovery) and finally e) disposal. The hierarchy establishes, in general, an order of priority for what constitutes the best environmental option. In accordance with the hierarchy, according to the Law, measures must be taken to encourage options that guarantee the best overall result, taking into account health, social and economic impacts, including technical feasibility and economic viability.

Please note that recycling (Article 183(u) of TUA) is defined by the Law as '*any recovery operation through which waste is treated to obtain products, materials or substances for use for their original purpose or for other purposes. It includes the treatment of organic material but not energy recovery or reprocessing to obtain materials for use as fuels or in filling operations".*

As is well known, organic waste refers to: "*biodegradable waste from gardens and parks, food and kitchen waste produced by households, restaurants, offices, wholesale businesses, canteens, catering services and retail outlets, and similar waste produced by food industry plants*". Often, in ordinary speech, "*biodegradable waste from gardens and parks*" is referred to as "*green waste*", while the other types of waste mentioned in the above definition are referred to as "*wet waste*".

1.3 The situation in Italy

According to the citied ISPRA 2024 report on urban waste, Italy produces 496 kg of urban waste per inhabitant per year. All data below, unless otherwise specified, refer to 2023. It is estimated that 34.7% of the urban waste generated is organic waste (table 3.1 of the ISPRA report), i.e. 169 kg per inhabitant. Even more significant is the amount of organic waste collected separately: 74.7 Mt (117 kg per capita), or 38% of all separate collection 19.5 Mt (322 kg per capita).

Organic waste plays an even more important role in recycling, accounting for 41.2% of waste sent for recycling.

From an environmental point of view, organic waste, if sent to landfill or poorly managed, can pollute aquifers and/or release methane (a greenhouse gas many times more potent than CO_2) as well as unpleasant odours. Its implications are even more significant from an economic point of view:

- as it is not packaging, its management is not supported by the National Packaging Consortium (CONAI), which finances the separate collection of other fractions such as glass, paper, plastic, etc.,
- it is collected frequently, often three times a week,
- it cannot be stored for more than 72 hours,
- it can no longer be sent to landfill.

2. Technological solutions for bio-waste treatment

2.1 Composting

The only form of recycling that can be adopted for organic waste is composting, which is a technique that controls, accelerates and improves the natural process that any organic substance undergoes in nature as a result of degradation by aerobic microorganisms. The result of the process is what Italian fertiliser law (75/2010) refers to as Mixed Compost Soil Improver (ACM),

defined as follows: "*materials to be added to the soil in situ, mainly to preserve or improve its physical or chemical characteristics or biological activity, either separately or together*".

It should be noted that the collection system greatly influences the purity of the organic fraction. With roadside collection, impurities account for 15% of the total, while with door-to-door collection, they drop to 3.4%.

The benefits of composting are widely discussed in the literature, see, for example, a recent study (Iraji 2025).

Below is a short list.

- ✓ Carbon Sequestration and Global Warming
- ✓ Weed Suppression
- ✓ Crop yield
- ✓ Soil erosion
- ✓ Soil moisture content
- ✓ Soil workability
- ✓ Soil biological properties and biodiversity
- ✓ Nutritional quality of crops

Today, composting can be practised on various scales, from domestic to industrial plants, including small community and local plants. For some years now, there has been a process of decentralised and local composting, which includes the following administrative forms:

- ✓ 'self-composting':

composting of own urban organic waste, carried out by domestic (called *home composting*) and non-domestic users, for the purpose of using the material produced on site;

- ✓ 'community composting':

composting carried out collectively by several domestic and non-domestic users of the organic fraction of urban waste produced by them, for the purpose of using the compost produced by the users who deliver it;

- ✓ 'local composting':

composting activities intended exclusively for the recycling of organic waste produced in the municipality where the activity is carried out and in neighbouring municipalities, with a treatment capacity not exceeding 80 tonnes per year, as regulated by Article 214, paragraph 7-bis of the TUA.

It should be noted that the first two forms involve waste management by the producer itself and the use, by the same entity, of the compost it produces. This leads to the elimination of the environmental and economic impact of transport and collection. This applies not only to the management of organic waste but also to the logistics of compost distribution. Unfortunately, no studies have been found on the logistics of compost distribution, but it is certainly possible to estimate impacts comparable to those related to waste logistics. A thesis from 2000 identifies an economic limit of approximately 80 km between the area of compost production and the area of use. Beyond this distance, the user chooses producers closer to them or different fertilisation methods. From a sectoral and centralised management approach, it will be necessary to experiment with more flexible, polycentric models, organised by groups, starting from the home, the condominium, the neighbourhood, up to the cluster, the city and industrial treatment plants. Urban agriculture, public and private green spaces and composting can form a virtuous chain with positive effects on environmental quality and the shape of the city. The issue of waste has a paradigmatic dimension: the quality of the city of the future depends largely on the cultural,

technological and organisational progress of this sector, which is currently marginalised in planning and design. On the issue of local composting, see, for example the book on small scale composting (Mcsweeney's 2019) and the dedicated page of the Institute for Local Self Reliance: "Size Matters! New Report Shows The Value of Small-Scale, Community-Based Composting".

2.2 Bio digesters

Another way of using wet waste is to extract gas for energy recovery through the use of bacterial families that live in the absence of oxygen (anaerobiosis) and produce biogas. Specifically, this involves the extraction of methane for energy purposes (approximately 50% of biogas by volume is methane, while the remainder is mainly CO_2 but also NH_3, H_2S, etc.) through a process known as upgrading. Hence the names anaerobic digesters, biodigesters, or biogas plants. Biogas, which is energy recovery, should not be confused with recycling, which is material recovery. In addition to biogas, the digester produces "digestate", i.e. the residue from digestion. Some plants, known as "integrated" plants, follow anaerobic digestion with digestate treatment in order to recover some material through a subsequent composting phase. Depending on the technology used, water may or may not be used (wet, semi-dry, dry). The latter is the case of the highly innovative plant in Sant'Agata Bolognese, chosen as a model, which has the same capacity (100,000 tonnes/year) and technology (dry) as the Roman plants currently under construction in Cesano and Casal Selce.

3 Comparisons

3.1 Recycling of material

Below is a comparison between the simple composting plants and integrated plants. Following the ISPRA Report, in 2023, 3.4 million tonnes (3.8 million in 2022) entered composting plants, while the waste managed by integrated biodigestion/composting plants in 2023 amounted to 4.3 million tonnes, showing an increase of approximately 690,000 tonnes, or 18.8%, compared to 2022. This trend is driven by the continuous commissioning of additional plants. The total amount of soil improvers produced is 1.9 million tonnes, of which over 1.2 million tonnes (64.9% of the total) come from composting plants and approximately 673,000 tonnes (35.1% of the total) from integrated anaerobic/aerobic treatment plants (page 103 of the ISPRA Report). With a yield of 1.2Mt/3.4Mt = 35% for composting and 0.67Mt/4.3Mt=15.6%. Ultimately, the yield of simple composting plants, in terms of material recovery, is more than double that of integrated biogas+composting plants. The Sant'Agata Bolognese plant produces 19,050 t/year of compost (ISPRA Waste Report 2024) from 123,566 t/year of incoming waste (15.4% yield). In Rome, the integrated plant in Cesano is designed to process 110,000 tonnes/year of incoming waste to produce 18,506 tonnes/year of compost, i.e. with an expected material recovery of 16,8%, which is already lower than the average for conventional composting plants at the design stage.

3.2 Production of waste

Every plant produces waste. This waste is no longer municipal waste but special waste. While the TUA (Art. 182, paragraph 3) prohibits the transfer of non-hazardous municipal waste to regions other than those where it is produced, it does not explicitly prohibit the transfer of special waste outside the region. The waste produced by composting plants in 2023 (page 104 of the ISPRA Waste Report) amounts to over 532,000 tonnes (15.6% of what enters). That from integrated plants amounts to approximately 924,000 tonnes (21.6% of what enters). Here too, it is interesting to read in the ISPRA waste report that in Sant'Agata Bolognese, the waste produced is 54,414 tonnes/year, or 44% of what enters. In terms of mass balance, this "waste" represents the plant's largest production and its destination is not clear (at least in the ISPRA waste reports) but, being special waste, it can also be managed outside the region. With a little malice, these plants can be interpreted as a method of changing the nature of waste from urban to special. The

collection system and management technique are strongly correlated. It is worth noting that if you choose the biodigestion technique, the collection system and the related impurities (street collection with large containers) are not as important as in the case the focus is on compost production (then the door-to-door collection is important).

3.3 Plant size

In 2023, the situation was as follows:

- ✓ 275 plants dedicated solely to aerobic treatment (composting) with 2,546Kt/year of waste treated, an average of 9,258 t/year
- ✓ 61 integrated anaerobic/aerobic treatment plants with 3,923Kt/year of waste treated; average size 3923kt/61= 64,311 t/year;

In other words, the size of integrated treatment plants is much larger than that of composting plants. It should be noted that the size of the plants affects:

- ✓ their impact on the local area, with related issues of acceptance and social control;
- ✓ their location in remote areas, with consequent transport costs;
- ✓ their influence on the collection system (often roadside collection with related impurities);
- ✓ the lack of flexibility of the system.

When financing (e.g. from banks) is required for such plants, contracts must be in place that commit municipalities to delivering allocated quotas of organic waste for many years to come. This contrasts with actions to reduce waste at source (e.g. combating food waste), which is the European priority in waste management. In fact, many plants in the north-east today could not do without the waste supplied by the central and southern regions because they were designed years ago on the basis of exponential waste growth that did not materialise.

- ✓ High vulnerability of the system: large plants also mean, for the same treatment, few plants. The shutdown of one of the plants would compromise the entire treatment system.
- ✓ The opportunities for learning offered by small plants located close to users remove the fear of an unknown installation, even in favour of larger plants, reducing the NIMBY syndrome.

3.4 Costs

In the case of the biodigesters in Rome, for which AMA Roma obtained grants from the National Recovery and Resilience Plan (NRRP), the capacity is 100,000 tonnes/year each and the cost of the tender was €92.9 million for Cesano and €99.5 million for Casale Selce, therefore €929/t for Cesano and €995/t for Casale Selce.

For the same sites, at the end of the previous council term (Raggi), projects for composting-only plants had been developed, each with a capacity of 60,000 tonnes/year and a cost of €27,651,949: therefore, €461/tonne.

The internalisation of costs is one of the key issues in environmental problems. If there are "hidden" costs or if these affect several different areas, it becomes difficult to make comparisons. Compost does not receive subsidies. In this particular case, subsidies for anaerobic digestion, from NRRP sources or as a producer of renewable energy, alter the economic picture by shifting, for example, cost items from the waste sector to the energy sector. Without subsidies, biodigesters would not be economically sustainable. There is much to be said about the "renewability" of biological flows, which, like the extraction of virgin materials, are a factor in the unsustainability of development. Furthermore, moving away from combustion is one of the

key challenges of our time. The concept of CO2 neutrality, from the point of view of climate-changing emissions, with regard to biological flows, whose activation has required and continues to require planetary upheavals, one might well ask: “Are the fires in the Amazon, to make way for the soy crops needed to feed our pigs, really renewable?”.

3.6 Transport

According to ARPA Veneto, organic waste has a moisture content of 70-80%. In the case of transport to plants located far from the collection areas, this essentially means transporting water over long distances. In the analysis of Baronissi (De Feo et al. 2016) the estimate the mileage for organic waste was: 191.3 km collection (3.3-7.5 t van €3) + transport to sorting plant 40.6 km + transport to composting plant 497.79 km (lorry >32t Euro 3). The estimated impact in terms of emissions is around 168 kg CO2eq/t for organic waste collection and 148 kgCO2Eq/t for transport to the plant. It should be noted that the costs, including in terms of emissions, are mainly borne by the collection operations. The total emissions for collection + transport are 168 + 148 = 316 kg CO2eq/t. These figures, from the work on Baronissi, should be compared with the estimated emissions for composting, estimated at almost 84 kg CO2eq/t. In other words, the emissions from collection and transport are much higher than those from the composting process. Furthermore, even with a plant located zero km away (i.e. with zero transport impact), the emissions from collection would still be higher than the emissions from treatment. It should be noted here that the distribution of compost to end users has its own logistics and related impacts. This type of analysis reinforces the hypothesis of focusing on local treatment capacity, in particular by favouring both self-delivery, instead of collection, and the use of compost produced close to the places of production.

4. Supporting compost production and use

4.1 Past experiences of economic support for the use of compost

Some Italian regions had subsidised the use of compost in agriculture through Rural Development Plans, recognising its benefits.

In Piedmont, under the 2014-2020 RDP, measure 10.1.3 provides financial support for the distribution of compost (action 1) or other spreadable materials from the agro-zootechnical sector (action 2) for a period of five years. The premiums are already differentiated according to the matrix and the crop receiving it: €260 per hectare per year for compost distributed on herbaceous crops, €180 on tree crops. Considering €260/ha and a use of 15 t/ha, we would have an estimated support for compost of just over €17/t of compost for use in open field agriculture. Currently, approximately 10,000 ha are under commitment in Piedmont, of which over 60% is for compost distribution. It should be noted that support is granted to the farmer who cultivates the land, not to the person who supplies the material.

In Emilia Romagna, Regional Law 25 of 2000 encouraged the use of compost in agriculture and the purchase of equipment for spreading compost, using funds from the Rural Development Programme (RDP). Specifically, the subsidy amounted to €150/ha in ordinary areas and €180/ha in preferential areas, as identified by the Regional Rural Development Programme (RRDP). Calculating a discount rate of approximately 1.34 from 2000 to the present day, we arrive at a commitment of €200/ha and €240/ha. These figures are comparable to those committed by Piedmont. Unfortunately, this law was repealed in 2015 due to lack of funding.

4.2 Proposal for a possible support

The value of CO2 in the emissions market, mainly through the EU ETS (Emissions Trading System), is determined by the purchase and sale price of emission allowances (EUAs), which represent the right to emit one tonne of CO2. The price fluctuates according to supply and

demand, influenced by factors such as energy market trends, environmental policies and decarbonisation targets, and has settled at average values that vary depending on the period, with a tendency to rise for future allowances. During 2025, values are often above 70 euro/t of CO_2. According to the Ministry of Economic Development (2009), in relation to the organic carbon content in compost, CO_2 storage of approximately 80 kg CO_2/t [COMPOST] of avoided emissions is achieved, to which 200 kg CO_2/t [COMPOST] of avoided emissions as a substitute for peat and fertilisers can be added, for a total of approximately 280 kg CO_2/t [COMPOST]. Assuming a conservative figure of 250 kg (1/4 tonne) at a cost of 70 euro/t for CO_2 avoided, a contribution of 70/4 = 17.5 euro per t of compost used could be suggested. If collection and transport were then avoided, the estimated 316 kg could be used and the contribution for compost delivered by the producer and used on site could be increased to over 35 euro/t.

5.0 Conclusions

5.1 Toward a waste transition

In other sectors, such as energy, we are seeing ongoing development and transformation that should, in some way, inspire the management of organic waste. We refer mainly to the energy sector, where local and widespread production is encouraged, there is system integration between large and small producers, the grid, the presence of ESCOs, Energy Communities, energy saving in buildings is supported, etc. In other words, in recent years we have witnessed the so-called Energy Transition. From the ENEL monopoly and centralised production, we have moved on to a myriad of players. The offers to users are highly differentiated and tailored to their needs. We believe that now is the time for a "*Waste Transition*" which, similar to what we have seen with energy, will also bring the waste system into the third millennium. In this transition, widespread composting and local composting become central. In this process, we highlight the fundamental role that compost plays, not only in agriculture and horticulture, but also in the overall strategy to combat climate change, replace non-renewable materials (such as peat) or agrochemicals, promoting the use of secondary raw materials and systems for reducing waste at source, combating food waste, increasing soil water retention and soil workability. The challenge to be taken up is internal to the move away from a combustion-based society (even if it is the combustion of resources considered renewable) and a throwaway society. The use of methane is a palliative measure that has been around since the 1980s.

5,2 For a local empowerment

A simple practice based on the principle of subsidiarity and proximity should be promoted for the management and valorisation of organic waste, with the consequent development of local waste management capacities. The system of large plants is therefore at least integrated with the idea of distributed capacity, local management and networking. This is an approach whose importance, in our view, has been highlighted by the pandemic. It should be noted that the aim is to reduce the vulnerability of the system and increase social acceptability and awareness (many small plants close to production sites instead of one large and often distant plant). It is, in fact, from the different ideas of the future that progress or regression from a desirable scenario can be defined. The one suggested here focuses on the territory and care for the people and things around us, together with a rediscovery of local knowledge and know-how. Including waste.

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Developing the Components and Elements and Determining the Talent Identification Model for Children, Adolescents, and Youth in Iran

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Abstract

Introduction: Talent identification, as one of the fundamental pillars in developing talents and choosing career and educational paths for children, adolescents, and youth, requires comprehensive and scientific models.
Aim: The aim of the present study was to develop components and elements and determine the validity of the talent identification model for Iranian children, adolescents, and youth.
Method: This research was conducted using a qualitative approach based on grounded theory. The statistical population included experts and specialists in counseling, career guidance, and academic advising during the 2023–2024 academic year. Among them, 14 individuals were selected through theoretical sampling for in-depth interviews. Interviews continued until theoretical saturation was achieved. To validate the proposed model, 14 experts were selected using purposive sampling. The research tools included interviews with experts and school counselors. To examine the content validity of the proposed model, the Content Validity Index (CVI) and the Scale-level Content Validity Index (S-CVI) were utilized.
Findings: The Content Validity Index (CVI) indicated the comprehensiveness of judgments regarding the validity or feasibility of the final model or instrument. As the minimum acceptable value for CVI is 0.79, the results showed that this value exceeded 0.79 for all criteria of the model. Therefore, it can be concluded that the proposed model has appropriate content validity.
Conclusion: The results suggest that a combination of psychological tests, interviews, observations, talent games and temperament analysis, can be used for talent identification.

Key words: model, talent identification, children, adolescent, youth
Jel Codes: A19, A20, A29

1. Introduction

All those who have achieved impressive success in various fields such as music, painting and science have one thing in common: they all have special talents. But what is this talent? What causes some people to achieve extraordinary success in certain fields? Parents are especially eager to know in what field their child has talent and genius. And how they can develop this genius.

First, we need to know what our capabilities are? What position are we going to have in society in the future? And finally, how should we go about this path to reach our goal with ease and minimal stress? In this research, we intend to achieve a talent identification model for children, adolescents, and youth. Because if the talent identification process is implemented from an early age and this culture building is carried out at higher levels and in our organizations and society, many of our cultural, economic, social, and other problems will be resolved.

Moreover, Iranian teachers believe that if talent identification and recognition are not carried out in the early years, students' enthusiasm and ability to learn will diminish over time. We have all seen many enthusiastic and talented students whose passion for learning fades during their school years. All students have specific abilities that need to be discovered and provided with a conducive environment for growth. Success in any field requires the discovery of talents at an

early stage. Therefore, one of the most important tasks of schools is to discover the talents of students in various fields and guide them in the direction of their particular abilities in life. Discovering gifted and talented individuals in the early years leads to a better and clearer future for the student. If this is not done, it can lead to irreparable problems and failures in the future. By discovering gifted talents, individuals are provided with a platform for success and become efficient and useful people (Abbasian et al., 2023).

2. Literature Review

Talent is a special taste and ability that lies within individuals and causes a person to achieve above-average success in scientific, practical, industrial or artistic fields by using this blessing. The word “Talent” is derived from the Greek word “Talanton”, meaning a scale or measuring vessel. It is said that talent is a special ability that lies within the nature of individuals and by using it, an individual can achieve a higher level than the average person in some skills (Krafft and Semke, 2019).

Our abilities are so many that it is impossible to use them all. In most cases, we are not aware of our abilities, and if we are, we probably do not know how to use them in the best possible way. Successful people have learned to use their abilities and constantly make new discoveries about the different dimensions of these abilities. Of course, there is no obligation to use your abilities; but on the other hand, failure is usually a sign that we have abilities that we do not know how to use effectively (Barrett, 2019).

Another subtle point about talent is its uniqueness, as scientific research shows that every human being has 95 unique characteristics, including fingerprints, DNA, gait, body odor, and most importantly, their main talent. Therefore, the main secret to each person's success in life is considered to be focusing on their special talent (Alian Ataabadi, 2009).

Our children are geniuses. You may not realise it. They almost certainly don’t. But our children are part of the brightest generation of humans ever. They are humanity’s latest upgrade. Our children are 40 per cent brighter than the average young person was in 1950. On average, scores on intelligence (IQ) measures have increased by 3 points every decade in the last century. This trend continues and may even be accelerating. Add to this the enormous amount of technology we use now to leverage and increase our mental powers – laptops, smartphones, the internet – and the shift really is an exponential explosion of intelligence. It is estimated that we process five times more information every day than people did in 1986. This gain in intelligence has been achieved without any target intervention. Imagine what gains we could see if we helped to nourish our children’s cleverness rather than passively waiting for their abilities to unfurl like leaves in the springtime. Geniuses in the 21st century resemble the multi-skilled artists of the Renaissance era more than any other time in history. Today’s geniuses are thought-weavers. They are able to access knowledge from multiple sources, integrate it in ingenious ways and apply it in innovative ways in multiple setting (Fuller, 2016).

Sasani et al. (2024) conducted a study titled "Developing a Model for Identifying Student Talents with a Qualitative Study Approach". The study identified four primary factors influencing talent identification: individual, school, family, and social. Among these, school factors, particularly human resources (teachers, mentors), were found to be the most significant. Individual factors, such as internal and external motivation, also played a crucial role, with internal motivation being the more prominent driver of talent development. Family involvement, particularly parental support, was another key contributor, while social factors, including peer relationships, were found to be less influential but still relevant in specific contexts like sports and group activities.

Rajabian Deh Rizeh et al. (2025) conducted a study titled "Developing the components and elements and determining the validity of the talent identification and academic guidance model for students in Alborz schools". The results suggest that a combination of intelligence tests, paper-based assessments, interviews, observations, and other evaluation methods, along with consideration of influential factors such as family, peers, and the school environment, can significantly enhance the academic guidance process. Implementing this model in schools could

improve the accuracy of field-of-study selection and consequently increase students' educational and career satisfaction.

Studies show that current cultural, social, and economic conditions have made it difficult to implement programs to identify and guide highly talented individuals. In addition, the centralized approach of the educational system and its emphasis on predetermined programs are not compatible with the approach based on individual talents that is proposed in identifying and guiding highly talented individuals (Novidi, 2007). Considering these issues and the lack of a suitable program to identify the talents of Iranian children, adolescents, and youth, the researcher has decided to conduct this study.

3. Research Methodology

The research method was qualitative, data-based. The research method Data-driven theory is a qualitative research method that develops a theory using a set of data. Strauss and Corbin (1998) define data-driven theory as a theory that is directly derived from data that has been systematically collected and analyzed during the research process. Data collection, analysis, and the final theory are closely related. In grounded theorizing, all practical arrangements and steps are followed with the aim of identifying, developing, and relating concepts to each other, and the researcher selects forms of data collection that provide usable text and data in developing the theory (Rajabian Dehzireh, Moradi, and Taheri; 2025).

Participants in this study were selected using the theoretical sampling method. Theoretical sampling is similar to purposive sampling and is carried out simultaneously with the research stages, including collecting information from primary individuals, analyzing this information, conceptual categorization, and determining themes. Subsequent decisions determine the amount and type of data to be collected. Sampling and data collection continue until all categories and themes are saturated, after which another category or theme is added. Theoretical sampling requires the construction of interpretive theories from the integration of data and the selection of new samples to test and build this theory. The researcher selects samples as the theory evolves. In fact, increasing interest is the basis for selecting cases. It is the main strategy for grounded research, but it is also used in other qualitative methods that require interpretation (Jalali, 2012). For this purpose, one should go for people who maximize the possibility of discovering diversity and enrich the categories with features and dimensions (Homan, 2024).

Accordingly, and with regard to the research problem of designing a talent identification model for children and adolescents, 14 people were selected as a sample for interviews in 2024 and 2025 during the sampling stages using the theoretical sampling method from among experts and professors in the fields of educational sciences and psychology. Among the criteria for entering the research, all interviewees must have expertise in the field of talent identification, counseling, career guidance, and academic guidance. Considering the subject of the research, individuals must be familiar with various talent identification methods. Among the criteria for entering the research were expertise and experience (work history in the field of talent identification, counseling, career guidance, and academic guidance), having a relevant academic degree (educational sciences, psychology, and counseling), participating in training courses related to talent identification, having up-to-date information on theories and models of talent identification, and familiarity with tools and methods for assessing talents.

In this study, in-depth interviews were used to collect data. Extensive exploration and open-ended questions are one of the characteristics of in-depth interviews. In this method, the researcher prepares a list of key questions and topics for conducting the interview. This is a kind of guide for the interview and makes the interview more systematic and comprehensive. In-depth interviews are two-way purposeful conversations between a trained interviewer and the interviewee, and their goal is to infer rich details and important issues that can be used in analysis (Homan, 2024). In this regard, among the three types of structured, unstructured, and semi-structured interviews, the semi-structured interview method was used. Due to the importance of the interview questions, this was done by reviewing the research literature and consulting with

relevant experts.

To examine the content validity of the proposed model, the Content Validity Index (CVI) and the General Fit Index (S-CVI) were used. Since the minimum acceptable value for CVI is 0.79, this number was above 0.79 for all criteria of the model, and therefore it can be concluded that the proposed model has appropriate content validity. Also, to calculate the overall suitability of the proposed model (S-CVI) in this study, the average approach was used. The overall suitability of the proposed model (S-CVI) was 0.83, which is higher than the minimum desirable suitability (0.80). Therefore, it can be concluded that experts have evaluated this model as a suitable model for identifying talents of children and adolescents in Iran.

Details of the 14 interviewees in this study are presented in Table 1.

Table 1. Profile of interviewees

Job Title	Grade Level	Field of Study	Talent Identification Experience
Faculty Member	Ph.D.	Educational Psychology	5
Faculty Member	Ph.D.	Educational Sciences	4
Counseling Psychologist	M.A.	Educational Psychology	7
Counseling Psychologist	M.A.	Educational Psychology	3
Counseling Psychologist	M.A.	Clinical Psychology	2
Counseling Psychologist	Ph.D.	Clinical Psychology	3
Faculty Member	Ph.D.	Educational Psychology	4
Faculty Member	Ph.D.	Clinical Psychology	4
Faculty Member	Ph.D.	Educational Psychology	2
Consultant and Researcher	Ph.D.	Educational Sciences	1
Counseling Psychologist	Ph.D.	Clinical Psychology	8
Counseling Psychologist	Ph.D.	Educational Psychology	6
Counseling Psychologist	Ph.D.	Educational Psychology	3
Counseling Psychologist	Ph.D.	Educational Psychology	2

The research data were analyzed through a coding process based on a systematic design of data-driven theory. In the grounded theory method, data analysis is carried out through three main coding stages:

1. Open coding: In this stage, the raw data is divided into smaller sections and labeled based on the concepts contained in them. These concepts can be from a single word to a paragraph, and the main goal is to initially identify the concepts and their dimensions.

2. Axial coding: In this stage, the concepts identified in the previous stage are linked to each other and an initial theoretical structure is created. These relationships are shown in the form of a diagram in which a main category is selected and other categories are placed in specific positions based on their relationship to the main category. These positions include causal conditions, strategies, contextual conditions, mediating conditions, and consequences.

3. Selective coding: In this stage, the central categories are linked to each other and a comprehensive theory is created. This stage is the final stage of data analysis and in which a general theoretical model of the phenomenon under study is presented.

Reviewing research questions

Question 1. What components and elements does the talent identification model for children, adolescents, and youth in Iran include?

To answer the research question, the interview texts were carefully studied, analyzed, and initially coded. In this way, a paragraph or sentence or part of it was used and a code was assigned to it in the form of numbers or text. After open coding, axial coding was performed. Five main categories were identified, including psychological tests, interviews, observations, talent games, and temperament. Also, five subcategories were identified for the first category and seven subcategories for the fourth category. The main categories and their related subcategories are listed below.

Table 2. Coding of the main categories of talent assessment methods

Example of key sentence in the text	Main category
For me, the use of psychological tests is very important.	Psychological tests
After summing up the results of the questionnaires, it is necessary to hold 1 or 2 interview sessions with the parents and also an interview with the child or teenager himself.	Interview
Usually, talent spotters cannot do detailed and in-depth observation, but I think this is very important in addition to the interview.	Observation
All kinds of games, especially intellectual games, can help us identify and develop children's hidden talents.	Talent games
Temperament analysis helps me a lot in talent spotting. But this topic is rarely used by consultants.	Temperament analysis

According to Table 2, from the interviewees' perspective, the methods of talent assessment had 5 items including psychological tests, interviews, observation, talent games, and temperament analysis. In fact, according to the perspective of the participants in this study, these 5 methods should be used to assess the talent of children and adolescents.

Table 3. Frequency of repetition of the main categories of talent assessment methods

Row	Main category	Frequency of repetition
1	Psychological tests	14
2	Interview	12
3	Observation	5
4	Talent games	8
5	Temperament analysis	3

Table 3 shows the frequency of repetition of the main categories of aptitude assessment methods. The category of psychological tests has the highest frequency of repetition with 14 repetitions, and the category of temperament has the lowest frequency of repetition with 3 repetitions.

The two main categories of psychological tests and talent games had 5 subcategories and 7 subcategories, respectively.

Table 4. Coding of psychological test subcategories

Example of a key sentence in the text	Subcategory
I use the Stanford Binet test.	Intelligence and memory tests
Some tests, such as the Clifton Ability Test, provide valuable information about a person's strengths.	Ability and achievement tests
In talent screening for young people aged 18 and over, I use the Myers-Briggs personality test. However, for children and adolescents, the Eysenck personality questionnaire is suitable.	Personality tests
The Holland test is the most practical and famous test for identifying career interests and tendencies.	Career and interest inventory tests
When a person's areas of abilities, interests, and personality traits do not overlap. Examining personal values helps the talent scout.	Value assessment tests

According to Table 4, from the interviewees' perspective, the main category of psychological tests had 5 items including intelligence and memory tests, ability and achievement tests, personality tests, career and interest inventory tests, and value assessment tests. In fact, according to the perspective of the participants in this study, these 5 categories of tests can be used to conduct psychological tests.

Table 5. Frequency of repetition of psychological test subcategories

Subcategory	Frequency of repetition
Intelligence and memory tests	9
Ability and achievement tests	14
Personality tests	7
Career and interest inventory tests	8
Value assessment tests	5

Table 5 shows the frequency of repetition of the subcategories of psychological tests. The category of ability and achievement tests has the highest frequency of repetition with 14 repetitions, and the category of values assessment tests has the lowest frequency of repetition with 5 repetitions.

Table 6. Coding of talent games subcategories

Example of a key sentence in the text	Subcategory
Playing with Lego, especially in a group, reveals many of the abilities of children.	Construction games
Physical sports and games demonstrate a person's motor skills.	Movement games
Play dough is similar to pottery and reveals the child's creativity, imagination, and artistic expression.	Art games
Intellectual games such as Sudoku are very useful for developing the talents of children and adolescents.	Intellectual games
When a child appears in a simulated environment, for example, in the role of a dentist, he shows both his talents and becomes more familiar with the working conditions of each job.	Role-playing games
In addition to talent detection, dramatic games can also be used to teach scientific subjects.	Drama games
Now there are some educational computer games that help us in this.	Educational games

According to Table 6, from the interviewees' perspective, the main category of talent identification games had 7 items including construction games, movement games, art games, intellectual games, role-playing games, drama games, and educational games. In fact, according to the perspective of the participants in this study, these 7 categories of talent identification games can be used to conduct talent identification games.

Table 7. Frequency of repetition of talent game subcategories

Subcategory	Frequency of repetition
Construction games	10
Movement games	8
Art games	7
Intellectual games	9
Role-playing games	5
Drama games	7
Educational games	11

Table 7 shows the frequency of repetition of the talent identification game subcategories. The educational games category has the highest frequency of repetition with 11 repetitions, and the role-playing games category has the lowest frequency of repetition with 5 repetitions.

Question 2. What is the validity of the talent identification model for children, adolescents, and youth in Iran?

For the internal validation of the talent identification model for Iranian children, adolescents, and youth, 14 participants were selected in the research. The final model was sent to all of them, and 13 of the participants approved the model, the results of which are listed in Table 8. Also, to examine the content validity of the proposed model, the content validity index (CVI) and the overall fit (S-CVI) were used. The content validity index (CVI) indicates the comprehensiveness of judgments related to the validity or capability of the model or the final tool. Since the minimum acceptable value for CVI is 0.79, the results of Table 8 show that this number is above 0.79 for all criteria of the model, and therefore it can be concluded that the proposed model has appropriate content validity. Also, the average approach was used to calculate the overall fit of the proposed model (S-CVI) in this study. Based on the results of Table 8, the overall fit of the proposed model (S-CVI) is 0.83, which is higher than the minimum desirable fit (80%). Therefore, it can be concluded that experts have evaluated this model as a suitable model for identifying talent among Iranian children, adolescents, and youth.

Table 8. Internal validation of the talent identification model for children, adolescents, and youth in Iran

Standard	Mean	Standard Deviation	CVI	S-CVI
Validity	3.78	0.23	0.81	0.83
Applicability	3.92	0.24	0.83	
Coherence	3.87	0.23	0.81	
Comprehensiveness	3.64	0.32	0.85	
Acceptability	3.69	0.19	0.87	

Table 9. Categories and subcategories of the talent identification model for children, adolescents, and young people in Iran

Subcategory	Main category
Intelligence and memory tests	Psychological tests
Ability and achievement tests	
Personality tests	
Career and interest inventory tests	
Value assessment tests	
-	Interview
-	Observation
Construction games	Talent games
Movement games	
Art games	
Intellectual games	
Role-playing games	
Drama games	
Educational games	
-	Temperament analysis

4. Conclusion

The aim of this study was to present a model for the talent assessment of children, adolescents and young people in Iran. The results of the study showed that from the participants' perspective, the aforementioned model had the main categories of psychological tests, interviews, observations, talent assessment games and temperament. This finding is consistent with the results of research by Rajabian Dehzireh, Moradi and Taheri (2025), Manbari, Poushneh and Khosravi Babadi (2022), ... based on the consideration of assessment methods in talent assessment.

Talent assessment methods play a very important role in identifying the potential and hidden abilities of children, adolescents and young people. These methods not only help students to have better self-knowledge, but also allow academic counselors and parents to design educational and career programs appropriate to the talents of each student.

Among them, psychological tests have a special place. Intelligence and memory tests, as one of the oldest and most well-known methods of assessing talent, measure the general mental abilities of individuals such as visual-spatial processing, quantitative reasoning, fluid reasoning,

processing speed, reading comprehension, working memory, and problem solving. The results of these tests help counselors and educators to have a better understanding of the general abilities of students and design educational programs that are appropriate for them. In Iran, talent scouts are more likely to use the Stanford-Binet Intelligence Test and the Wechsler Intelligence Test. However, the use of intelligence tests such as Raven, Cattell, Kaufman, Goodenough Draw-a-Person, Reynolds, Domino (D48), etc. is also seen. The Sullivan test has also been used to measure emotional intelligence. Ability and achievement tests are tools that are used to evaluate and measure the capabilities and abilities of individuals in various fields. These tests can be useful in educational and career guidance, identifying strengths and weaknesses, and planning for personal development. The advantages of these tests include their ease of administration and the ability to assess a large number of people simultaneously. In Iran, Gardner's Multiple Intelligence Test is used to identify and understand different types of intelligence, Clifton's Ability Assessment Test or Seligman and Patterson's Personality Ability Questionnaire (VIA-IS) is used to identify people's strengths, and Torrance's Creative Thinking Test and Philip Carter's Creative Thinking Test are used to measure creativity. Personality tests have a variety of applications in different fields. These tests can help people get to know themselves better, identify their strengths and weaknesses, and make better decisions in choosing a job and career path. These tests can help examine personality changes over time and improve people's performance. In Iran, the Eysenck personality test is commonly used for children and adolescents, and the Myers-Briggs, Neo, DISC, and Enneagram tests are used for young people over 18. Career and aptitude tests are tools designed to help individuals choose a career and field of study that is appropriate for their interests and abilities. By measuring individuals' interests, skills, and personality type, these tests provide them with useful information so that they can make more informed decisions about their career and education. In Iran, the use of the Holland Aptitude Test, the Strong Aptitude Test, and Edgar Schein's Career Anchors is common. Values assessment tests are used to identify and understand individual value priorities. These tests can be used in various fields, including career selection, career counseling, personal development, and even understanding cultural differences. By recognizing their values, individuals can make more informed decisions and live in line with their goals and values. Schwartz's Personal Values Test or Allport Values Test and the Values Card (prepared by Ali Sahebi and Mehdi Eskandari based on Russ Harris Happiness Trap Card) are among the practical tests in this field.

In the interview, as a qualitative method in talent identification, an opportunity is provided to communicate directly with the individual and collect more information about his/her interests, motivations, goals, strengths and weaknesses. The interview also helps the talent agent to gain a deeper understanding of the individual's personality and way of thinking. For example, in a sample interview, first the individual's personal information and resume are obtained. Then, the individual's concerns, mental questions, doubts, etc. are familiarized with. The validity of the Gardner Intelligence Test and the Holland Career Interest Scale are verified. The individual's fundamental interests and values are familiarized with. And finally, the final conclusion is made regarding the field of study and career and the offer of training in the areas of personal development, specialized courses and business skills to the candidate. The interview session ends with answers to the individual's questions, concerns, doubts, etc.

Direct observation of a child, adolescent, or young person's behavior in various settings such as the classroom, extracurricular activities, living space, and social environments provides valuable information about their talents and abilities. By carefully observing a person's behavior, a talent scout can identify their strengths and weaknesses in various areas such as communication skills, teamwork, problem solving, and creativity.

Talent identification games are a special type of game designed to engage the individual more with the game. When a person starts spending time with talent scouting games, they reveal their skills, abilities, and talent to a great extent. Talent scouting games are generally challenging and make the person activate their creativity and think and focus on how to play the game. Some of these games used in talent scouting centers in Iran include:

1. Construction games: Construction games are a category of toys and intellectual games that allow children and even teenagers and young people to build three-dimensional structures. These games usually include pieces that can be connected in different ways and create a variety of shapes:

a) Lego: One of the most famous and popular construction games that consists of small plastic pieces and allows the construction of a variety of models, including cars, houses, and cartoon characters.

b) Puzzles: Puzzles are also a type of construction game that completes an image by putting different pieces together. Puzzles come in many types, from simple wooden puzzles for children to complex, three-dimensional puzzles for teenagers and young people.

c) Wooden construction games: These types of games consist of wooden pieces and are usually used to build geometric shapes or simple models. These games are safe for children, teenagers and young adults due to the naturalness of the raw materials and help to enhance creativity and motor skills.

d) Magnetic construction games: These games use blocks or pieces that are connected to each other using magnets. These games allow volunteers to build a variety of three-dimensional structures using their creativity.

e) Play dough: Play dough is also a type of construction game that allows people to make different models by shaping the dough. These games help to enhance creativity, motor skills and hand-eye coordination.

f) Origami: Origami is the Japanese art of folding paper to make different shapes. This art helps to enhance concentration, creativity and fine hand skills.

2. Movement games: Movement games play a very important role in the development of children's physical and cognitive functioning. Especially in today's world where children are increasingly dependent on electronic devices and sedentary activities. Movement games include activities in which children play and exercise by using their bodies and performing various movements. These games have many benefits for children's physical and mental development and help strengthen their movement skills, coordination, balance, and physical strength. These games greatly help talent scouts in identifying individuals' kinesthetic intelligence:

a) Gross movement games: These games include movements that involve the large muscles of the body, such as running, jumping, skipping, throwing a ball, and walking.

b) Fine movement games: These games include movements that involve the small muscles of the hands and feet, such as grasping objects, throwing, and catching a ball.

c) Imaginative movement games: These games involve movements that use the child's imagination and creativity, such as playing with rope, crossing lava, and dancing with paper towels.

3. Art Play: Art play for children includes activities that allow them to express their creativity and develop their artistic skills. These games can include painting, sculpting, craft making, and other art activities:

a) Painting:

• Finger painting: Using finger paints and drawing on paper or other surfaces.

• Brush painting: Using a brush and different colors to create artwork.

• Pastel painting: Using oil pastels or chalk to draw.

• Salt painting: Using salt and food coloring to create raised designs on paper.

b) Sculpting:

• Play dough: Using play dough to make different shapes and models.

• Clay: Using clay to sculpt and make objects.

C) Crafts:

• Making crafts with paper: Using colored paper, cardboard, and other materials to make various crafts such as animals, flowers, and ...

• Making crafts with recycled materials: Using plastic bottles, cans, and other disposable materials to make crafts.

D) Performance:

• Puppet show: Making puppets and performing puppet shows.

• Pantomime show: Performing wordless performances to express concepts and stories.

4. Intellectual Games: Intellectual games encompass a wide range of purposeful mental activities that can be played individually or in groups and can have a positive impact on the mind, personality, and life of individuals. These games, regardless of age, gender, or physical condition, can help focus, enhance skills, and creativity:

• Board Games: This category includes games such as chess, Monopoly, Abalone, Corridor, and Debrena.

• Card Games: Card Games: Games played with cards often have simple rules and are portable, such as Passover and ...

• Puzzle Games: These games include a variety of puzzles and mental games aimed at strengthening problem-solving skills.

• Memory Games: These games help strengthen memory and concentration.

5. Role-Playing Games: In this category of games, the individual is placed in different job formats and in a simulated environment to become familiar with the working conditions of each job.

6. Drama Games: Drama games are a type of activity through which children assume roles and play. These types of games help children develop their personal and social skills, increase their self-confidence, and cultivate their creative minds. These games reveal the talents and personality complexities of students while interacting and having fun with each other. "Drama Games for the Theater Workshop" by Viola Spolin is an important work in the field of dramatization education and provides educators with a comprehensive guide to incorporating theater games and improvisation techniques into the classroom. First published in 1975, it remains a staple text for teachers, offering practical exercises, insights, and strategies for engaging students in creative expression, collaboration, and self-discovery through theater.

7. Educational Games: These games are designed to teach and reinforce specific skills, such as games related to math, language, science, and more. Educational games are great learning tools. The goal of game-based learning is to provide an educational environment that engages individuals in learning goals.

Temperament analysis in talent identification refers to the process of identifying a person’s talents and abilities based on their dominant temperament. In this approach, it is believed that each person has unique personality traits and talents based on their temperament (nature) that can help them choose the right career and educational path.

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Pre- and Post-GenAI Hotel Technologies: A Systematic Review of Service Quality and Satisfaction for Value

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Abstract

Introduction: Technological hospitality services represent a component for tourism organizations and customers experiences facilitating value co-creation. Technology management role in hotel industry is crucial to enhance hotel competitive advantage. Starting from mature technologies, the understanding technology's use in hotels in last years to the combination emerging technologies/AI is critical to forecast future.
Aim: This study aims at identifying the main technologies used before GenAI and later to date in the hotels. Also, creates possible intersections between technological service qualities level and related customer satisfaction considering technology used before GenAI and today. This research redefines service qualities and customer satisfaction within hotel services (Ng et al., 2024; Luo et al., 2025).
Method: A Systematic Literature Review was developed to: identify and categorize technologies in hotel services into pre-GenAI (≤2022) and post-GenAI (≥2023); link these technologies and customer satisfaction, considering only studies matching identified technologies.
Findings: The results highlights pre-GenAI technologies offer different experiences impacting on customer experience and on value showing a shift from efficiency-driven tools to experience-centered solutions improving the customer satisfaction. Instead, relational aspects are crucial for tourists target.
Conclusion: Mature and disruptive technologies coexistence is shaping hybrid models of hotel services, where GenAI complements rather than replaces previous systems. Human aspects in managing technological hotel services are relevant in value co-creation processes impacting on hotels competitive advantage.
Originality and value: This research is original lacking this aim in the current literature and create value for researchers and hotel managers on managing technological transitions.

Key words: **Tourism; Hospitality services; Emerging technologies; GenAI; Customer satisfaction; Service quality.**
Jel Codes: L83; M19; O32

1. Introduction

Recent technological revolutions have profoundly reshaped tourism and hospitality (Pencarelli, 20209 transforming how firms interact with customers (Buhalis et al., 2019). The ability to provide hospitality service enhanced by technology is now recognized as a strategic lever (Khatter, 2025) that enface challenges and opportunities (Giannoukou, 2024). This ongoing transformation has significant implications for how hospitality organizations manage the offer of services and customer satisfaction. The hotel industry must now harness technological potential while preserving the human essence of services (Solnet et al., 2019). The use of technology in hotel services represents a key component of tourism, aimed at enhancing customer experience and co-creating value for both guests and organizations (Buhalis et al., 2019; Chathoth et al., 2016). Understanding this balance is crucial for both researchers and professionals seeking to navigate the ongoing transformation of "digital hospitality".

Initially, technology in hotels served to improve operational efficiency and standardize service

delivery (Lee et al., 2023). With the diffusion of Artificial Intelligence (AI) and machine learning, the focus shifted from efficiency to experience, emphasizing personalization, interactivity, and value co-creation (Ng et al., 2024). More recently, the emergence of Generative AI (GenAI), has accelerated this transformation, raising new opportunities but also new challenges for managers and researchers.

The introduction of GenAI since 2022 has profoundly transformed the hospitality sector (Parvez et al., 2025) highlighting how technological evolution could change service quality and customer satisfaction within hotel services (Luo et al., 2025). This conceptual and empirical gap investigates not only which technologies have been adopted, but also how their application has impacted the relational and strategic dimensions of hotel management. Against this backdrop, the research problem consists of identifying and interpreting how technologies adopted in hotel services have evolved from the pre-GenAI (≤2022) to the post-GenAI (≥2023) period, analyzing their functional roles and their implications for service quality and customer satisfaction. To fill this gap, a Systematic Literature Review (SLR) has been carried out to achieve three specific objectives: firstly, identify and categorize the main technologies used in hotel services before GenAI (≤2022) and after GenAI (≥2023); secondly, investigate their impact on operational practices examining only case study; thirdly, investigate the relationship among the selected technologies, service quality dimensions and customer satisfaction results.

All this considered, we developed following research questions:

RQ1: What is the leverage of emerging technologies in hotel tourism?

RQ2: How does the integration of mature technologies and emergent technologies affect perceived quality of service and customer satisfaction in hotels?

RQ3: To what extent and how do emerging and mature technologies integrate with human intervention in hotel services, and how does this human-tech interaction affect the customer experience, the perception of service quality and the co-creation of value?

The paper is structured as follows. In section 2 the theoretical background has been investigated; in section 3 the methodology has been described; section 4 shows findings of paper; in section 5 the discussions have been developed; finally, in the section 6 the conclusions, implications, limitations and future research lines have been presented.

2. Theoretical background

2.1. Tourism management

According to the World Tourism Organization (UNWTO), tourism is a social, cultural, and economic phenomenon that involves the movement of people to countries or places outside their usual environment for personal or professional purposes. This definition allows to understand that there are a lot of customers' needs must be satisfied, considered and managed.

In literature, tourism management is defined as the management of resources, processes and people to and create valuable tourism experiences (Chang & Katrichis, 2016). In recent years, the sector has influenced by significant transformation, driven by technological innovation and changing tourist behavior (Rodrigues et al., 2023). Researches on the tourist management have been investigated highlighting more holistic approaches (Ramkissoon & Uysal, 2018) that consider emotions, value co-creation and technology (Dangi & Jamal, 2016).

2.2. Smart tourism and technology management

According to Gretzel et al. (2015), "smart tourism is a phenomenon firmly grounded in technology" (pag. 42). Smartness stems not from isolated technological innovations, but from the integration and coordinated application of various technologies (Höjer & Wangel, 2015).

Technology has become pervasive in everyday life, profoundly transforming how tourists plan, experience, and share their journeys (Buhalis et al., 2019). Moreover, the continuous integration

of digital and emerging technologies in tourism and hospitality does not merely enhance service quality and customer satisfaction (Limsawaddiwong, 2025). It also acts as a catalyst for service innovation, driving new ways of creating, delivering, and co-creating value (Neuhofer, 2016; Opute et al., 2020).

The growing integration of digital tools in tourism required effective technology management to ensure alignment with strategic objectives. According to Liao (2005) "technology management is a process, which includes planning, directing, control and coordination of the development and implementation of technological capabilities to shape and accomplish the strategic and operational objectives of an organization" (pag. 381). In this perspective, the continuous evolution of digital systems naturally leads to the emergence of new technologies that reshape the dynamics of tourism and hospitality.

2.4. Emerging technologies and human interaction

A technology is emerging when its transformative potential becomes evident (Halaweh, 2013). Emerging technologies are characterized by five attributes: radical novelty, fast growth, coherence, prominent impact, and uncertainty and ambiguity (Rotolo et al., 2015, pag. 1827). These technologies have a high potential to affect processes, organizations, or user behaviour (Lee et al., 2021). However, these technologies increasingly mediate interactions between guests and service providers. Understanding human-technology interaction becomes essential to effectively manage the customer experience (Wang et al., 2025). A purely technological approach could risk reducing engagement and compromising the overall experience (Tandafatu et al., 2024). According to Lee et al. (2025), technology improves convenience and speed within the tourism and hospitality industry, while the human role is crucial for those who prioritize the emotional and relational aspect of their stay. The balance between human and technology is crucial to maximizing perceived quality and customer loyalty (Park et al., 2022).

The interaction between human and technology is a key to understand the current value obtainable from technology but finally to forecast the next technological future based on the quantum computing.

2.5. Service science and Quality as drivers of Customer Satisfaction

Service science is deeply rooted in Service-Dominant Logic (S-DL) (Vargo & Lusch, 2008), which emphasizes that value is co-created through resource integration and service exchange. Service science applied to tourism therefore analyses service systems as integrated networks of people, technologies, and organizations that co-create value (Sigala, 2018). Within this logic, service quality and customer satisfaction improve when smart technologies are not only adopted but integrated with human skills, strengthening value co-creation and long-term loyalty (Yağmur et al., 2024). In this view, service quality is a dynamic construct, resulting from ongoing interactions between service providers, customers, and technologies (Sigala, 2018). The perception of service quality becomes a key antecedent of customer satisfaction, reflecting how effectively value is co-created (Solakis et al., 2021). Ultimately, customer satisfaction emerges as a key indicator of the success of value co-creation in tourism and hospitality services (Ribeiro et al., 2023).

2.6. Value co-creation

The concept of value co-creation introduced by Prahalad and Ramaswamy (2004) points out that "customers are co-creators of value rather than targets of that value" (Lyu et al., 2022, p. 1). Value "differs for each customer, being created in use and specific to context" (Font et al., 2021, p. 2). In essence, co-creation is a "joint, collaborative, peer-like process of producing new value, both materially and symbolically" (Galvagno & Dalli, 2014, p. 643).

Recognizing that firms' boundaries are permeable and emerging technologies enable to totally change value propositions, theorists pay attention to tech in value co-creation (Kohli & Grover, 2008). Value co-creation in tourism combines technology and human interaction for

personalized experiences and greater guest satisfaction (Bhuiyan et al., 2022). Stakeholder engagement, supported by technologies, is essential to enrich the experience and increase satisfaction (Carvalho & Alves, 2023).

3. Methodology, research design and process

This methodological approach allows the identification of mature and emerging technologies applied in the hotel industry, how they contribute to operational efficiency and enhanced service quality and customer satisfaction. Therefore, we selected only papers that addressed mature or emerging technologies in tourism through case studies, examining business practices and their strengths and weaknesses.

With the aim to identify and categorize the existing literature on the use of emerging technologies in hotel services, and to explore their relationship with service quality and customer satisfaction, a multi-step methodological approach was developed. Firstly, a Systematic Literature Review (SLR1) was conducted to identify and classify emerging technologies adopted in hotel services. Secondly, a content analysis was carried out on first Systematic Literature Review to classify the identified technologies into two temporal clusters: pre-Generative Artificial Intelligence (pre-GenAI, ≤2022) and post-Generative Artificial Intelligence (post-GenAI, ≥2023). The post-GenAI, ≥2023 is assumed since the launch of the first version of ChatGPT (OpenAI) on November 2022. Thirdly, their contribution to service quality and customer satisfaction has been analysed; then, a second Systematic Literature Review (SLR2) has been conducted to investigate the relationship among technologies, service quality, and customer satisfaction. The SLR2's results are investigated by a content analysis and summarized in table 3. Finally, the findings from the two SLRs and the content analysis were integrated and discussed to provide a comprehensive interpretation of how mature and emerging technologies affect service quality and customer satisfaction within hotel organizations.

4. Findings

In applying the systematic literature review, we used Scopus and Web of Science databases. We started to add in Scopus the keywords and Boolean operators defined ("Emerging technolog*" OR "Artificial Intelligence" OR "AI" AND "touris*" AND "case study") by using the settings "no data limitations" and search field "Articles title, Abstract, Keywords". We have generated the following string:

(TITLE-ABS-KEY ("Emerging technolog*") OR TITLE-ABS-KEY ("Artificial Intelligence") OR TITLE-ABS-KEY ("AI") AND TITLE-ABS-KEY ("Touris*") AND TITLE-ABS-KEY ("Case study"))

By this string, we have generated n=356 papers. Also, we have filtered these documents with the following rules: "Article" document type, "English" language obtaining the following string:

(TITLE-ABS-KEY ("Emerging technolog*") OR TITLE-ABS-KEY ("Artificial Intelligence") OR TITLE-ABS-KEY ("AI") AND TITLE-ABS-KEY ("Touris*") AND TITLE-ABS-KEY ("Case study")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English"))

Finally, we have extracted n=103 papers.

At the same time, we have adopted the same process for Web of Science by using the same settings used previously in Scopus. This string has been generated:

"Emerging technolog*" OR "Artificial Intelligence" OR "AI" (Topic) AND "Touris*" (Topic) AND "Case study" (Topic)

By this string we have obtained n=92 papers. Then, we have filtered these documents with the following rules: "Article" document type and "English" language extracting the final string:

"Emerging technolog*" OR "Artificial Intelligence" OR "AI" (Topic) AND "Touris*" Topic)

AND "Case study" (Topic) and Article (Document Types) and English (Languages)

The string has generated n=71 papers.

After getting the results from both databases, we merged them (n=174) and eliminated the duplicates (n=56 papers), resulting in a final result of n=118 papers.

A manual content analysis was conducted on the 118 papers retrieved from Scopus and Web of Science. The analysis examined each paper to identify and categorize emerging technologies applied in hotel and tourism services into two temporal clusters: pre-Generative Artificial Intelligence (pre-GenAI, ≤2022) and post-Generative Artificial Intelligence (post-GenAI, ≥2023). Subsequently, n = 29 papers were selected for the analysis of their application. From 118 total articles, only 13 papers were considered suitable and appropriate for emerging technologies applied to tourism services pre-GenAI (≤2022) and 16 papers were considered suitable and appropriate for emerging technologies applied to tourism services post-GenAI (≥2023).

Table 1. Matching SLR1 and content analysis on Emerging technologies (pre-GenAI, ≤2022) in hotel tourism services

Author(s)	**Content analysis**	
	Technology category	*Hotel Application Examples*
Nam et al. (2021), Gupta et al. (2022)	AI and robotics	Robots for reception, housekeeping and concierge, automation of interactions with guests
Orden-Mejía & Huertas (2022), Alotaibi et al. (2020)	Chatbot / AI NLP	Customer service, reservations, personalized recommendations
Wang et al. (2020), Mora-Mora et al. (2015)	IoT + sensors	Smart room management, object tracking, hotel security and automation
Allal-Chérif (2022), Zhang et al. (2022), Nicolaidou et al. (2022)	AR / VR / immersive tech	Immersive cultural experiences, virtual tours, hotel and destination promotion
Riadh (2022), Topal & Uçar (2019), Zheng et al. (2020)	AI for decision support / recommendation systems	Tourism planning, customer profiling, itinerary optimization
Rong et al. (2020)	Autonomous vehicles / AI mobility	Sustainable tourist transport linked to hotels and museums

Table 2. Matching SLR1 and content analysis on Emerging technologies (post-GenAI, ≥2023) in hotel tourism services

Author(s)	Content analysis	
	Technology category	*Hotel Application Examples*
Balga & Basciftci (2025); Gao et al. (2024); Makivić et al. (2024)	Deep Learning / Neural Networks	Room classification, customer preference analysis, experiential satisfaction prediction.
Cheng et al. (2024); Sop & Kurçer (2024); Nguyen et al. (2023)	GenAI / LLM / ChatGPT	Review analysis, data generation, chatbots for customer support.
Li & Jiang (2024); Rasheed et al. (2023)	Service Robotics + AI Interaction	Robot concierge and room service with adaptive learning.
Rekiek et al. (2024); Yuan & Zheng (2024)	Predictive AI / Machine Learning	Demand forecasting, pricing optimization, dynamic recommendations.
Bilgihan & Ricci (2024); Alcaraz et al. (2024); Shen et al. (2024)	Immersive & Integrative Tech	Experiential marketing, customer database enrichment, personalized tourism.
Li et al. (2023); Wiangwiset et al. (2023)	Smart Infrastructure & IoT	Flow monitoring, intelligent transport management and common spaces.
Chu (2024)	AI for Strategic Innovation	Technology adoption in OTAs and post-pandemic hotel management.

Starting by the first SLR, we further investigated to analyse service quality of emerging technologies, that affect customer satisfaction. So, we conducted a second SLR (SLR2) using both data base (Scopus and Web of Science) using Boolean indicators.

Starting on Scopus data base, we used the following string with n=8 results:

TITLE-ABS-KEY (“Emerging technolog*”) OR TITLE-ABS-KEY (“Artificial Intelligence”) OR TITLE-ABS-KEY (“AI”) AND TITLE-ABS-KEY (“Touris*”) AND TITLE-ABS-KEY (“Case study”) AND TITLE-ABS-KEY (“Quality”) AND TITLE-ABS-KEY (“Customer”))

Also, we have filtered these documents with the following rules: “Article” document type, “English” language generating the following string with n=2 results:

TITLE-ABS-KEY (“Emerging technolog*”) OR TITLE-ABS-KEY (“Artificial Intelligence”) OR TITLE-ABS-KEY (“AI”) AND TITLE-ABS-KEY (“Touris*”) AND TITLE-ABS-KEY (“Case study”) AND TITLE-ABS-KEY (“Quality”) AND TITLE-ABS-KEY (“Customer”)) AND (LIMIT-TO (DOCTYPE, “ar”)) AND (LIMIT-TO (LANGUAGE , “English”))

The same SLR strategy was adopted on Web of Science database generating the following string:

“Emerging technolog*” OR “Artificial Intelligence” OR “AI” (Topic) AND “Touris*” (Topic) AND “Case study” (Topic) AND “quality” (Topic) AND “customer” (Topic)

Web of Science generated no result (n=0).

The only two results obtained by Scopus and that we analysed as follow to understand the service quality level and the customer satisfaction are shown in the following table.

Table 3. Matching SLR2 and content analysis on Technological adoption's impact on service quality and customer satisfaction

Author(s)	Content analysis		
	Applied Technologies in Tourism/Hotel	*Impact on Service Quality*	*Impact on Customer Satisfaction*
Nam et al. (2021)	AI, Service Robots, Chatbots, Automation Systems	They improve efficiency and accuracy in service delivery, reducing human errors and response time while increasing service reliability.	AI enhances convenience and personalization, but too much automation may reduce emotional connection; balanced human–robot collaboration sustains satisfaction.
Kharkhalis et al. (2025)	AI-based management tools, CRM systems, mobile applications, and analytics platforms	Quality improves through real-time monitoring and data-driven decision-making.	Digital innovation improves communication, speed, and personalization, enhancing tourist satisfaction and loyalty.

Both studies affirm that emerging technologies act as catalysts of service quality, primarily by optimizing efficiency, accuracy, and responsiveness.

The emerged results by SLRs and content analysis (tab. 1, 2 and 3) highlighted that the use of technologies pre-GenAI technologies mainly focused on:

- *efficiency* (Nam et al., 2021; Gupta et al., 2022);
- *automation* (Alotaibi et al., 2020);
- *operational control* (Allal-Chérif, 2022; Zhang et al., 2022).

While post-GenAI technologies introduced a paradigm shift toward:

- *personalization* (Makivić et al., 2024);
- *interactivity* (Gao et al., 2024);
- *experiential value co-creation* (Yuan & Zheng, 2024).

5. Discussions

Post-GenAI technologies extends beyond functional satisfaction (Li & Jiang, 2024) to emotional and relational dimensions of the guest experience (Wiangwiset et al., 2023). Also, the findings highlight how the hotel industry is undergoing a dual transformation phase, in which mature and emerging technologies coexist and complement each other (Shen et al., 2024). The role of humans is related to technologies. The study is focused on the role of GenAI in tourism and hotel services and how it impacts on customer satisfaction. Discussions can be split in human and technological aspects. Related to technological aspect: before the GenAI application, a mechanistic approach was used; after GenAI advent, a more human-like mode of thinking evolved. Related to human perspective: before the GenAI advent, people behavior based on mechanistic approach; after GenAI application people behavior matured by technology.
Moreover, the results also indicate that customer satisfaction is not a direct consequence of technological sophistication alone, but depends on how technology enhances services. In this

sense, technology enhance quality and satisfaction when it complements, rather than replaces, the relational dimension of tourism and hospitality services.

6. Conclusion, implications, limitations and future research

The combined findings from the two SLR and the content analysis reveal a clear evolutionary trajectory in the use of technologies within hotel services. Although technological adoption in hospitality has evolved from efficiency-based to experience-centered approaches, there is still a critical lack of studies that examine how emerging technologies affect service quality and customer satisfaction. This gap reflects a limited maturity of the research field, confirming the topic is at an early developmental stage and represents fertile ground for further exploration. From a theoretical perspective, the study confirms service quality and customer satisfaction in technology-enhanced hospitality are the result of integration between human and artificial intelligence. The findings suggest hybrid models, combining human empathy with AI-driven precision, represent the future trajectory of service innovation in tourism. These models enhance value co-creation, where customers actively participate in the service process through digital interfaces, chatbots, or immersive tools.

This study acknowledges the immaturity of the field, which, while limiting generalizability, also underscores the novelty and originality of the topic. The relational and experiential effects of technology in hospitality services are not yet systematically explored. This suggests that the intersection between technology-driven services and customer experience remains under-theorized and under-validated.

The research presents several limitations. First, the study is based on secondary data retrieved through SLRs and content analysis; therefore, it relies on the scope and quality of the existing literature rather than on primary empirical evidence. Second, although the analysis distinguishes between pre- and post-GenAI technologies, the temporal boundary (2022/2023) is still evolving, and some overlaps may exist between technological generations. Also, results from the SLR2 are not robust but reveal opportunities to explore an under-researched area and confirm the need for further study on emerging technologies.

Future research should empirically validate these conceptual insights through mixed methods, integrating qualitative interviews with hotel managers and quantitative analyses of guest satisfaction. Further research should also explore the cross-sectoral diffusion of hotel technologies into broader tourism ecosystems (e.g., destination management, smart cities, cultural heritage), identifying the enablers of sustainable and inclusive innovation.

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Airbnb and the Social Reshaping of Space: Platform Capitalism in Post-Socialist Albania

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Abstract

Introduction: In the last decade, Albania has undergone rapid urban transformation, particularly in cities such as Tirana and Durrës, where short-term rental platforms like Airbnb have emerged as significant actors in the housing and tourism sectors. T
Aim: This paper examines the role of Airbnb in the social reshaping of urban space in post-communist Albanian cities, exploring how digital platforms mediate economic, social, and spatial dynamics. The study aims to analyze the perspectives of hosts, local residents, and municipal stakeholders regarding Airbnb's influence on neighborhood cohesion, housing accessibility, and urban governance.
Method: A qualitative research approach was employed, combining semi-structured interviews with twenty-one participants, including Airbnb hosts, local residents, tourism professionals, and municipal officials. Data were collected through direct and indirect interviews over WhatsApp video calls, supported by policy document analysis and secondary statistical data. Interviews were conducted in Albanian and focused on participants' experiences, perceptions, and insights related to the short-term rental sector.
Findings: Findings reveal that Airbnb hosts perceive themselves as active contributors to local economic development, cultural promotion, and employment, while residents report both positive effects—such as enhanced services and intercultural interaction—and negative consequences, including rising rents, reduced long-term housing availability, and diminished neighborhood cohesion. Municipal stakeholders emphasize the need for regulation to balance economic opportunities with social equity**.**
Conclusion: This study contributes to the literature on platform capitalism, urban commodification, and the sharing economy in post-communist contexts.
Originality and value Its originality lies in providing empirical evidence from Albania, a relatively underexplored setting, highlighting the dual socio-economic and spatial impacts of Airbnb. The findings offer valuable insights for policymakers, urban planners, and tourism stakeholders seeking to manage short-term rental growth sustainably while preserving community well-being.

Key words : platform economy, commodification, urban space, Airbnb, post-socialist Albania
Jel Codes : R10, R11

1. Introduction

In the last decade, Albania has been through a radical change of its environment urban and housing. Among the most fast-paced changes is the rapid growth of the sector that deals in short-term rentals — apartments and houses rented by the day via platform players such as Airbnb and Booking. com. It is the symptom of not just economic modernization, but of deeper social and spatial changes that are transforming post-communist Albania's cities, particularly Tirana, Durrës, Shkodër and coastal sites such as Vlorë and Sarandë.

After the fall of communism in the early 1990s, Albania experienced a rapid period of urbanization. The mass migration from rural to urban centers resulted in both housing shortages and an informal construction explosion. Albanians poured their resources into real estate as a

guarantor of security and family capital over the years. Today, some of those places of residence — frequently constructed or remodeled only in the last two decades — are part of the digital global market for short-term rental bookings.

The aim of this study is to analyze the role of digital platforms, focusing on the case of Airbnb, in the social reshaping of urban space. The study focuses on the case of Albania, taking as case studies the two largest cities in Albania: Tirana, the capital of Albania, and Durrës, the second largest city with the largest port in Albania.

1.1. Platform Capitalism: Origins and Conceptualization

In recent decades, the development of digital technology and the spread of high-speed internet have had their value in how economic and social structures are constructed. One of the concepts discussed in the social sciences is that of platform capitalism, articulated by Nick Srnicek (2017). This refers to the way in which digital platforms, including social networks on Facebook, Instagram, TikTok and Google, are key actors in the accumulation of capital, the production of information and the reshaping of internal concepts. In this context, social media are not only communication tools, but also market mechanisms that mediate supply and demand in different sectors, which make short-term rental housing. Through them, homeowners have promoted their product, built reputations and had a global audience, while users are informed, compared and make consumption decisions. This logic of platform capitalism creates a new economy of visibility, which is in the housing market not only dependent on one's wealth, but also on one's social media skills and proper positioning in the platforms' algorithms.

The discussion on platform capitalism emerged as a response to the economic transformations following the 2008 global financial crisis. At a time when many traditional industries were shrinking or facing a slowdown, technology companies began to grow rapidly, building services based on digital infrastructure and the collection of massive data (Srnicek, 2017). In this sense, platforms do not function simply as neutral intermediaries between service providers and consumers, but as sophisticated mechanisms for collecting, processing and monetizing data (van Dijck, Poell & de Waal, 2018).

Beyond the economic dimension, scholars such as José van Dijck and Thomas Poell (2013; 2018) have developed the concept of "platform society", arguing that digital platforms are not only businesses, but also social infrastructures that mediate communication, economics and politics. This approach broadens the understanding of platform capitalism, connecting it to the everyday experience of individuals and the way they conceptualize space and social interactions. In the Albanian context, this logic is clearly reflected in the use of social media to promote short-term rental housing. Platforms such as Instagram, Facebook, and TikTok are not just advertising channels, but spaces where social credibility is created, the owner's image is built, and tourist expectations are shaped. Thus, platform capitalism takes on a practical dimension in the housing market, turning private space into a tradable public product and introducing it into a new economic and cultural logic.

From a sociological perspective, digital platforms are not only technological forms of economic mediation, but also social infrastructures that create and restructure power relations, economic spaces and social identities. According to Castells (2000), the network society is "the new dominant form of social organization in the information age" (p. 21). Within this context, platform business models function as mechanisms of capital accumulation and, at the same time, as forms of institutionalization of social relations. Srnicek (2017, p. 48) defines a platform as "a digital infrastructure that enables interaction between two or more groups and that gains by connecting and managing these relations". This definition, although economic, has clear sociological implications: platforms create new fields of social interaction, recomposing what Bourdieu (1990) would call a "social field", where economic, cultural and symbolic capital are intertwined and reproduced

1.2. Airbnb as an example of platform capitalism

Airbnb was founded in 2008 by Brian Chesky, Joe Gebbia, and Nathan Blecharczyk, initially as a way to offer "air and breakfast" in San Francisco during an overcrowded conference (Guttentag, 2015, p. 9). The concept was based on the idea of hospitality and sharing personal spaces, using digital technology to connect individuals in a global network. In the following years, Airbnb expanded rapidly, crossing national borders and becoming a global phenomenon. By 2017, the platform had over 4 million listings in more than 190 countries (Zukin, 2019, p. 112). This expansion highlighted an important sociological dimension: interactions that once took place within local communities were mediated by a global actor, changing the structure and perception of urban space.

Castells (2000, p. 45) argues that global information networks transform local spaces into shared nodes of capital and power. Airbnb represents a clear example of platform capitalism and the sharing economy, functioning not only as a digital intermediary, but also as an actor reshaping urban spaces, social relations and tourist experiences. As Srnicek (2017, p. 56) points out, Airbnb does not own the properties offered, but controls the flow of value through the platform. This gives the company a powerful economic and social position, where social interactions are transformed into tradable goods.

Also in the case of Airbnb and short-term rental housing, the business model is not limited to the transactional process of renting, but also creates a new hospitality economy, where private housing becomes a market commodity, while the identities of hosts and tourists are shaped by digital interactions. Airbnb as a platform manages not only contractual relationships (payments, reservations), but also symbolic relationships, such as trust, reputation and cultural belonging, through rating and comment mechanisms.

In a global context, sociologists of the city and economy, such as Saskia Sassen (2001), argue that actors such as Airbnb contribute to the creation of "global cities", where digital networks intertwine with physical spaces and generate new dynamics of gentrification, rising rents and urban mobility. In Albania, this process is clearly visible in cities such as Tirana, Durrës, Vlorë and Saranda. The use of social media such as Instagram, Facebook and TikTok, and platforms such as Airbnb and Booking, has enabled private homeowners to promote their services on a massive scale, increasing the visibility of destinations and transforming local neighborhoods into tourist-oriented spaces.

1.3. Commodification of urban space and the role of Airbnb

The concept of the *commodification of urban space* refers to the transformation of urban environments—land, housing, and public areas—into commodities that can be traded, owned, and profited from in the capitalist market. David Harvey (2008) articulates this process as part of a broader neoliberal restructuring in which urban spaces are reorganized to facilitate capital accumulation rather than to meet social needs. For Harvey, urbanization is not merely a demographic or physical process but a mechanism through which capital circulates and reproduces itself. He argues that the production of urban space has become "an active moment in the circulation of capital" (Harvey, 2008, p. 24), where spatial forms are constantly reshaped by economic imperatives and speculative interests.

In the neoliberal era, the commodification of urban space has intensified through processes such as privatization, gentrification, and financialization of housing (Harvey, 2008; Smith, 2002). Space, once viewed as a collective good, is increasingly treated as a profit-generating asset. The emergence of digital platforms such as Airbnb exemplifies this logic. By turning private homes into rentable assets, Airbnb (and of course other platforms as well) extends the commodification process into the domestic sphere. What was previously considered a personal or social space becomes a source of market value. As Wachsmuth and Weisler (2018) argue, Airbnb represents a "platform-mediated form of urban commodification" that reconfigures the boundaries between home, hospitality, and investment.

Airbnb's operations illustrate Harvey's notion of the "spatial fix," whereby capital seeks new geographic arenas for accumulation when traditional markets are saturated (Harvey, 2001). The platform capitalizes on underutilized housing stock and transforms it into globally tradable short-term rentals. This process not only generates profit for individual hosts but also integrates local housing markets into global circuits of tourism and finance (Cox, Slee, & O'Neill, 2020). Consequently, cities experience shifts in housing affordability, displacement of long-term residents, and alterations in neighborhood character—manifestations of what Harvey (2008) calls "accumulation by dispossession."

The platform's influence extends beyond individual transactions, shaping regulatory debates, urban governance, and spatial justice. In this sense, Airbnb is not merely a hospitality service but a spatial actor that accelerates the neoliberal commodification of urban life.

2. Literature Review

The literature review is organized into two sections. The first section examines research on the influence of Airbnb and its social dimension of reshaping the space and the second section explains the Albanian context of reshaping the urban space after the fall of socialist regime.

2.1. Studies on the role of Airbnb on the Social Reshaping of Space

In the last decade, the academic literature on the role of Airbnb in the social reshaping of urban space has expanded significantly. Scholars from urban studies, geography, tourism, and housing economics have increasingly explored how digital platforms such as Airbnb alter the meanings, uses, and ownership patterns of urban environments. Far from being a neutral intermediary connecting hosts and guests, Airbnb has become a key actor in the commodification and reorganization of urban space, reshaping social relations, housing accessibility, and local governance.

According to Lee (2016), Airbnb has intensified the "hotelization" of residential housing in cities like Los Angeles, contributing to shortages of affordable housing. By allowing residential units to circulate as tourist commodities, the platform transforms the home from a site of dwelling into a profit-generating asset. This legal and policy-oriented analysis illustrates how Airbnb's expansion exploits regulatory loopholes and weak enforcement, particularly in high-demand cities where tourism and real estate speculation overlap.

Empirical economic studies provide complementary evidence that Airbnb influences urban housing markets. Horn and Merante (2017) conducted one of the first econometric analyses on Airbnb's effects in Boston and found that a one percent increase in Airbnb listings led to a 0.018 percent rise in rents. Similarly, Barron, Kung, and Proserpio (2021) demonstrated that the growth of Airbnb across the United States correlated with rising housing prices and rents, especially in neighborhoods with low owner-occupancy. Their findings reveal that Airbnb redistributes housing stock toward short-term uses, reinforcing dynamics of housing financialization where space functions as an income-yielding commodity rather than a social right.

Spatial analyses highlight where these effects concentrate. Gutiérrez et al. (2017) compared the spatial distribution of hotels and Airbnb listings in Barcelona and found that Airbnb clusters primarily in central, high-amenity neighborhoods. This concentration increases visitor pressure on residential areas, altering patterns of mobility and consumption. Wachsmuth and Weisler (2018) interpret this process through the concept of the *rent gap*, suggesting that Airbnb enables capital to exploit spatial disparities in value between long-term and short-term rental markets. Their study in New York City shows that Airbnb facilitates gentrification by channeling global tourist demand into local real estate markets, raising property values, and accelerating neighborhood transformation.

The social implications of these spatial dynamics have become a growing concern. Farmaki (2019) and Stergiou (2020), studying residents' perceptions in Athens and other European cities, found that neighbors often perceive short-term rentals as disruptive to community cohesion.

They report rising nuisances, noise, and the displacement of local services by tourist-oriented businesses. This aligns with Gurran and Phibbs's (2017) analysis, which argues that the influx of short-term rentals blurs the boundaries between residential and commercial use, challenging local planning frameworks and creating tension between residents and investors.

The literature also emphasizes that Airbnb's influence is not uniform across urban contexts. Frenken and Schor (2017) conceptualize Airbnb within the broader "sharing economy," warning that platforms often reproduce social inequalities rather than mitigating them. Wealthier homeowners and investors are better positioned to benefit from short-term rentals, while renters face displacement and reduced housing security. Dogru, Mody, and Suess (2020) further demonstrate that Airbnb affects not only residential housing but also the hospitality industry. Their study shows that hotel revenues decline in proportion to the density of local Airbnb listings, suggesting that the platform reshapes entire urban economic ecologies, redistributing capital between traditional and platform-based accommodation sectors.

Recent work by Crommelin (2021) and Gurran et al. (2020) deepens this understanding by exploring how Airbnb alters the experiential and affective dimensions of city life. In cities like Sydney and Amsterdam, they note that Airbnb contributes to an "amenity shift," where local shops, services, and even public spaces adapt to the needs of transient visitors rather than long-term residents. This shift reflects what Harvey (2008) describes as the commodification of urban space under neoliberal capitalism—the transformation of collective urban resources into privately exchangeable goods.

Overall, the literature converges on several key findings. First, Airbnb functions as a mechanism of urban commodification by monetizing domestic and social spaces. Second, it generates measurable effects on housing affordability, neighborhood composition, and the social fabric of cities, particularly in tourist-heavy and housing-constrained areas. Third, governance plays a decisive role: cities with robust regulation—such as caps on rental days or mandatory registration—can mitigate displacement, while unregulated markets tend to experience intensified inequality and gentrification.

2.2 Albanian context of reshaping the urban space after the fall of socialist regime

During the totalitarian socialist regime in Albania, the movement of the population towards the cities can be divided into 2 periods: the period 1947-1964, in addition to the 24 cities founded in the first millennium BC, by the end of the 19th century, 26 new industrial cities were added (Dervishi, 2021: 34). This change motivated, in a controlled manner, the movement of people to the cities. During the 1970s and 1980s, the party-state policy on the movement of the population changed radically. The respective party and state structures not only no longer encouraged the movement of the population from the countryside towards the city, but also strictly restrained and controlled such movements (Dervishi, 2001:34). While after 1990, the resident population in the Republic of Albania moved freely both within and outside the country's borders. Rapid internal migration and the liberalization of land and housing markets produced a concentrated urban growth around Tirana and the Adriatic coast, creating a new urban fabric that tourism now exploits (Pojani, 2009). As cities redefined their economic functions, previously peripheral infrastructures, informal construction, and symbolic "socialist" landmarks became part of emerging tourism itineraries and imaginaries (Dino, 2022; Iacono, 2016).

The commercialization of urban space—through private investment, refurbishment, and short-term letting—reconfigures patterns of daily life and access. Pojani (2009) locates this process within broader neoliberal urbanization, where housing, transport, and public space are progressively oriented toward market uses rather than collective provision.

Over time, many Albanians invested in property as a form of security and family wealth. Today, those same apartments—often built or renovated during the last twenty years—are being integrated into the digital global market through short-term rental platforms.

Although Airbnb has been recognized as one of the most successful sharing-economy platforms

in the Balkan region (Čavalić, 2017), its adoption rate remains relatively low in Albania, since 2020, compared to other countries. A contributing factor to this limited participation is the prevalence of informal economic practices in the region, which affects both regulatory compliance and engagement with digital platforms (Koka, et al., 2021: 164).

In 2025, Tirana had approximately 3,585 active Airbnb listings, with an average occupancy rate of 61% and an average daily rate of LEK 4,183 (approximately €34) per night. Guests typically stayed for an average of 4.3 nights, spending an average of LEK 10,876 (around €88) per stay. dditionally, a report by Airbtics in 2025 noted that Tirana's short-term rental market was strong but not oversaturated, indicating a healthy demand for Airbnb accommodations [1.]

Furthermore, Google Search Trends data indicates a consistent interest in Booking.com in Albania, with a daily search score averaging around 33,000 from December 2021 to May 2025.[2]This trend reflects ongoing engagement with the platform among Albanian users.

However, the study conducted by Koka et al. (2021) notes that the lack of a formalized platform community in Albania limits hosts' ability to share experiences and best practices, which could further enhance their role in the city's social transformation. The absence of a local Airbnb community in Albania contrasts with experiences in other cities like Vienna, where hosts benefit from organized networks and support systems. In Tirana, hosts express enthusiasm about the potential for such a community, recognizing its value in sharing experiences and improving service quality. The study suggests that establishing a local Airbnb community could empower hosts, enhance service standards, and contribute positively to the city's social fabric.

3. Methodology

The study employs a qualitative approach, combining semi-structured interviews with key stakeholders—including local residents, Airbnb hosts, municipal officials, and tourism professionals—with analysis of policy documents and secondary statistical data. A total of 21 interviews were conducted across Tirana and Durrës between 2024 and 2025.

The interviews were administered using both direct and indirect approaches, primarily through WhatsApp video calls, over the period of April to October 2025. Detailed notes were taken contemporaneously during the interviews; however, no audio recordings were made in order to preserve participants' comfort and confidentiality. Each session lasted approximately forty-five minutes and was conducted in the Albanian language.

The initial section of each interview focused on collecting general demographic and background information about the participants. In total, twenty-one individuals participated in the study, comprising nine men and twelve women between the ages of twenty-four and sixty-eight. Participants possessed at least a high school diploma, but many of them held a bachelor's degree, and a master's qualifications. The majority had been engaged as Airbnb hosts for a period ranging from one to five years, although most also operated on additional short-term rental platforms.

With respect to geographic distribution, fourteen participants were based in Tirana, the capital city of Albania, whereas seven resided in Durrës, the country's largest coastal urban center. Regarding the nature of the accommodation offered, most respondents rented out their secondary residences, while others managed privately owned apartments used exclusively for short-term or daily rental purposes.

[1] https://airbtics.com/tourism-statistics-tirana-al, accessed on October 21, 2025

[2] https://www.ceicdata.com/en/albania/google-search-trends-by-categories/google-search-trends-travel--accommodations-bookingcom, accessed on October 21, 2025

Table 1: The characteristics of the interviewed people

The characteristics of the interviewed people	***Number***
Local residents	14
Hosts	5
Tourism professionals and municipality officials	2
Male	9
Female	12
Residents in Tirana	14
Residents in Durrës	7
Total	*21*

Source: Own authors

4. Findings and analysis

The findings of this study are classified into the following subsections: 1. Airbnb hosts' perceptions of their role in the social reshaping of the city. 2. Local residents' views on Airbnb's impact on the community. 3. Insights from tourism professionals and municipal officials regarding the regulation of short-term rentals

4.1. Airbnb hosts' perceptions of their role in the social reshaping of the city

The study reveals that Airbnb hosts view themselves as active participants in both the employment sector and in tourism. According to them, they fill a gap in the job market by becoming self-employed.in the tourism sector.

> *"Actually, I never really finished my studies in tourism. I studied geodesy engineering. But since I couldn't find a job in my field, and because my parents had an old apartment from the Enver Hoxha era that they were renting out for 30,000 lek (290 Euro) per month, I thought, why not renovate it and give this a try? Now I earn three times more since the apartment is in a central area in Tirana, and I think I made the right choice. It's a good way to be self-employed, and I believe the government should encourage people to do this. After all, I'm no longer un unemployed in this city" (P. S, male, 37 years old)*

According to the hosts, offering affordable and personalized accommodation options attract both local and international visitors. They perceive their participation in the platform as a means to contribute to the city's evolving social and economic landscape.

> *" I think offering a service like this is really good for the city. Why, you ask? Well, think about it: first, the quality of the apartments improves; the services offered nearby also get better because they adapt to the tastes and standards of foreigners. Residents in the building feel more pressure—in a positive way—to maintain shared spaces. Through this work, we also create opportunities for others to find jobs. For example, taxi services have grown a lot over the years, bars and restaurants have benefited too, and tourism agencies have started*

offering day-trip packages, and so on".

This involvement is seen as a response to the growing demand for diverse lodging experiences and a desire to showcase Albanian hospitality and culture. .Moreover, hosts often engage in practices that promote local culture and community integration, such as providing guests with information about local attractions, traditions, and cuisine. This approach not only enhances the guest experience but also fosters a sense of pride among hosts about their cultural heritage.

> *"Honestly, at first I just thought of this job as a way to make some extra money, but over time I realized it's more than that. Seeing how interested foreigners are in Albania—our culture, traditions, food—I often end up acting like a little tour guide and promoting my country. I didn't even know I was that patriotic! (laughs) On the plus side, it's been really good for me too, because I've had to read up and learn more in order to answer all the questions and requests from my guests." (A. M, female 29 years old)*

Nevertheless, some hosts express concerns regarding the lack of information about the guests they accommodate in their apartments. This uncertainty can generate stress and insecurity about guest behavior, as well as apprehension regarding potential legal responsibilities that hosts might face in cases of crimes or deviant acts committed by their guests.

> *"Although the Airbnb platform is more controlled than others, it at least requires me to ask the guest for a form of identification, we, as hosts, have to be aware that there are also some social risks in this work. For example, I don't know who might stay in the apartment I offer, what activities they engage in in their own country—legal or illegal—or what could happen during their stay in my apartment. I don't know what conflicts might arise between the guest and the neighbors. Even though in my experience my guests mostly come from Western countries with strict laws and rules about community living, the fear is still strong, and I pay extra attention and care."*

4.2. Local Residents' Views on Airbnb's Impact on the Community

Local residents express a mix of appreciation and concern regarding Airbnb's influence on their neighborhoods. Some residents perceive the presence of foreign tourists in their immediate surroundings positively. In general, they hold a favorable view of tourists arriving from European and other Western countries, as these individuals are perceived to be more disciplined and aware of the importance of adhering to rules and legal regulations.

> *"To be honest, even though we were unprepared to live alongside foreigners in our buildings, I see their presence positively. They are orderly, don't make noise, always greet us, and don't leave trash in the stairways. In fact, they come to the apartments just to sleep." (A. SH, male, 56 years old)*

On another positive side, some acknowledge the economic benefits brought by short-term rentals, such as increased local spending and the revitalization of certain areas.

> *"As a metter of fact, in our building, there are six apartments that are rented out daily, and their owners got together and renovated all five floors of the building, painted it, fixed it up, paved the courtyard in front, and planted trees. Even the local bakery was improved—it started making French baguettes and always greets us with a smile. I think the presence of tourists has been beneficial overall. " (H. R,*

female 55 years old)

Additionally, the influx of tourists is seen as an opportunity to promote Albanian culture and hospitality on a global scale.

> *"To be honest, my heart melts when I see foreign tourists wearing traditional caps and shirts with the Albanian eagle. Finally, they are recognizing who we are. When we were emigrants, we were constantly judged. Now they see our generosity and hospitality, and they understand that we live with sacrifices and that life isn't easy for us. One day, my mother gave an Italian couple—a couple who had come to stay for about two weeks in the neighboring courtyard—a jar of homemade fig jam, and they were really delighted. They said this doesn't happen in other countries in the world".*

Conversely, there are apprehensions about the potential negative effects of Airbnb on community dynamics. Residents worry about the displacement of long-term tenants due to property owners opting for more profitable short-term rentals. This shift can lead to increased rents and a reduction in the availability of affordable housing. Furthermore, the transient nature of Airbnb guests is perceived to erode the sense of community and local identity, as neighborhoods become more commercialized and less cohesive.

> *"These Airbnb rentals might be good for those who earn from them, but for us as residents, they don't have such a positive impact. House prices have gone up, and it's almost impossible to find a monthly rental because everyone wants to rent their place out daily. On top of that, we don't have stable neighbors anymore—an Italian leaves, a French person moves in, each with their own habits. It used to be nice—you could go to your neighbor and have a coffee, or even buy a house if the neighbors were good. Now, you can't really connect with anyone." (P.M, female 51 years old).*

The increasing presence of short-term rental guests has generated a sense of uncertainty among long-term residents. Encounters with unknown individuals, often from diverse cultural and linguistic backgrounds, contribute to feelings of disconnection and social instability within the building.

> *"I sometimes get scared when I enter the building. I never know who I'll run into—are they drunk, what language do they speak…? We used to complain that we couldn't find anyone from Durrës in the building, but now we can't even find Albanians, and we don't know what's happening right at our doorstep (K.L, male, 62 years old).*

The interviewees also highlight issues of marginalization. They report feeling excluded from decision-making processes and overlooked in discussions regarding the use of shared urban spaces. This sense of marginalization is further reinforced by the rapid influx of short-term rental guests, which alters neighborhood dynamics and reduces residents' sense of control over their own living environment.

4.3. Insights from tourism professionals and municipal officials regarding the regulation of short-term rentals

Tourism professionals and municipal officials recognize the growing significance of short-term rentals in Albania's tourism sector but emphasize the need for a balanced regulatory framework. They advocate for policies that ensure the sustainability of the tourism industry while protecting

the interests of local communities.

Key recommendations include the establishment of clear regulations governing short-term rentals, such as registration requirements for hosts, safety standards for accommodations, and guidelines for pricing. Additionally, officials suggest implementing zoning laws to prevent the overconcentration of short-term rentals in residential areas, thereby preserving the character and affordability of neighborhoods. There is also a call for increased collaboration between local authorities, tourism stakeholders, and Airbnb to develop strategies that align with both economic objectives and social welfare.

5. Discussions

The findings of this study illustrate the multifaceted role of Airbnb and other short-term rental platforms in reshaping the social, economic, and spatial dimensions of Albanian urban environments. Aligning with the literature on platform capitalism (Srnicek, 2017; van Dijck, Poell, & de Waal, 2018), the evidence from Tirana and Durrës highlights that Airbnb does not merely function as a technological intermediary between hosts and guests but acts as an active social actor, influencing urban space, neighborhood dynamics, and community interactions. Hosts perceive their participation as a form of self-employment that fills gaps in the local labor market while simultaneously contributing to the development of the tourism sector and enhancement of local services. This dual economic and social function reinforces the notion that platform-mediated forms of hospitality represent a new dimension of commodified urban life (Wachsmuth & Weisler, 2018; Crommelin, 2021).

From the perspective of Airbnb hosts, engagement with the platform extends beyond financial considerations. Hosts in Tirana and Durrës described their roles as cultural intermediaries, guiding tourists, promoting Albanian heritage, and contributing to neighborhood improvements. The refurbishment of apartments, maintenance of common spaces, and engagement with local businesses exemplify how short-term rentals can catalyze micro-level urban revitalization. These findings echo Crommelin (2021), who argues that hosts play a critical role in shaping the experiential and affective dimensions of urban life, mediating between global tourist flows and local cultural landscapes. However, these positive contributions are mediated by the hosts' ability to access digital literacy and maintain reputational capital on platforms such as Airbnb, consistent with Srnicek's (2017) discussion of the social infrastructure inherent in platform capitalism.

Despite these contributions, the research underscores a range of social and spatial tensions associated with Airbnb. Local residents highlighted issues of social uncertainty, displacement, and marginalization, reinforcing the concept of urban commodification articulated by Harvey (2008). The influx of short-term rental guests, particularly from Western Europe, has altered neighborhood composition, disrupted long-standing social networks, and weakened the sense of local cohesion. Residents reported that transient populations reduce opportunities for meaningful neighborly interaction, erode community identity, and foster feelings of disconnection. The rapid turnover of occupants—illustrated by the alternating presence of Italian and French guests—produces what can be described as a socially fluid, yet fragmented urban space. These findings are consistent with Farmaki (2019) and Stergiou (2020), who argue that short-term rentals often challenge traditional social structures and contribute to perceived community disruption in urban neighborhoods.

Moreover, residents' concerns about housing affordability and access align with broader empirical studies on Airbnb's impact in global cities. As Horn and Merante (2017) and Barron, Kung, and Proserpio (2021) demonstrate, Airbnb listings are associated with rising rental prices and reduced availability of long-term housing. In the Albanian context, the preference of property owners to convert monthly rentals into daily short-term accommodations has led to increased rents and decreased housing stability for local residents, reflecting a local manifestation of the "accumulation by dispossession" that Harvey (2008) identifies in neoliberal urbanization. The study also highlights a gap in residents' agency and voice in decision-making

processes, emphasizing their sense of marginalization as Airbnb transforms shared urban spaces into market-oriented commodities.

The perspectives of tourism professionals and municipal officials underscore the regulatory challenges inherent in balancing economic growth with social equity. While short-term rentals contribute to local tourism revenues and urban vitality, unregulated or poorly monitored markets exacerbate inequality and threaten community cohesion. Officials emphasized the need for policies that include registration, safety standards, zoning, and collaboration with platform operators, echoing policy recommendations identified in international studies (Dogru, Mody, & Suess, 2020; Gurran & Phibbs, 2017). Such interventions are crucial for mitigating the negative social and spatial externalities of platform-mediated commodification while enabling sustainable economic participation by local hosts.

This discussion also highlights the intersection of local cultural values with the globalized logic of platform capitalism. Hosts and residents alike reported pride in showcasing Albanian hospitality, traditions, and cuisine, emphasizing the symbolic as well as economic value of short-term rentals. Experiences such as providing homemade fig jam to guests or observing tourists wearing traditional Albanian attire illustrate the dual role of Airbnb as both a commercial and cultural intermediary. These findings support van Dijck and Poell (2013, 2018), who assert that digital platforms operate not merely as economic entities but as social infrastructures mediating cultural and interpersonal relations, thus shaping both the material and symbolic dimensions of urban space.

However, the study also demonstrates that these benefits are unevenly distributed. Hosts with higher digital literacy, centrally located properties, and access to networks benefit disproportionately, while local residents experience limited control over neighborhood dynamics. This disparity reflects the reproduction of social inequalities within platform capitalism, consistent with Frenken and Schor (2017), who argue that sharing economy platforms can exacerbate pre-existing disparities rather than alleviate them. In Albania, the lack of a formalized host community, as noted by Koka et al. (2021), limits opportunities for knowledge exchange, capacity building, and coordinated social engagement, thereby constraining the positive potential of short-term rentals for equitable urban development.

The findings from Tirana and Durrës illustrate the ambivalent social and spatial effects of Airbnb. On the one hand, hosts contribute to economic revitalization, urban maintenance, and cultural promotion, reflecting the transformative potential of platform-mediated urban activity. On the other hand, residents experience housing pressure, social fragmentation, and reduced agency over their urban environment, emphasizing the risks associated with commodification and transient populations. These dynamics mirror global patterns observed in cities such as New York, Barcelona, and Sydney, while highlighting specific characteristics of post-communist urban contexts in Albania, including recent histories of informal construction, rapid internal migration, and evolving regulatory frameworks.

Ultimately, the study suggests that the social reshaping of urban space in Albania is neither uniformly positive nor negative. It is contingent on the interaction between platform-mediated economic activity, local regulatory structures, and residents' capacity to engage with and influence neighborhood change. The findings reinforce the theoretical insight that platforms like Airbnb are not neutral intermediaries but active agents of urban transformation, simultaneously producing opportunities and challenges for social cohesion, economic equity, and cultural sustainability. Future research could further examine how local governance mechanisms and host networks mediate these outcomes, as well as the long-term implications of short-term rental proliferation on housing markets and urban social life.

6. Results, Limitations, and Future Directions

6.1. Results

This study provides a nuanced understanding of the role of Airbnb in the social reshaping of

urban space in post-communist Albanian cities, with a particular focus on Tirana and Durrës. The findings indicate that Airbnb functions not merely as a platform for short-term rentals but as a socio-economic actor that actively influences neighborhood dynamics, housing markets, and cultural interactions. Hosts perceive themselves as contributors to both economic development and cultural promotion, offering personalized services that enhance local tourism and facilitate intercultural exchange. This aligns with the broader literature on platform capitalism and the commodification of urban space, whereby private residences are transformed into marketable assets and social interactions become economically mediated (Harvey, 2008; Srnicek, 2017).

Residents' perspectives reveal the dual nature of Airbnb's impact. While the platform can stimulate local economies and improve services, it also contributes to rising rents, reduced availability of long-term housing, and erosion of neighborhood cohesion. The transient character of short-term rental guests often diminishes social stability, generating feelings of uncertainty and marginalization among permanent residents. Tourism professionals and municipal officials recognize these tensions and advocate for regulatory frameworks that balance economic growth with social equity, including registration systems, zoning regulations, and collaboration with digital platforms.

Overall, the study demonstrates that Airbnb's presence in Albanian cities exemplifies a platform-mediated form of urban transformation. While it creates opportunities for self-employment, cultural exchange, and neighborhood revitalization, it simultaneously challenges social cohesion and housing affordability. Sustainable governance, informed by both residents' needs and platform dynamics, is essential to ensure that short-term rental growth contributes positively to urban life rather than exacerbating inequality or social fragmentation.

6.2. Limitations

While this study provides valuable insights into the social reshaping of urban space by Airbnb in Albania, several limitations should be acknowledged.

First, the sample size of 21 participants is relatively small and may not fully capture the diversity of experiences across Tirana, Durrës, and other urban centers.

Second, the qualitative methodology—while rich in descriptive data—limits generalizability to broader populations.

Third, the study relies on self-reported perceptions, which may introduce bias or exaggeration of both positive and negative experiences.

Finally, the absence of longitudinal data restricts the ability to assess long-term trends in housing markets, community cohesion, and regulatory outcomes.

6.3. Future directions

Future research could address these limitations by incorporating larger and more representative samples of hosts, residents, and municipal stakeholders across multiple Albanian cities. Longitudinal studies would allow for the assessment of dynamic changes in housing affordability, neighborhood composition, and social cohesion over time.

Additionally, mixed-method approaches combining qualitative interviews with quantitative analyses of housing market data and Airbnb listing trends could provide a more robust understanding of platform-mediated urban transformation.

Further research should also explore the role of formal host networks and community engagement initiatives in enhancing social integration, mitigating risks, and fostering sustainable tourism practices. Comparative studies across Balkan cities or post-communist urban contexts could shed light on the influence of historical urbanization patterns, regulatory environments, and cultural norms on the social impacts of short-term rental platforms.

Finally, investigations into the intersection of digital literacy, platform visibility, and host

success could inform policies aimed at promoting equitable participation in the platform economy while protecting residents' rights and community stability.

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Preparing education for the future: The role of Ethics and Philosophy

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Abstract

Introduction: Ethics constitutes the foundational basis for the moral purpose of education, ensuring that the educational process aligns with core values such as human dignity, respect, and personal growth. Rooted in ethical principles, education goes beyond the mere transmission of knowledge, evolving into a transformative endeavour that promotes the holistic growth of individuals.
Aim: This paper explores the critical importance of ethics in shaping educational philosophies that prepare individuals to confront future challenges such as artificial intelligence, environmental sustainability, cultural diversity and social justice.
Method: Drawing on theoretical approaches, this paper integrates reflections on the work of well-known authors and various schools of thought in ethics, education, and philosophical discourse.
Findings: By nurturing critical thinking, ethical reasoning, and adaptive skills, education not only enhances academic and professional success but also cultivates conscientious, morally responsible individuals who are equipped to engage thoughtfully with diverse perspectives and actively contribute to the social, cultural, and ethical advancement.
Conclusion: Education oriented toward the future must equip learners with the capacities for critical thinking, responsible ethical judgment, and adaptive responses to evolving societal challenges.
Originality and value: Introducing innovative approaches to incorporating ethics and philosophical thinking into education, while examining the factors that cause education to risk becoming a mechanical system, focused on outcomes rather than fostering genuine human growth and the development of moral character.

Keywords: ethics, philosophy of education, ethical principles, future
Jel Codes: I21; I26

1.Introduction

Morality is a distinctive and defining dimension of human existence. A human being possesses a consciousness that allows to respond morally. Education aims to cultivate several dimensions of the human person, with a focus on developing the dimension of moral awareness to empower the individual as a moral subject. The challenge of education today and in the future is connected to nurturing the human being as a moral entity, guided by what is good and grounded in inalienable values. The intellectual endeavour that seeks to understand, analyse, and clarify this moral dimension is known as ethics. Ethics is the branch of philosophy that examines morality, including the meaning of moral language, the origins of moral understanding, the basis of moral responsibility, and the reasoning behind moral rules and judgments.

In the history of the philosophy of education, there has been a distinct concern for the moral education of the human being. The history of the philosophy of education encompasses a wide range of influential thinkers, including Socrates, Plato, Aristotle, Rousseau, Dewey, Thomas Aquinas, Augustine, Thomas Hobbes, René Descartes, John Locke, David Hume, Immanuel Kant, all of whom have made significant contributions to educational thought. It is noteworthy that, despite their considerable philosophical divergences and varying points of emphasis, these

thinkers generally concur that the central purpose of education lies in the cultivation of rationality and moral development in human beings.

It should also be emphasized that UNESCO (United Nations Educational, Scientific and Cultural Organization), has played a very important role in designing education programs based on ethics. One of the recent initiatives for moral education is the UNESCO 2050 Initiative: Learning to Become. Moral education programs might be adapted to develop the foresight capacities of young people.

There is ongoing global discussion about what defines quality education, and many emphasize the growing need to focus more on nurturing the moral character of children and young people.

While there may be many variations to this debate, the key idea is centred around the ability or capacity of the education system to promote good "values and attitudes of responsible citizenship and nurture creative and emotional development" (UNESCO, 2004, p. 17) in early childhood education.

The education of the human being as a moral being requires that formal education in schools include ethics in the curricula, and treat it merely as a competence developed through various activities and projects in different subjects. In many countries, moral education and the ethics curricula are mandatory, and in the practices of some countries, moral education is integrated into special modules.

In the Albanian preschool and pre-university education system, the integration of ethics into the curriculum throughout education is seen as a need to prepare students for the 21st century and to face future problems. Since 2014, the Albanian education system has implemented a curriculum with key competencies, and the integration of ethics would help in its goal of developing critical thinking, problem solving and ethical decision-making. Preparing students as moral beings and as moral actors will help them face challenges and contribute more to society. The necessity is related to global changes and challenges such as artificial intelligence, environmental sustainability, cultural diversity, and social justice.

2.Review of Related Literature

The education of the human being as a moral and rational being was initially grounded in the philosophy of education, where philosophers such as Socrates, Plato, Aristotle, Rousseau, Dewey, Thomas Aquinas, Augustine, Thomas Hobbes, John Locke, David Hume, Immanuel Kant etc. have made a significant impact in the field of education, and their ideas remain relevant even today. In today's world, the interest in the education of the moral being, with a focus on ethics and moral education, can be found in the works of many contemporary authors. However, the most important ones related to this study will be highlighted as follows.

UNESCO's educational literature presents a comprehensive set of ideas and principles about moral education that offer significant insight and guidance. UNESCO (2015) promotes ethical awareness, empathy, and respect for diversity as key goals in global education.
UNESCO (2021). explores how ethics education can promote peace, empathy, and global understanding. Noddings (2013) argues that education should nurture moral and ethical reasoning, not just academic skills. Arthur, J., Kristjánsson, et al. (2016), focused on moral and character education and its role in shaping ethical citizenship.
Narvaez, D., & Lapsley, D. K. (2008), examine how educators can integrate moral and ethical reflection into teaching practice. Lovat, T., & Toomey, R. (2009), explored how teaching ethics and values enhances overall teaching quality and student engagement.
Campbell, E. (2003), discusses the moral dimensions of teaching and the ethical challenges teachers face in everyday practice. Kohlberg, L. (1981), has a foundational work on moral reasoning and stages of moral development, often cited in ethics education theory.
Strike, K. A., & Soltis, J. F. (2009) have another foundational text on how ethical principles apply in classroom decision-making and teacher-student relationships. Haynes, F. (2002),

explores how schools can intentionally cultivate ethical cultures and moral development in students.

3.Moral education and Ethics

Ethics constitutes the foundational basis for the moral purpose of education, Educational ethics encompasses a relatively broad area of ethical concerns related to education as such. It can be defined as consisting out of three major fields, namely deliberation and reflection on educational policies (especially those directly related to ethical concerns), moral education and professional ethics (including aspects of teacher education as key part of their professional development) (Campbell 1997, 255).

Immanuel Kant emphasized moral education as essential for developing character and moral autonomy, enabling individuals to act according to universal principles of duty and reason rather than personal desires. The reason of giving a big importance to education of Kant, the most important reason causing badness is not directing according to a good education of a person nature and thinking of sending a person in a good way with the education. To him, a person only can be a person with education. By means of education Kant believes person could carry out oneself and attracts attention gaining the most addition to perfection of person nature for education (Kant, 1992; 7).

Nord and Haynes (2015) state that moral education encompasses two major aspects. The first is "moral socialization", which means training and nurturing in children key norms, values and virtues, which are dominantly recognized in the society as enabling flourishing and good life. The second aspect concerns developing intellectual resources, skills and competencies, which enable for well informed and responsible moral judgments, decisions and actions. Moral education seeks to help students understand ethics, develop a sense of responsibility, act fairly, and make decisions that serve both their own well-being and the greater good. It is not confined to a single subject area but is integrated throughout the entire school experience. From reading stories that present moral challenges, to debating real-world issues that test ethical perspectives, to handling discipline in ways that promote accountability, schools play a vital role in shaping students' moral growth.

One purpose of moral education is to help make children virtuous, honest, responsible, and compassionate. Another is to make mature students informed and reflective about important and controversial moral issues. Both purposes are embedded in a yet larger project - making sense of life. On most accounts, morality isn't intellectually free-floating, a matter of personal choices and subjective values. Moralities are embedded in traditions, in conceptions of what it means to be human, in worldviews. (Nord & Haynes 2015).

UNESCO has long emphasized the importance of integrating ethics, values, and human rights into education. The issue at hand is that modern education systems often focus heavily on academic knowledge and technical skills, sometimes neglecting the moral, ethical, and social development of students. UNESCO addresses this by promoting Education for Sustainable Development (ESD) and Global Citizenship Education (GCED). UNESCO (2021) emphasizes fostering ethical values and responsible behaviour by encouraging students to act with integrity, fairness, and respect for others. It promotes human rights and social justice by educating learners about equality, inclusivity, and respect for diversity. Additionally, UNESCO seeks to develop critical thinking and reflection, helping students engage thoughtfully with moral and societal issues rather than accepting norms passively. At the same time, it encourages emotional and creative growth, supporting holistic development that nurtures empathy, compassion, and problem-solving skills.

4.Considering future challenges in education

The debate over ethical issues began around the 1970s, with a call for human awareness and responsibility to stop the human-driven destruction of the environment. It raised the question:

Should those who live today sacrifice for the people of the future? One of the most prominent authors, Hans Jonas, argued that we need a new ethical model for technological issues, because technology has undermined the fundamental assumptions on which our traditional ethical models are based. The situation changed completely with the growth of knowledge and major technological developments, which transformed human activity, giving it immense and autonomous power, but also creating premises that turned into threats. These technological changes were the cause of the damage suffered by nature and the risks threatening the future survival of human beings, as well as the quality of life in the future. Modern technology has introduced actions, scales, objects, and consequences of such magnitude that the framework of traditional ethics can no longer contain them. For example, one major change in our inherited worldview is the critical vulnerability of nature to human technological intervention—something previously disregarded, until the damage already done made it visible. *(Jonas, 1984).* Technological innovation, supported by science, has progressively developed ever newer and more powerful forms of technology, expanding the scope of human power beyond humanity's ability to foresee the consequences.

Based on this context, the weight of responsibility is directly linked to the education of moral beings, enabling them to face further changes in technology and artificial intelligence. Consequently, the ethics of technology, environmental ethics, and bioethics focus on ethical issues and moral dilemmas. According to the *Universal Declaration on Bioethics and Human Rights,*[3] the role of ethics in education is connected to shaping educational philosophies that prepare individuals to confront future challenges, such as artificial intelligence, environmental sustainability, cultural diversity, and social justice.

As society faces rapid technological advancements like artificial intelligence, ethical education equips learners with the critical thinking and moral discernment needed to make responsible decisions about technology's use and impact. In addressing environmental sustainability, ethics fosters a sense of stewardship, encouraging actions that balance human needs with the preservation of the planet. Similarly, in increasingly multicultural societies, ethical education promotes respect, empathy, and understanding across cultural differences, enabling individuals to engage constructively in diverse communities. In this way, embedding ethics in education is not just about personal morality, it is about preparing learners to thoughtfully, responsibly, and creatively confront the moral and practical challenges of a rapidly evolving world.

Education not only enhances academic and professional success but also cultivates conscientious, morally responsible individuals who are equipped to engage thoughtfully with diverse perspectives and actively contribute to the social, cultural, and ethical advancement.

5.Ethics and moral education in curricula

A well-rounded curriculum should incorporate education on ethics, values, global citizenship, and socio-emotional development, delivered through transformative pedagogical methods. Teacher training and capacity-building initiatives are crucial to ensure the effective integration of ethics education in everyday teaching. The ethical education leads to tolerance, develops empathy, assertiveness and leads to healthy lifestyle. Ethics teaches students **how to reason about complex issues**, not just what to think. It encourages analysing different viewpoints, evaluating evidence, and making justified decisions skills valuable in any field.. Many modern problems, from climate change to privacy and technology have ethical dimensions. By studying ethics, students learn how to deal with **moral dilemmas** they'll face now and in the future. Engaging students with real-life dilemmas helps them apply ethical reasoning in context.

[3] In October 2005, the General Conference of UNESCO adopted by acclamation the Universal Declaration on Bioethics and Human Rights. https://unesdoc.unesco.org/ark:/48223/pf0000146180

Since 2014[4], Albania has been implementing a **competency-based curriculum** that shifts focus from rote learning to developing **key competencies.** the knowledge, skills, and values that students need to function effectively in a rapidly changing world. The reform aligns with European standards and the **European Key Competences Framework for Lifelong Learning**[5]

These main competencies include:

-Critical thinking and problem-solving
-Communication and collaboration
-Learning to learn (metacognitive skills)
-Personal and social responsibility
-Digital competence

The education of the human being as a moral entity requires that formal schooling include ethics within the curriculum, and treating it merely as a competence developed through various activities and projects in different subjects. In many countries, moral education and the ethics curriculum are mandatory, and in the practices of some countries, moral education is integrated into specific modules. In the Albanian preschool and pre-university education system, the integration of ethics into the curriculum throughout education is seen as a need to prepare students for the 21st century and to face future problems.

The integration of ethics would help in its goal of developing critical thinking, problem solving and ethical decision-making. Preparing students as moral beings and moral actors, means that as **moral beings,** students cultivate empathy, values, and a sense of integrity and as **moral actors**, they learn to **apply** these values when making choices, personally, socially and professionally.

6.Conclusion

The core of the debate focuses on whether the education system can effectively foster responsible citizenship, moral values, and emotional development of students. Ethics in education is a multifaceted domain that requires ongoing attention and adaptation to contemporary challenges. By embedding moral education and ethical principles into curricula, educational institutions can cultivate environments that promote moral development, integrity, and social responsibility. Moral education seeks to shape ethical, compassionate individuals while also helping students thoughtfully engage with moral issues within the context of human traditions and worldviews. The role of ethics in education is fundamental because it shapes educational philosophies that prepare individuals to navigate the complex challenges of the future. Within the Albanian educational system, which is progressively aligning with European educational standards and civic values, embedding ethics into education serves two key purposes: it fosters active citizenship and strengthens democratic culture, while also preparing students to act as global citizens equipped to confront the complex global challenges of the future.

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Entrepreneurial Marketing in entrepreneurial projects-"startups ": Some Examples of Global Companies

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Abstract

Introduction: Classical institutions differ from entrepreneurial projects "start-ups", in which the start-ups work on totally varied marketing methods. Consequently, they confront such enormous challenges due to the vulnerability of its optimal human resources, along with perils whose face, as well as the great competition from other firms. Therefore, we made this study to identify one of the crucial marketing methods "Entrepreneurial Marketing ", aiming to demonstrate the prominent contribution of this latter in developing innovative start-ups.
Aim: The aim of this study is to assess how much entrepreneurial organizations employ entrepreneurial marketing as a successful marketing strategy that advances their marketing performance in the marketplace that intensifies their marketing efficiency in the market.
Method: in this study, we used the descriptive and analytical method
Findings: It's not feasible to implement traditional marketing strategies on entrepreneurial projects (such as Start-ups) due to its variety from larger enterprises in certain points: Firm size; Financing volume; Work team.
Conclusion: Entrepreneurial projects (capable to grow up; based on technologies; with new commercial models or implemented in a very low way) exercise entrepreneurial marketing in a complicated equation.
Orginality and value: Entrepreneurial Marketing is a contemporary topic

Key words : Entrepreneurial Marketing, Innovation, Innovation Organizations, start-up, Entrepreneurial projects
Jel Codes : M13, M31

1. Introduction

Marketing is a field of extreme importance in commercial practices even if they are traditional projects or entrepreneurial ones. So, the marketing in traditional projects is related to the concept of ideas and development of products regarding price, promotion and distribution…etc. For reaching a tremendous number of clients, thus, bringing the benefit for both company and consumer and to guarantee they both would be satisfied where the client can attain the intended value and the company achieves financial objectives as well as getting more clients. In contrast, the use of marketing in entrepreneurial projects, that are newly models in business or not tested yet or even not sufficiently tested, couldn't be applied by traditional projects. Therefore, the adoption of marketing in entrepreneurial projects with such peculiarity in abilities differs as "financing's volume – company's size – Teamwork (experience)". Consequently, these restrictions made this challenge in entrepreneurial marketing increased from marketing's perspective where entrepreneurs go through various experiences to attain such highly rated enterprises that may reach a Unicorn in one year or they leave highly risky enterprises that may not succeed. In this regard, the study addresses the concept of entrepreneurial marketing and how it can be adopted in certain global institution

- ***The Problematic of Study***

In which manner can entrepreneurial projects contribute in the application of marketing?

Sub-questions:

Through the aforementioned problematic, we raise the following sub-questions:

1/ What is the definition of entrepreneurial marketing? And how does it differ from traditional one?

2/ What are its aspects, specificities and strategies?

3/ How it can be applied in entrepreneurial projects?

- ***The Importance of Study:***

The study is crucial due to the importance of entrepreneurial marketing and its impact on marketing performance through entrepreneurial projects as one the effective methods that may increase the value of entrepreneurial projects in global market.

- ***The Objectives of Study:***

This study aims to identify the current status of entrepreneurial marketing practice by entrepreneurial projects and its impact on their marketing performance through exploratory study.

- ***The Methodology of Study:***

In order to answer the aforementioned problematic, we addressed two prominent themes as follows:

- The General Framework of Entrepreneurial Marketing
- Examples on the Application of Entrepreneurial Marketing by Global Enterprises

2. General Framework of Entrepreneurial Marketing



source ; (by the student)

3. The Concept of Entrepreneurial Marketing:

The term "entrepreneur" originates from the French word "entrepreneur," which means "to take on." An entrepreneur is someone who organizes, manages, and takes risks in running a business, according to dictionaries (najwa saoudi, 2020).

Contemporary research has focused on exploring the relationship between entrepreneurship and marketing. In 1982, under the auspices of the American Marketing Association and the International Council for Small Business, research meetings were conducted concerning entrepreneurship and marketing. The results of these meetings were made available for public access.

Researchers define entrepreneurial marketing as marketing that is based on entrepreneurship. It involves a set of activities that encourage the ministry to adapt to change, improve innovation and creative skills, and take marketing risks. The effectiveness of entrepreneurial marketing is measured through innovative marketing, creative marketing, and marketing risk-taking.

The table below summarizes the key definitions related to entrepreneurial marketing

Name of Researcher	**Year**	**Concept**
Philip kotler	2020	We notice that entrepreneurship in marketing consists of three main factors; positioning –differentiation and branding these components are interconnected and guide decision making.
Whalen et al	2016	Entrepreneurial marketing involves proactive and risk-taking innovative activities with the aim of creating value for customers ,entrepreneurs, marketers ,their partners and society as a whole .it encompasses effective communication strategies that effectively convey and deliver this value
Khakzadian et al	2019	Entrepreneurial marketing is a dynamic approach that combines the fundamental principles of marketing and entrepreneurship. Its primary focus is not only on serving existing markets but also on creating new markets by directing and guiding customers. This leads to increased visibility of companies and competitors in the target markets. With the emergence of entrepreneurial marketing, competition within industries has become more intense and fierce. In such an environment, the ability to predict outcomes becomes challenging, as the landscape is characterized by fluid borders and increased risk-taking. This necessitates a shift in management mindsets away from traditional principles towards embracing change and fostering a new organizational structure

4 .Differences between Traditional and Entrepreneurial Marketing:

By comparing key points within a table, we can identify the important differences between traditional and entrepreneurial marketing.

Type of processing	**Traditional Marketing**	**Entrepreneurial Marketing**
Approach	Mass Marketing	Niche Marketing
Strategy	Marketing Mix	Word of Mouth
Method	Funnel Method	Bottom up
Marketing Mix	Marketing Mix	Idea Sharing through

		community and networks

(Micheal Rached, 2019)

5. The Dimensions of Entrepreneurial Marketing:

The dimensions of entrepreneurial marketing vary from study to study, and some of these dimensions will be mentioned below:

5.1 Customer Intensity: Many studies emphasize that marketing activities should primarily be based on customers' awareness, desires, and requirements. This dimension should be based on the belief that the customer orientation should be the primary driving force of marketing within the organization. (amiri, 2018. seyyed & hendijanifard)

The best example of this is WhatsApp, which achieved a high growth rate compared to a low profit rate, and was sold to Facebook for about $18 billion. Thus, entrepreneurial companies focus on growth and customer intensity.

5.2 Towards Innovation: Marketing procedures oriented towards innovation allow organizations to concentrate on ideas that generate new markets, products, or processes. Small and medium-sized enterprises may concentrate on innovative marketing techniques since they possess the necessary resources to meet industry standards or to maintain them. (helms.2015)

5.3 Value creation: Maurice and colleagues claim that creating innovative value is the cornerstone of marketing. Creating value is necessary for relationships and transactions by identifying untapped customer value sources and creating unique resource combinations to accomplish this value. (2014. anukam & nwaizugbo)

This is what was mentioned in the book "BLUE OCEAN SHIFT". The authors state in the introduction that pilot projects have challenged a fundamental and true concept that cannot be argued within the world of competition – that high quality cannot be delivered at a lower cost. However, through the use of technology, pilot projects have been able to deliver higher quality at a reasonable price, or lower, compared to competitors (Thabet Hejazi, 2024**).**

5.4 Risk Management: Researchers believe that only organizations that pursue an entrepreneurial marketing approach as risk-takers are successful. Innovating in today's markets requires policies built on rationality for risk management. Maurice asserts that project management approaches in marketing will attempt to redefine uncertain external environmental factors in ways that will reduce uncertainty and may modify the organization's task environment. (Brychan and Gary and Geoff, 2009)

Example: The company Snapchat was losing money 4 years ago, but their growth, market value, and expansion in gaining new customers was increasing.

5.5 Proactiveness: Being proactive can help anticipate market changes and needs, target important market segments, outperform competitors in the market, and create a performance advantage within the organization (Eromafuru & Peter.A, 2016).

5.5 Resource Maximization: Resource maximization is an organization's pursuit of resources that others cannot see. Rather than being constrained by resource limitations, the organization develops innovative marketing strategies, enabling them to access resources while minimizing risks. Studies have found that gaining access to resources can lead to more innovation and risk-taking, whereas resource limitations can have a negative impact on entrepreneurship efforts (Becherer & Helms, 2016).

6.case studies of successful Entrepreneurial Marketing in Global - companies

Airbnb's Entrepreneurial Marketing strategy.

6.1 History of the platform

One of the most successful examples of entrepreneurial marketing is Airbnb, the online platform that connects travelers with local hosts who offer accommodation in their homes. Airbnb was founded in 2008 by Brian Chesky, Joe Gebbia, and Nathan Blecharczyk, who were struggling to pay their rent in San Francisco. They decided to rent out their spare room and air mattresses to attendees of a design conference, and realized that there was a huge demand for alternative and affordable lodging options. Since then, Airbnb has grown to become a global phenomenon, with over 4 million hosts and 800 million guests in 220 countries and regions.

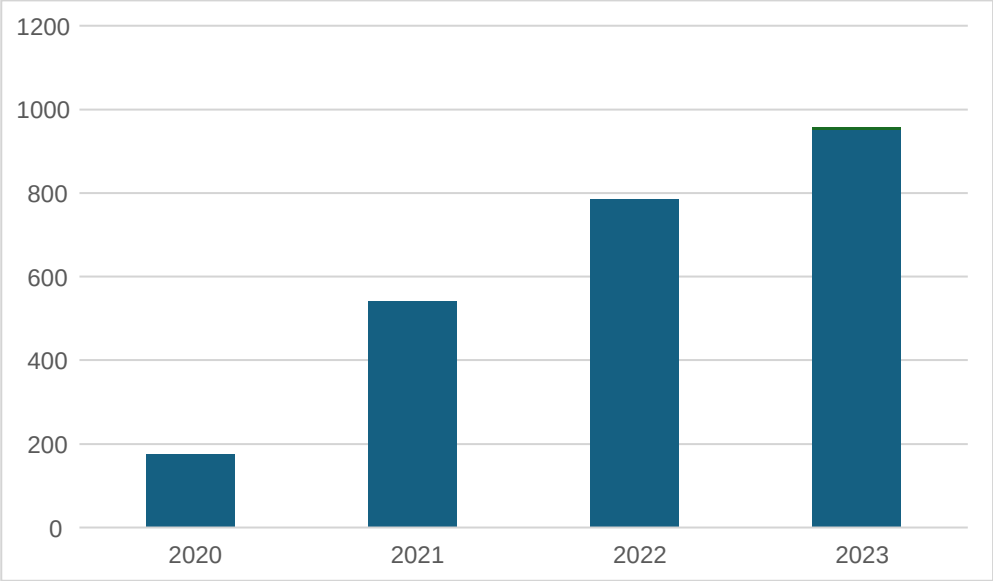
6.2 Platform users from 2012 to 2023

Year	**2012**	**2014**	**2016**	**2018**	**2020**	**2022**	**2023**
Users	**6**	**50**	**100**	**150**	**200**	**230**	**265**

(Curry, 2024)

The site escalated impressively in terms of users, as it currently has 265 million users despite its inception with 6 million users. And that reflects clearly its success over a decade.

6.3 Global advertising costs of the airbnb platform between 2020 and 2023



(Statista Research Department, 2024)

In 2023, the platform spent about 953 M on advertising activities, whereas in 2022 it was about 786 M, which represents a growth of 21%, and the platform revenue was about 9.92 billion in 2023, a high growth strategy of the platform, with a mobile-friendly marketing strategy, (Stanković, Anđelković, Mrdak, & Dimitrijević, 2023, p. 118) Indeed, consumers are making purchases via the mobile application of the company and pre-pay. (Agina, Aliane, Sawy, Khairy, & Fayyad, 2023, p. 4).

6.4. The entrepreneurial marketing aspects of the Airbnb site .

This feature enables the site to be installed and navigated upon adopting entrepreneurial

marketing dimensions and utilizing them to finalize the prosper of its business in a setting with a high rate of change

1. Proactivity.

Establishing trust relationships, made the company gain a reputation and a valuation of 38 billion USD by May 2018, based on trust and inclusiveness. It pioneered in building trustworthy relationships. (Ravenelle, 2020, p. 157)

It assists hosts and guests on management with structural opportunities of the rental process and offers a calendar with which hosts can manage reservations (Reinhold, 2017, p. 31) . It takes the initiative to build and foster the community of guests and hosts (Reinhold, 2017, p. 31).

2. Focus on innovation

2.1 This sharing economy platform gives to the home owners the chance to be entrepreneurs and rent their homes out to various sections of consumers. (Chung & Sarnikar, 2022, p. 2075) the possibility to interact with people in innovative and progressive ways, and to keep in touch with others.(Oskam & Boswijik, 2016, p.27)

2.2 Creation of new features; the additional services provided to meet the travel needs of the customers can be explored by them through:

- Two new levels of vacation homes.
- Showing customers a list of properties (niel, LaRae, and Seydou, 2022, p. 10) "Beyond by Airbnb and Airbnb Plus" to address the luxury accommodation demand better.

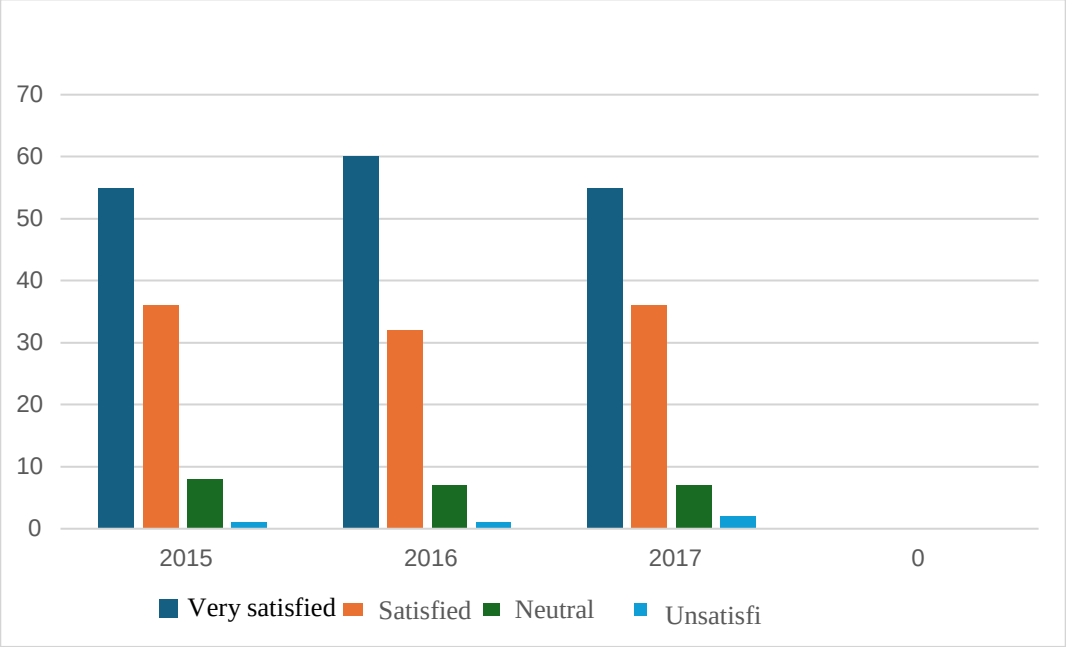
Payment system; Global payment system is the key to the platform success in the new markets, as it offers many payment options in terms of pre-payment and split payments, and that's facilitates making trips to the guests and keeping more bookings to hosts (Alyssa, Daniel, LaRae, Seydou and 2022, p.14). It is a safe and trustworthy system of international transactions that does not imply a banking license (Reinhold and Dolnicar, How Airbnb Makes Value, 2017, p.48)
Modern technologies; The platform has its own technology and infrastructure to ensure the enhancement of the search engine and the user experience with the help of AI tools (Stankovic, Andelkovic, Mrdak, and Dimitrijevic, 2023, p. 118).
A customer service platform that can cope with a big volume of requests received in an hour, and a review system that enables problem-solving and reviews to be made, that could be beneficial to both guest and host. (Reinhold and Dolnicar, How Airbnb Creates Value, 2017, p. 48)

3. Customer satisfaction focus.

Establishing a social environment; The platform highlights the significance of human relations in terms of travel and the peculiar experiences that may be gained through these relations by providing a sense of belonging. This is depicted by the visual communications and tools of marketing "Don't just stay there, live there where you communicate with hosts and guests through its platform, email, mobile app, and public advertisements.(Reinhold & Dolnicar, How Airbnb Creates Value, 2017, p. 49)
Multi-sided market system; the platform was previously a two-sided market with introduction of experiences. It had shifted with the two-sided seller-buyer market structure to a multi-sided market structure in which service and accommodation providers co-operate in delivering local authenticity to the guests. (rajala, Huhtamäki, Johanson, & Vakkuri, 2022, p. 33)
Multi-sided platform business model operators achieve two or more connections between two groups of people, buyers and sellers of complementary services.
Personalized marketing; the platform or company can deliver targeted marketing messages to particular user groups when it comes to increasing user preference. For example, we suppose that a certain category of users is concerned with urban exploration. Here, the company will be able to suggest special accommodation experience in the center of the city or offer travel packages to these users. (Weng, 2024, p. 72)

Motivations of the customers are; sustainability, community, low cost, home comforts, authenticity, interaction, novelty and fun. (Tumer Kabadayi, Cavdar Aksoy, Yazici, and Kocak Alan, 2022, p. 752). Cost savings and enjoyment are the main customers' motivation (Li, 2024, p.72). The platform has had over 150 million travelers who have made over 1 billion bookings.

3.1 The level of customer satisfaction of Airbnb platform in the United States and Europe



(Statista,2023)

4. Pursuing opportunities.

Finding new markets; the platform has experienced growth due to advertising, referral programs, acquisition of imitators in foreign markets as well as investments on vacation rental companies. At the beginning of 2017, the platform invested in Luxury Retreats company, a Luxury vacation rental firm located in Montreal and has over 4,000 homes under its ownership, and also declared a joint venture with Carison wagontil travel and American express global business travel (Reinhold, 2017, p. 33) to take a bigger portion of the business travelling market.

The site provides to the hosts, an alternative of monetizing on idle accommodation facilities like rooms and houses (Tumer Kabadayi, Cavdar Aksoy, Yazici, and Kocak Alan, 2022, p. 752). They make profits up to $9,600 annually, based on the estimations of 2023 (write, Perfectly, 2024)

To the guests, it is all a participatory act that transpires in a digital setting and forms a new generation of online marketplaces

Regions	Overnight stays 2020	Overnight stays 2021
Europe	97.33	144.76
North America	77.41	110.38
Asia	45.33	54.01
Latin America	26.99	41.99
Africa	4.06	5.75

(Matthieu , 2024)
Millions of requests; Europe on the top, Surprisingly, North America is ranked the third followed by Latin America that scored the highest growth in 2020.

5. Utilizing resources

Taking advantage of the collaborative economy; the platform is the biggest accommodation provider in the world even though it does not own the properties, it uses to conduct its accommodation business (Rajala, Huhtamäki, Johanson, & Vakkuri, 2022, p. 33)

It is a marketplace and hospitality service, which involves individuals renting their own homes on a short-term basis.(Ravenelle, 2020, p. 157)

Data use; Data is used on the platform to assist in offering all the necessary services. This information is applied to give and enhance, and build the platform, including allowing the customers to use the platform, make and accept payments, conduct analyses, and eliminate mistakes.(Alyssa, Daniel, LaRae, & Seydou, 2022, p. 14)

6. Creating value

In the case of hosts, the platform finds the right hosts by allowing them to list their spaces on the platform, which will attract a large number of worldwide guests (Reinhold, 2017, p. 31).

The site offers to the guests a platform through which they easily compare and book as many accommodation facilities as they can in any part of the world 24h/daily. The platform also enables the guests to enter the property upon passing through the necessary procedures (Reinhold, 2017, p. 32).

In the case of local communities, the revenues of the platform are spent on covering housing expenses of the hosts and adding to the consumption of higher prices, and that positively affects the creation of a value within the local economy (Nino & Jie, 2022, p. 2).

7. Risk management
It also guarantees the owners and authenticates information and identity of the two parties on the platform. (REINHOLd, 2017, p. 36)

It is also in line with the government regulations of each country, like paying taxes …(Alyssa, Daniel, LaRae, & Seydou, 2022, p. 10)

8.Conclusion

Nowadays, the entrepreneurial projects require effective strategies to accomplish its objectives, including a prominent one which is entrepreneurial marketing. Despite the challenges and barriers that accompany its practical application, the success of marketing affects successful entrepreneurial projects which might strengthen its evolution. Thus, flexible and short-term marketing strategies are needed to be adapted with continuous shifts in workplace which presented one the optimal advantages of entrepreneurial projects that differ from traditional marketing which is marked by fairness and attention of large enterprises.

Entrepreneurial marketing is a powerful strategy in varied industries at present, almost distinguished by strong competitiveness. Its role is to advance the modern marketing practices and create new prospects to attain sustainable success. Therefore, all the elements of entrepreneurial projects must work together to guarantee the efficiency of these strategies in order to activate the modern global marketing trends.

Consequently, entrepreneurial marketing is not only an option in our life, but a peremptory necessity to assure the continuity and success of projects in business field.

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The relationship between self-esteem and aggressive behavior in adolescents. An empirical analysis of psychological and social factors

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Abstract

Introduction: This study aims to analyze the relationship between self-esteem and aggressive behaviors among adolescents aged 16–19, while examining the moderating role of family support, school climate, peer dynamics, and socio-economic conditions.
Method: Participants were high school students from an urban area. Standardized questionnaires were administered to assess levels of self-esteem and the frequency and types of aggressive behaviors. Additional items explored family emotional support, school-related pressures, peer influence, and patterns of social media use.
Findings: Results indicate that low self-esteem is a significant predictor of aggressive behavior. Lack of emotional support at home, negative school climate, and peer pressure substantially increase the likelihood of aggression. Excessive or negative use of social media further intensifies conflict and emotional isolation. Boys demonstrated higher levels of physical aggression, whereas girls displayed more verbal or indirect aggression.
Conclusion: Self-esteem, combined with social and environmental stressors, influences both the intensity and the form of aggressive behaviors in adolescents.
Originality and Value: This study contributes to the understanding of aggression by integrating psychological, social, and economic determinants, offering evidence-based recommendations for programs that enhance self-esteem, strengthen family support, improve school climate, and promote healthier social media use.

Keywords: adolescent, aggressive behavior, social factors, psychological factors, self-esteem, education
Jel Codes: I3

1. Introduction

Adolescence represents one of the most important periods of an individual's psychological and social development. During this phase, young people face rapid physical, emotional and social changes, which help in the formation of personal identity and in the structuring of self-esteem. Family, teachers and peers have a great influence on the creation of the self-concept. This assessment can include categorizations such as capable or not, beautiful or ugly, liked or not. The way an individual evaluates and perceives himself plays a crucial role in building attitudes, in the way of interacting with others and in dealing with challenging situations. At the same time, adolescence is a period where various forms of aggressive behavior are often encountered.

Aggressive behaviors can manifest verbally, physically, or even socially and pose a serious challenge to the school environment and the mental health of young people. Often, these behaviors are linked to various psychological factors, such as low self-esteem, sensitivity to rejection, or lack of emotional management skills. The increase in aggressive behaviors in school environments has become a serious concern for educators, parents, and mental health professionals. Students aged 16–19, although in the final stages of adolescence, often display various forms of aggression, which can negatively affect not only the school environment, but

also their psychological and social development.

The main aim of this study is to explore and analyze the relationship between self-esteem and aggressive behavior among adolescents of this age, attending secondary education in an urban environment. The study aims to identify whether there is a significant relationship between the level of self-esteem and the tendency to display aggressive behavior, as well as to analyze the psychological and social factors that influence this relationship.

2. Literature Review

In recent years, interest in understanding the psychological factors that influence adolescent behavior has increased significantly in the Albanian context as well. Among these factors, self-esteem occupies a central place, as it directly influences the way individuals perceive themselves, interact with others, and face social challenges.

International studies have shown that self-esteem is closely related to emotional regulation and aggressive behaviors, especially during adolescence—a developmental stage characterized by identity formation and sensitivity to social evaluation. In the Albanian context, where the influence of family, social norms, and interpersonal relationships remains strong, studying the link between self-esteem and aggression is important for understanding the psychological dynamics of young people and for helping to develop preventive and educational interventions.

2.1 Studies on Self-Esteem

Self-esteem is a psychological construct related to an individual's perception and evaluation of themselves. Rosenberg (1965) defines it as an individual's global assessment of themselves, reflecting a sense of personal worth and competence. Coopersmith (1967) emphasizes the importance of early family experiences and social acceptance in the formation of self-esteem, arguing that feelings of self-worth and respect are built through positive interactions with others.

From a developmental perspective, Harter (1999) emphasizes that self-esteem is formed and consolidated during adolescence, a period characterized by social comparisons and the search for approval from peers. Leary and Baumeister (2000) propose the sociometric theory, according to which self-esteem functions as a psychological indicator of social acceptance and interpersonal regulation. Kernis (2003) distinguishes between stable and fragile self-esteem, where the latter is more sensitive to threats and may be associated with aggressive reactions.

Empirical studies show that low self-esteem is often associated with insecurity, feelings of inferiority, and a tendency toward aggressive behavior (Donnellan et al., 2005). On the other hand, high but unstable self-esteem can also lead to aggression when self-image is perceived to be threatened (Baumeister, Smart & Boden, 1996). Orth and Robins (2014) and Erol and Orth (2011) show that self-esteem gradually increases during adolescence and serves as a protective factor against stress and problematic behavior.

2.2. Studies on Adolescent Aggression

Contemporary research on adolescent aggression highlights this developmental stage as a critical period for the formation of stable patterns of social behavior. According to Tremblay (2000), physical aggression tends to decline with age as adolescents learn more sophisticated ways to express disagreement and emotional tension.

However, as emphasized by Björkqvist, Lagerspetz, and Kaukiainen (1992), indirect forms of aggression—such as social exclusion, rumor spreading, or emotional manipulation—become more prevalent during this phase, particularly among girls. Research by Farrell et al. (2010) indicates that psychological factors such as low self-esteem, reduced empathy, and poor

emotional regulation are directly related to aggressive behavior. Likewise, the family environment plays a crucial role: parental conflicts, lack of emotional support, and aggressive parental models contribute to the development of aggressive tendencies among youth (Buehler et al., 1997).

From the perspective of social learning theory (Bandura, 1973), adolescent aggression is viewed as a learned behavior acquired through the imitation of environmental models—parents, peers, or media figures. Later studies (Anderson & Bushman, 2002; Huesmann & Guerra, 1997) confirmed that repeated exposure to media violence increases the likelihood of aggressive reactions and desensitizes individuals to violence. From a biopsychosocial standpoint, Raine (2008) argues that adolescent aggression results from the interaction between biological factors (e.g., low serotonin levels, hyperactivity of the amygdala) and social factors (family environment, peer influence). These findings support the integrative framework of the General Aggression Model (Anderson & Bushman, 2002), which encompasses personal, situational, and cognitive factors that shape aggressive behavior.

2.3 Studies on the Relationship between Self-Esteem and Aggression

Baumeister, Smart, and Boden (1996) found that individuals with high but unstable self-esteem may display aggression when their self-image is threatened. Conversely, Donnellan et al. (2005) showed that low self-esteem is associated with an increase in antisocial and aggressive behaviors, due to insecurity and difficulties in emotional regulation. Social-cognitive theories also indicate that aggression can be learned through modeling the behavior of others, particularly when such behavior is rewarded or socially accepted (Bandura, 1986). Protective factors such as family support, peer relationships, and emotional regulation skills may reduce the impact of self-esteem on aggression (Anderson & Bushman, 2002).

In summary, both types of self-esteem—low self-esteem and high but fragile self-esteem—may predispose adolescents to aggressive behaviors, while contextual and interpersonal factors play an important moderating role. This is particularly relevant in Albania, where family and community dynamics strongly influence the behavioral development of young people

2.4 Psychological Factors Influencing Aggression in Adolescents

Research has shown that adolescents who struggle to manage negative emotions—such as anger, frustration, or shame—are more likely to engage in various forms of aggressive behavior (Eisenberg et al., 2000). Difficulties in emotional regulation are often associated with low self-esteem and a perceived inability to cope effectively with social stressors or environmental pressures.

2.4.1Impulsivity and Self-Control

Low levels of self-control constitute one of the most significant predictors of aggressive behavior. According to Tangney et al. (2004), impulsive adolescents tend to act without sufficient reflection on the potential consequences of their actions, thereby increasing the risk of violent or harmful reactions toward others. Limited self-control impairs the ability to regulate emotional responses and to employ constructive coping strategies in stressful or conflictual situations.

2.4.2. Narcissism and Fragile Self-Esteem

Another psychological dimension linked to aggression is narcissism, characterized by a high yet unstable form of self-esteem. Bushman and Baumeister (1998) argue that individuals with narcissistic tendencies are particularly sensitive to criticism and social rejection, often responding with hostility or aggression when their self-image is threatened. This fragile self-concept, dependent on external validation, makes them more prone to defensive and aggressive reactions when their perceived superiority is challenged.

2.4.3 Social Skills and Empathy

Social competence and empathy play a protective role against aggressive behavior. Adolescents with higher levels of empathy are better able to understand others' emotions and perspectives, making them less likely to resort to aggression as a means of communication or conflict resolution (Mestre et al., 2009). Conversely, a lack of social skills and emotional sensitivity can lead to misinterpretations of others' intentions and to impulsive or hostile reactions in interpersonal contexts.

2.5 Studies on Social Factors and Aggressive Behavior

Social factors constitute a crucial dimension in explaining the emergence and development of aggressive behaviors among adolescents. The family environment and parenting style play a central role in shaping social and emotional interaction patterns. According to Patterson (1982), authoritarian parenting and frequent family conflicts are strongly associated with lower levels of self-esteem and higher tendencies toward aggressive behavior. The absence of emotional support and constructive communication strategies within the family fosters conditions that encourage impulsivity and interpersonal hostility.

Peer groups also represent a major source of social influence in shaping adolescents' behavioral patterns. Prinstein and Dodge (2008) emphasize that social exclusion, peer rejection, or involvement in deviant peer groups can reinforce aggressive behavior, often serving as a mechanism for adolescents to gain social status or cope with feelings of insecurity. Peer interactions function as a "social laboratory" where adolescents learn which behaviors are socially acceptable, including aggressive conduct.

Similarly, the school context and the broader educational environment have a significant impact on the manifestation of aggression. Educational settings characterized by a lack of psychological support, a weak sense of belonging, or exposure to discrimination are more likely to foster problematic or antisocial behaviors among students.

An increasingly important dimension in this regard is the influence of media and social networks. Twenge and Campbell (2018) note that repeated exposure to violent content, social comparison, and aggressive behavioral models through digital platforms may contribute to the normalization of aggression and a decline in self-esteem. These mechanisms can reinforce the perception that aggressive behaviors are acceptable or effective strategies for interpersonal interaction.

3. Materials and Method

The present study examines the relationship between self-esteem and aggression among adolescents aged 16 to 19, emphasizing the role of psychological and social factors in shaping these behaviors. A quantitative research design was employed to analyze the association between levels of self-esteem and aggressive behavioral tendencies. The study outlines the characteristics of the target population, sampling procedures, and standardized measurement instruments, ensuring the reliability and validity of the data. Ethical considerations were strictly observed, including the confidentiality of participants and the accuracy of data collection procedures.

3.1 Main Objectives

The study aims to assess the level of self-esteem among adolescents and to identify potential differences based on gender and age. Another key objective is to determine the various forms of aggression exhibited in this age group, including verbal, physical, and social aggression.

Additionally, the study seeks to examine the influence of psychological factors—such as emotional regulation, impulsivity, self-control, narcissism, and social skills (including empathy)—as well as social factors, including family structure, peer relationships, school environment, and media exposure.

Finally, the research intends to propose intervention strategies that may contribute to enhancing positive self-esteem and reducing aggressive behaviors among young people.

3.2 Population

The study population consisted of Albanian adolescents aged 16–19 who were attending secondary schools in Tirana. The sample included 300 students, selected using a combination of purposive and random sampling to ensure representation of both genders and a variety of demographic characteristics. The primary aim of this sampling strategy was not to achieve statistical representativeness, but rather to collect detailed and in-depth data on adolescents' self-esteem and aggressive behaviors.

3.3 Instruments

Self-Esteem: The Rosenberg Self-Esteem Scale (RSES) was employed to assess self-esteem. This widely used standardized instrument consists of 10 items rated on a 4-point Likert scale. RSES has demonstrated high reliability across diverse cultural contexts, including the Albanian-translated version. The items reflect individuals' overall feelings about themselves, their self-evaluation, and perceptions of personal worth.

Aggression: To measure aggression, the Buss–Perry Aggression Questionnaire (BPAQ) was used, adapted into Albanian and rated on a 5-point Likert scale. This instrument assesses the level of aggressive behaviors displayed in adolescents' social environments and includes items related to verbal, physical, indirect, and emotional aggression. Participants indicate how frequently they have experienced or exhibited these behaviors using a predefined scale. The BPAQ has shown high reliability in previous studies and has been adapted for use in the Albanian educational context.

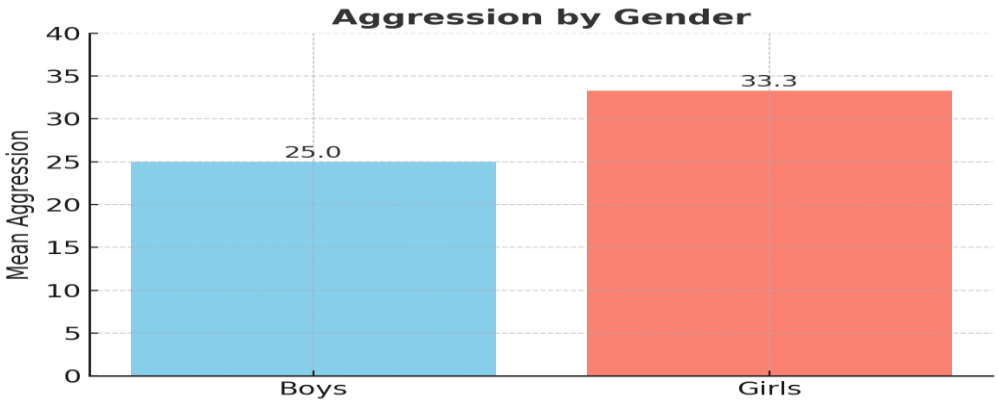
Variable / Concept	Instrument / Measurement
Self-Esteem	Rosenberg Self-Esteem Scale (RSES); 5-point Likert scale
Aggressive Behaviors	Buss–Perry Aggression Questionnaire (BPAQ); 5-point Likert scale
Psychological Factors	Measures of emotional regulation, impulsivity, self-control, narcissism, social skills, and empathy (standardized psychological subscales)
Social Factors	Indicators of family/parenting style, peer influence, school environment quality, exposure to media and social networks

4. Discussion

4.1. Interpretations of Self-Esteem

The study results indicate that the majority of adolescents exhibit a moderate level of aggressive behavior. This moderate level encompasses various forms, including verbal, emotional, and physical aggression. Specific findings suggest that individuals with lower self-esteem are more likely to display impulsive and violent behaviors, whereas higher self-esteem is associated with calmer and more cooperative attitudes. These results are supported by developmental psychology theories, which posit that self-esteem influences how adolescents cope with stress and social interactions. Self-esteem functions as a protective mechanism against emotional pressure, while its absence may lead to aggressive behavior as a way to compensate for feelings of inferiority.

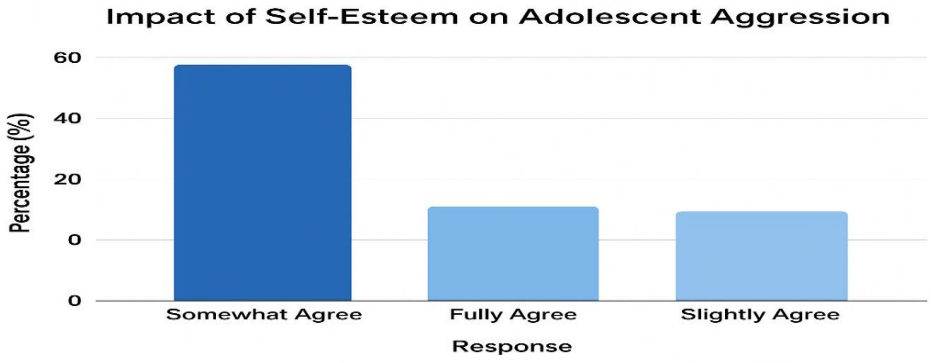
4.2 Aggression by Gender



This result suggests that, in this context, girls may exhibit more visible or more frequently reported forms of aggression, possibly due to different coping strategies or patterns of emotional communication. This finding is consistent with several studies indicating that girls may display more indirect or social aggression, whereas boys often manifest more overt physical aggression.

4.3 The impact of self-esteem on adolescent aggression

These results suggest that self-esteem functions as a regulatory mechanism for aggressive behavior. Specifically, adolescents with higher self-esteem tend to exhibit lower levels of aggression, whereas those with lower self-esteem are more likely to display aggressive tendencies.This visual representation reinforces the notion that enhancing self-esteem could serve as a protective factor against aggression, highlighting the importance of intervention programs in school and family contexts aimed at improving adolescents' self-concept and emotional regulation skills.

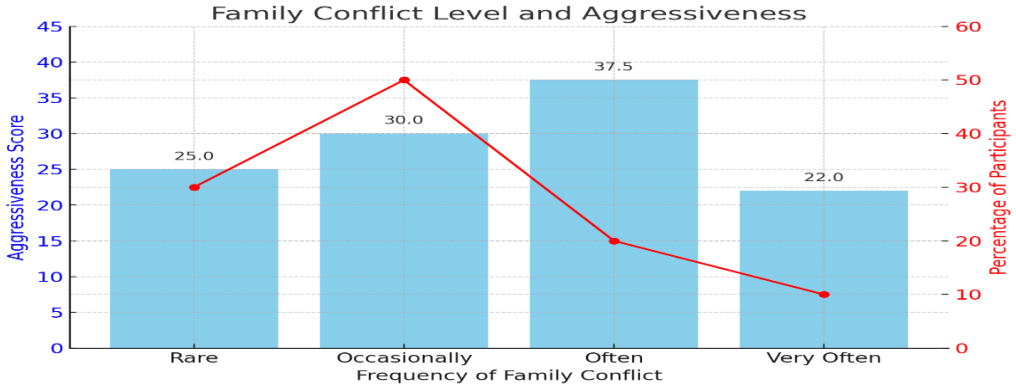


4.4 ***Factors Influencing Adolescent Aggression***

The average aggression score in this sample (M = 30.0) indicates a moderate level of aggressive behaviors overall. The standard deviation of 7.38 suggests a relatively homogeneous, yet not narrow, distribution of scores, meaning that some individuals exhibit higher or lower aggression than the mean. The minimum and maximum values (22–40) highlight considerable variability among participants, which may be associated with individual factors (e.g., self-esteem, temperament, coping strategies) and contextual factors (e.g., family environment, social pressures) influencing how individuals experience and express aggression. This variability is important for understanding the complexity of aggressive behaviors and for guiding potential educational or psychological interventions

The study highlights multiple factors influencing aggressive behaviors among adolescents aged 16–19. Lower self-esteem is associated with higher levels of aggression, particularly verbal and social forms, suggesting that unstable self-esteem constitutes a risk factor for impulsive and hostile behaviors. Excessive *social media* use—especially over six hours per day—correlates with very high aggression scores (40.0), indicating a potential link between intense digital engagement, emotional tension, and impulsive reactions.

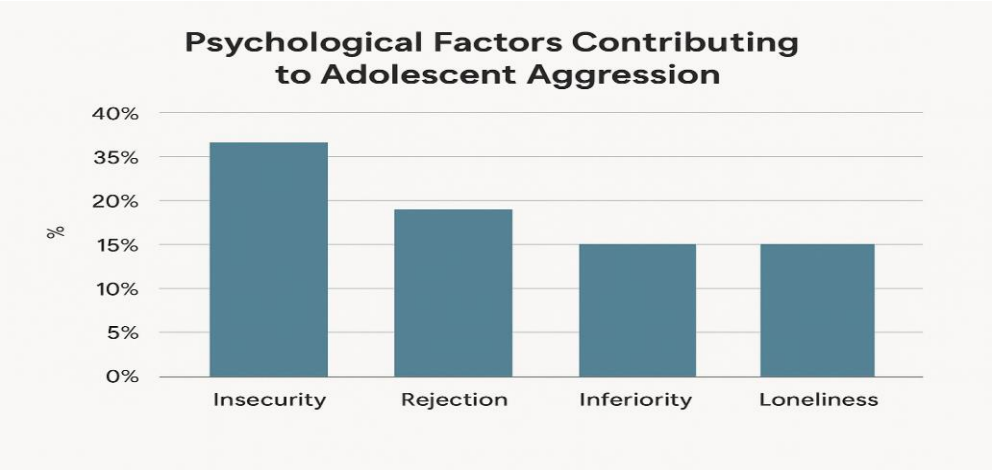
Family conflict also plays a significant role. These findings suggest that aggression is influenced not only by the presence of stressors but also by how adolescents perceive, interpret, and cope with them. Overall, the results are consistent with social-cognitive and self-esteem theories, emphasizing the interplay between personal, social, and familial factors in shaping aggressive behavior.



4.5 Psychological Factors and Aggression

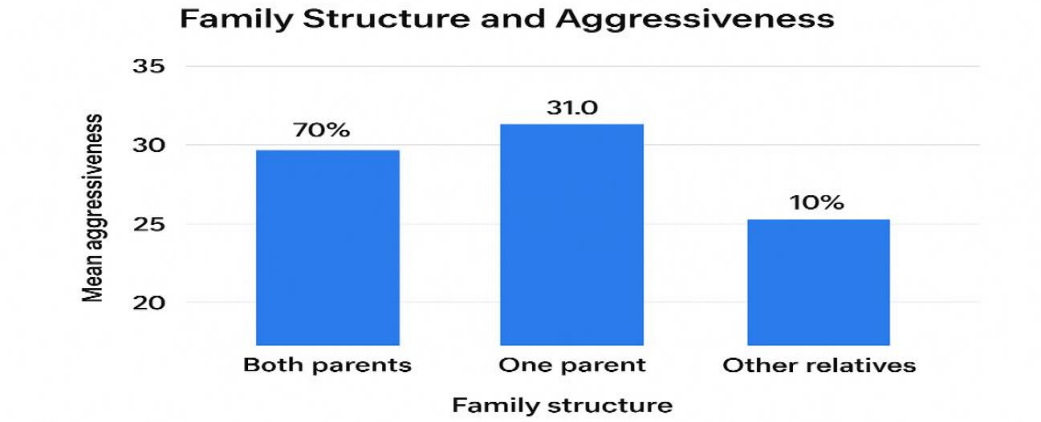
Adolescents who experience such feelings tend to use aggression as a way to express their dissatisfaction, to attract attention, or to protect themselves from further harm. Thus, both social and psychological factors interact and influence the adolescent to form attitudes that can be constructive, peaceful, or, conversely, destructive and aggressive.

This passage highlights that adolescent aggression does not arise from a single cause but is the result of the interaction between psychological and social factors. Feelings of insecurity, rejection, inferiority, or loneliness may motivate adolescents to exhibit aggression as a way to express dissatisfaction, attract attention, or protect themselves from further harm. In this context, aggressive behavior can take various forms, ranging from destructive and conflictual actions to more constructive or peaceful strategies, depending on how the adolescent manages these emotions and the social support they receive. From an academic perspective, this underscores the importance of analyzing psychological and social factors as interconnected components of aggression, suggesting that preventive or educational interventions should address both dimensions to reduce aggressive behaviors in adolescents.



4.5.2 Aggression according to family structure

Although the difference is modest, it aligns with existing literature suggesting that family structure plays a significant role in emotional and behavioral development. Living with both parents may provide a more stable emotional environment, greater supervision, and consistent support, which can act as protective factors against aggressive tendencies. Conversely, adolescents in single-parent households may face increased stressors, reduced monitoring, or fewer opportunities for emotional regulation support, potentially contributing to slightly elevated aggression scores. These findings underscore the importance of considering family composition in studies of adolescent aggression and in the development of targeted interventions.



5.Results, Limitations, and Future Directions

5.1Results on Self-Esteem and Aggressive Behavior

The findings of this study demonstrate a complex relationship between self-esteem and aggression among adolescents, highlighting the interplay of both psychological and social factors.

Firstly, there is a clear inverse relationship between self-esteem and aggressive behavior, with adolescents exhibiting lower self-esteem showing a higher propensity for aggressive actions. This aligns with theoretical models emphasizing the importance of internal psychological factors

in regulating behavior. Low self-esteem in adolescents often leads to the use of aggression as a coping mechanism or as a form of rebellion against environments perceived as neglectful or unsupportive. Such reactions can exacerbate negative self-perceptions, creating a cycle where aggression reinforces low self-worth.

Gender differences were also evident: males tend to display more overt forms of aggression, including physical and verbal behaviors, whereas females more frequently exhibit passive or indirect aggressive strategies. This suggests that aggression in adolescence is expressed in gender-specific ways, consistent with prior research on socialization and emotional regulation.

Social factors further moderate aggressive tendencies. Lack of family support, problematic peer influences, and adverse school environments significantly contribute to the manifestation of aggressive behaviors. Conversely, self-esteem grounded in social acceptance and emotional support from family and school environments serves a protective function, mitigating the likelihood of aggression.

Interestingly, the study also revealed that adolescents with high self-esteem may demonstrate aggression, though for different motives. In these cases, aggression is often instrumental, serving as a means to assert leadership, control, and social dominance among peers. Such behaviors provide satisfaction and reinforcement for their self-concept, highlighting that high self-esteem does not inherently prevent aggressive tendencies but may shape their expression. High self-esteem adolescents tend to be assertive and reactive when their rights or opinions are challenged, often defending themselves vigorously, which can strain peer relationships and limit social compromise.

Overall, these results support theoretical models that emphasize the dynamic interaction between internal psychological factors and external social influences in the development of aggressive behavior during adolescence. They illustrate that aggression may function both as a maladaptive response to low self-esteem and as a strategic tool in the context of high self-esteem, reflecting the multifaceted nature of adolescent social and emotional development.

5.2 Limitations

The study has several limitations that should be considered:

The data are self-reported, and therefore may be influenced by the subjectivity of the participants. Clinical psychological measures of self-esteem or aggression were not included, which would provide a more accurate picture. The influence of cultural, ethnic, or geographic factors, which may play an important role in adolescent behavior, was not taken into account.

-The small sample size (300 participants) limits the generalizability of the findings to a wider population.

-Self-reporting as a method may lead to responses influenced by the desire to provide socially acceptable answers.

However, the results provide valuable insight into trends that deserve further investigation with larger samples and research designs that include inferential statistical analyses.

5.3 Future Directions

The study findings have great importance for school psychologists, teachers, and parents. They indicate the need for:

- Promoting stable and positive self-esteem through psycho-pedagogical interventions.
- Providing emotional support and building a positive climate in school.

● Creating awareness programs on the impact of aggressive behaviors and ways to manage them.
Peer and Social Media Influences: Given the increasing impact of digital environments, future studies could investigate the role of social media and online peer interactions in shaping aggressive behaviors. This may include examining exposure to violent content, cyberbullying, and social comparison mechanisms.

Psychological and Emotional Moderators: Additional research could focus on the role of

psychological constructs such as emotional intelligence, coping strategies, resilience, and empathy in moderating the relationship between self-esteem and aggression. Understanding these mechanisms could inform targeted psychological interventions.

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Sustainability Communication on Hotel Websites Example of Balıkesir Province

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Abstract

Introduction: Sustainability in the tourism sector is a critical issue for both the protection of natural resources and the long-term appeal of destinations. Balıkesir province, with its natural beauty, coastal tourism, thermal springs, and cultural heritage, is one of Turkey's major tourism centers. In this context, the sustainability communication of hotels in the region plays a decisive role in the destination's competitiveness and brand image.
Aim: The purpose of this study is to examine the sustainability communications on the websites of sample hotels in Balıkesir province and to reveal the extent to which sustainability dimensions are reflected through an analysis of the certificates, symbols, marketing language, and visual elements used.
Method: The research was conducted using qualitative content analysis. The sample included hotels operating in Balıkesir that hold sustainability certifications (Green Key, LEED, etc.) and those that advertise their environmentally friendly practices on their websites. The text, images, icons, and certification information on the websites were analyzed according to the established coding scheme. The findings were evaluated using frequency tables and thematic analysis.
Findings: The analysis revealed that sustainability communications in most hotels primarily focused on environmental aspects (energy savings, waste management, water efficiency), while social and economic aspects were emphasized more limitedly. While certification logos were prominently displayed in some hotels, others, despite holding certification, were not sufficiently highlighted on their websites. Key words such as "eco," "environmentally friendly," and "green" were frequently used in marketing language, but narratives and references to international standards were lacking.
Conclusion: Sustainability communication on hotel websites in Balıkesir is generally environmentally focused and has room for improvement in terms of marketing language. Making social and economic sustainability messages more visible will both enhance hotel brand value and strengthen their alignment with the destination's sustainable tourism goals.
Originality and value: This study is unique in that it is one of the first to examine sustainability communication in Balıkesir province. Its focus on a local destination contributes to the academic literature and provides practical advice for hoteliers to improve their marketing strategies. Furthermore, the findings on how sustainability certifications are represented in digital marketing communications provide guidance for both policymakers and the tourism industry.

Key words: sustainability, sustainability communication, tourism
Jel Codes: M31, Q01, Z33

1. Introduction

Many researchers emphasize that natural and cultural resources are finite and susceptible to damage from overconsumption; thus, sustainable tourism has emerged as a response to the negative environmental and cultural impacts caused by inappropriate sectoral development on host communities and regions (Pelit, Baytok, & Soybalı, 2015, p. 40). Governments that derive profit from tourism and view it as a vital economic catalyst often overlook the negative aspects of the industry while developing policies. In principle, the concept of sustainable tourism is an

approach aimed at mitigating these negative impacts while promoting the positive contributions of the sector (Tokmak, 2023, p. 740).

The Brundtland Report is cited as the primary reference for sustainable development, which outlines four key characteristics (Ceylan, 2012, p. 170):

- Maintaining the overall quality of life,
- Ensuring continuous access to natural resources,
- Preventing damage that leaves a permanent footprint on the environment,
- Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Due to its structure and dynamics, the tourism sector is more closely linked to every stage of sustainable development mentioned in the report than any other industry. Therefore, the relationship between tourism and sustainability must be adopted and implemented by tourism producers across all functions, including production, marketing, finance, human resources, and management.

Countries that recognize the importance of tourism development based on pristine natural and cultural resources are adopting sustainable tourism policies to ensure both the preservation of their heritage for future generations and the continued generation of economic gain. By promoting the conscious use of natural resources through sustainable development, it is possible to mitigate the negative impacts inherent in the structure of the tourism sector. Consequently, the level of economic, social, and environmental benefits derived from tourism can be enhanced. For this reason, the concept of sustainability is gaining increasing global significance (Alkan, 2015, p. 6692).

This growing importance in recent years has led to shifts and transformations in tourism demand. On one hand, there is a positive change in the demographic structure of the tourist base regarding education and culture; on the other hand, concepts such as environmental values, sensitivity, and awareness are gaining prominence and influencing the selection of tourist activities. Since a conscious tourist base understands the importance of the environment and natural resources for tourism, they act with greater sensitivity toward the protection and enhancement of these values. They prefer regions and products that demonstrate the same sensitivity and accept being part of the solution to environmental problems. Therefore, strategies must be developed to attract this specific tourist segment to the region (Ayaş, 2007, p. 67). These strategies should be utilized effectively not only in service production and delivery but also within marketing functions. The awareness, education, and behavioral changes created through an effective marketing strategy will allow the ethos of sustainability to be woven into many segments of society.

2. Literature Review

2.1. Stages and Criteria of the Sustainable Tourism Program

To evaluate tourism sustainably within the framework of the protection-utilization balance of natural, cultural, and social resources, Turkey has developed national standards titled "Turkey Sustainable Tourism Industry Criteria" (TR-I). These standards were prepared through the cooperation of the Ministry of Culture and Tourism and the Turkey Tourism Promotion and Development Agency (TGA), with contributions from national and international stakeholders. TR-I is applicable to accommodation facilities and tour operators and is in full compliance with the Global Sustainable Tourism Council (GSTC) criteria. The criteria are categorized under four main pillars: sustainable management, socio-economic impacts, cultural impacts, and environmental impacts. All criteria are considered mandatory for the sector, except for exceptions that can be justified as not applicable in specific cases.

These standards were established to support the sustainable growth of the Turkish tourism sector, develop a common understanding among stakeholders, and contribute to the country's

obligations under the Paris Agreement and the European Green Deal. Furthermore, TR-I serves as a framework that guides enterprises in their sustainability practices, increases awareness, and provides fundamental principles for educational institutions. While the criteria aim to encourage businesses of all scales to adopt sustainable practices, they also enable the development of policies and applications through cooperation between the government, private sector, civil society, and academia. Additionally, it enhances the global competitiveness of Turkey's tourism brand and serves as a reference point for marketing sustainable tourism products. Finally, TR-I standards are reviewed and updated periodically (every 3–5 years) (TGA, 2025).

The sustainable tourism program consists of four groups, three stages, 42 criteria, and 167 indicators that determine whether these criteria are met. The distribution of groups, stages, criteria, and indicators is presented in Table 1 (TGA, 2025; Eşitti & Bay, 2023, p. 593).

Table 1: Stages and Criteria of the Sustainable Tourism Program

GROUPS	Stage 1 Criteria	Stage 1 Indicators	Stage 2 Criteria	Stage 2 Indicators	Sustainable Tourism Cert. Criteria	Sustainable Tourism Cert. Indicators	Total Criteria	Total Indicators
Group A: 13 Criteria (Effectiveness of Sustainable Management)	**6**	**20**	**2**	**8**	**5**	**20**	**13**	**48**
Group B: 9 Criteria (Maximizing Socio-Economic Benefits for Local People & Minimizing Negative Impacts)	**1**	**3**	**5**	**18**	**3**	**11**	**9**	**32**
Group C: 4 Criteria (Maximizing Benefits to Cultural Heritage & Minimizing Negative Impacts)	**1**	**4**	**1**	**3**	**2**	**7**	**4**	**14**
Group D: 16 Criteria (Maximizing Contributions to the Environment & Minimizing Negative Impacts)	**6**	**29**	**7**	**31**	**3**	**13**	**16**	**73**
TOTAL (4 GROUPS)	14	56	15	60	13	51	42	167

Source: TGA, 2025. https://tga.gov.tr/guvenli-ve-surdurulebilir-turizm/surdurulebilir-turizm-programi/sertifikali-belgeli-konaklama-tesisleri Accessed on: September 30, 2025; Eşitti, B. B., & Bay,

E. (2023). Sürdürülebilir turizm sertifikalı konaklama işletmelerinin web site içeriklerinin incelenmesi: İstanbul örneği. *Safran Kültür ve Turizm Araştırmaları Dergisi*, *6*(3), 590-603.

2.2. Marketing Communication

Every business and communicator faces significant challenges in the 21st-century marketplace. As competition intensifies, every market is under constant pressure. Customers, the vital essence of any business, have become more demanding and selective regarding what brands represent and stand for. Technological advancements have transformed the dimensions of communication. The rise of social media and changing "tectonic layers" of communication necessitate a presence in both online and offline channels. Events in a specific geographic market are rapidly transmitted to sensitive consumers worldwide via global media—through computer, television, and mobile screens—becoming almost instantly accessible. This world, characterized by information accessibility and the end of corporate invisibility, is a communication reality for today's businesses and consumers. Consequently, there is a need for communication that is preferably integrated. The immense power of marketing communication is inevitably shifting and evolving into new forms as a result of the underlying technological revolution (Kitchen & Proctor, 2015, p. 34).

Digital marketing communication is the process through which businesses gain visibility to create awareness among target audiences, build lasting relationships through interaction, and create mutual value. In the initial stage, an organization promotes itself by establishing a brand identity; subsequently, it personalizes communication and differentiates its services by analyzing customer data. In the final stage, co-creation of value occurs through online communities and collaborations, benefiting both customers and businesses (Rowley, 2004, p. 25).

The inability to communicate effectively with the target audience constitutes a risk for marketers. Since ineffective communication leads to failure, marketers can enhance their effectiveness by utilizing marketing communication strategies (Koekemoer, 2004, p. 2; Çakmak, 2023, p. 1). In this regard, effective promotion primarily means effective communication; however, providing information is necessary but not sufficient. The objective is not merely to inform the consumer but to foster desired changes in their attitudes and behaviors. Creating behavioral change in consumers is a complex task. At this point, developments in behavioral sciences and communication have transformed marketing communication into an integrated concept (Mucuk, 2006, p. 174).

For a business website to serve as an effective marketing tool, its content must be organized to appeal to visitors. In this context, it is crucial to evaluate every element—from website design to the information provided—through the lens of marketing communication. To reach new consumers and retain existing ones via a website, the site must be clear and comprehensible (Duygun & Alnıpak, 2017, p. 10; Söylemez, 2020, p. 56). Although relationship marketing via the web is extensively utilized today, many websites fail not because of unattractive visuals or poor legibility, but because they fail to meet the information needs of visitors. Often, websites are business-oriented rather than customer-oriented. Corporate pages prepared in electronic environments must be functional and user-friendly (Berthon, Pittb, & Watson, 1996; Özkoyuncu & Şahin, 2018, p. 3214). Marketing communication is a multifaceted concept that expresses the communication aspect of marketing more strongly through the integrated application of various promotional elements. The aim of this study is to reveal how effectively the research population utilizes their websites—a core component of marketing communication—regarding sustainability.

3. Method

The purpose of this study is to evaluate the website content of accommodation businesses that have met the requirements of the sustainable tourism program and hold a tourism operation license along with a sustainable tourism certificate. This study employs a qualitative research method, utilizing content analysis for data evaluation. While the population of the study consists of 268 accommodation businesses with sustainable tourism certificates in the province of

Balıkesir, a sample of 20 four- and five-star hotels was selected due to time constraints. The analysis form used in the research was developed based on the study by Eşitti and Bay (2023), which examined the website content of certified sustainable accommodation businesses.

Websites were analyzed across several categories: sustainability certification level, visibility of the certificate, sustainability logo, dedicated sustainability page, currency of sustainability information, energy efficiency, water conservation, waste management, nature conservation, cooperation with local people, use of local products, social responsibility projects, sustainable supply chain, contribution to the local economy, promises to customers, environmental policy page, social media icons, and sustainability-related posts on Facebook and Instagram. Finally, a visibility level was calculated by scoring the presence or absence of these categories, and the hotels' visibility levels were explained.

This study aims to answer the following research questions and serve as a pioneer for more comprehensive future research:

1. To what extent do hotels provide visibility for their sustainability certificates on their websites?
2. Which dimensions (environmental, social, economic, etc.) are included in the sustainability messages on the websites?
3. What is the level of emphasis on sustainability on hotels' websites and social media accounts?
4. Do hotels offer specific promises to their customers regarding sustainability goals and objectives?

4. Findings

Between September 1 and September 30, 2025, the websites of 20 four- and five-star accommodation businesses in Balıkesir, which hold tourism operation licenses and are certified under the sustainable tourism program, were examined via the Turkey Tourism Promotion and Development Agency (TGA, 2025) website. The websites were analyzed for the visibility of sustainability activities using a "Sustainable Accommodation Business Website Analysis Form."

Table 2. Hotel Type, District, and Certification Level

	Hotel Name	**Hotel Type (Stars)**	**District**	**Sustainability Certification Level**
1	Adramis Termal Otel	4	Edremit	Stage 2 Certificate Issued
2	Artemis Ören Tatil Köyü	4	Edremit	Stage 1 Certificate Issued
3	Balıkesir Altın Otel & Spa	4	Altıeylül	Certificate Issued (Full)
4	Club Orient	4	Burhaniye	Certificate Issued (Full)
5	Cunda Kızılca De Luxe Hotel & Spa	4	Ayvalık	Certificate Issued (Full)
6	Dedeman Güre Nurhayat Thermal Resort & Spa	4	Edremit	Certificate Issued (Full)
7	Elbis Hotel	4	Edremit	Certificate Issued (Full)
8	Güre Saruhan Termal Otel	4	Edremit	Stage 1 Certificate Issued
9	Kazdağları Allia Thermal Health & Spa	4	Edremit	Certificate Issued (Full)
10	Musho Otel	4	Ayvalık	Certificate Issued (Full)
11	Mutlular Gönen Termal Resort	4	Gönen	Stage 1 Certificate Issued
12	Otel Eken Prestige	4	Bandırma	Certificate Issued (Full)
13	Sındırgı Obam Termal Resort & Spa	4	Sındırgı	Stage 1 Certificate Issued
14	Willmont Hotel	4	Karesi	Certificate Issued (Full)
15	Adrina Health & Spa Hotel	5	Edremit	Certificate Issued (Full)

16	Golden Stone	5	Edremit	Stage 2 Certificate Issued
17	Grand Asya Hotel	5	Bandırma	Certificate Issued (Full)
18	Grand Temizel Otel	5	Ayvalık	Certificate Issued (Full)
19	Haliç Park Hotel	5	Ayvalık	Certificate Issued (Full)
20	Ramada Resort Kazdağları Termal Otel	5	Edremit	Certificate Issued (Full)

Source: TGA, 2025. https://tga.gov.tr/guvenli-ve-surdurulebilir-turizm/surdurulebilir-turizm-programi/sertifikali-belgeli-konaklama-tesisleri Accessed on: September 30, 2025

Table 2 examines the hotel types, the districts in which they are located, and the sustainability certification levels of the accommodation businesses. Accordingly, the distribution of certification levels and the number of hotels is as follows:

Table 2.1 Distribution of Hotels by Certification Level

Certification Level	Number of Hotels	Percentage (%)
Certificate Issued (Full)	14	70%
Stage 1 Certificate Issued	4	20%
Stage 2 Certificate Issued	2	10%
Total	20	100%

It is observed that the number of hotels capable of obtaining full certification is the highest according to the sustainability certification levels. The distribution results of these certification levels in relation to hotel types are presented in Table 2.2.

Table 2.2: Hotel Type and Certification Level

Hotel Type	Certificate Issued (Full)	Stage 1	Stage 2
4-Star	9	3	2
5-Star	5	-	1

Based on this distribution, it is observed that the sustainability rates of 5-star hotels (83%) are higher, while 4-star hotels lag behind in terms of obtaining full certification.

Table 2.3: Certification Level by District

District	Number of Hotels	Prominent Certification Status
Edremit	7	4 certified, 3 stage-certified
Ayvalık	3	All certified
Bandırma	2	All certified
Altıeylül	1	Certified
Burhaniye	1	Certified
Gönen	1	Stage 1 Certificate Issued
Karesi	1	Certified
Sındırgı	1	Stage 1 Certificate Issued

When examining the distribution by district, it is observed that hotels located in the Edremit district hold the largest share of hotels that have obtained sustainability certification.

Table 3: Hotels and Websites

	HOTEL NAME	WEB SITE
1	ADRAMİS TERMAL OTEL	https://www.adramis.com.tr/
2	ARTEMİS ÖREN TATİL KÖYÜ	https://artemistatil.com/
3	BALIKESİR ALTIN OTEL & SPA	https://www.altinotelbalikesir.com/
4	CLUB ORİENT	https://www.club-orient.com.tr/
5	CUNDA KIZILCA DE LUXE HOTEL & SPA	https://cundakizilcahotel.com/
6	DEDEMAN GÜRE NURHAYAT THERMAL RESORT & SPA	https://www.dedeman.com/oteller/dedeman-gure-nurhayat
7	ELBİS HOTEL	https://www.elbis.com.tr/
8	GÜRE SARUHAN TERMAL OTEL	https://www.guresaruhan.com/tr/
9	KAZDAĞLARI ALLIA THERMAL HEALTH&SPA	https://www.alliatermalotel.com/tr
10	MUSHO OTEL	https://otelmusho.com/
11	MUTLULAR GÖNEN TERMAL RESORT	http://www.mutlulargonentermalresort.com/
12	OTEL EKEN PRESTIGE	https://www.ekenhotels.com/prestige/
13	SINDIRGI OBAM TERMAL RESORT & SPA	https://www.obamtermal.com/
14	WILLMONT HOTEL	https://www.willmonthotel.com/
15	ADRINA HEALTH & SPA HOTEL	https://www.adrinahotel.com/
16	GOLDEN STONE	Website inaccessible
17	GRAND ASYA HOTEL	https://www.grandasyahotel.com/index.html
18	GRAND TEMİZEL OTEL	https://www.grandtemizel.com/tr
19	HALİÇ PARK HOTEL	https://www.ayvalikhalicpark.com/
20	RAMADA RESORT KAZDAĞLARI TERMAL OTEL	https://ramadaresortkazdaglari.com/

While the websites of 19 out of the 20 accommodation businesses examined in Table 3 were accessible, the website of one accommodation business was inactive. Therefore, the research proceeded with the analysis of the remaining 19 websites.

Table 4: Prevalence Rates of Features on Websites

Features	N	Websites Featuring the Item	%
Visibility of the Certificate	19	2	10.53
Sustainability Logo	19	5	26.32
Dedicated Sustainability Page	19	13	68.42
Currency of Sustainability Information	19	4	21.05
Energy Efficiency	19	13	68.42
Water Conservation	19	12	63.16
Waste Management	19	13	68.42
Nature Conservation	19	13	68.42
Cooperation with Local People	19	12	63.16
Use of Local Products	19	12	63.16
Social Responsibility Projects	19	0	0.00
Sustainable Supply Chain	19	13	68.42
Contribution to the Local Economy	19	12	63.16
Promises to Customers	19	4	21.05
Environmental Policy Page	19	5	26.32
Social Media Icons	19	15	78.95
Sustainability-Related Facebook Posts	19	3	15.79
Sustainability-Related Instagram Posts	19	5	26.32

Following the examination of communication elements regarding certificate visibility and sustainability practices on hotel websites and social media platforms, the following distribution emerges:

A result of 68.42% was obtained regarding hotel websites including a dedicated tab or page for sustainability. In terms of sustainability dimensions, energy efficiency, waste management, nature conservation, and supply chain aspects are featured at a rate of 68.42%. Following closely, topics such as contribution to the local economy, use of local products, and cooperation with local people show a strong distribution at 63.16%. These findings indicate that themes of environment and local contribution have successfully gained prominence in hotel communications.

However, the rates obtained for the visibility of the sustainability logo (26%), the environmental policy page (26.32%), and the presence of the sustainability certificate (10.53%) are considered insufficient in terms of communication. Regarding the currency of certificates or sustainability reports featured on websites or social media, it was observed that either no date was specified or the information was not up-to-date. The distribution of those featuring current information is 21.05%.

In terms of specific promises to customers, it is seen that 21.05% of hotels publish these as distinct targets and objectives. While a high rate of 78.95% was reached regarding the presence of social media icons on hotel websites, sustainability-related communication on these platforms remains at a low level, with Facebook posts at 15.79% and Instagram posts at 26.32%. Finally, the feature with the lowest result—appearing on none of the sites—is social responsibility projects. None of the examined hotel websites include social responsibility projects.

Table 5: Ranking of Hotels by Sustainability Visibility Scores

	HOTEL NAME	VISIBILITY SCORE
1	ADRAMİS TERMAL OTEL	10
2	ARTEMİS ÖREN TATİL KÖYÜ	0
3	BALIKESİR ALTIN OTEL & SPA	12
4	CLUB ORİENT	11
5	CUNDA KIZILCA DE LUXE HOTEL & SPA	0
6	DEDEMAN GÜRE NURHAYAT THERMAL RESORT & SPA	10
7	ELBİS HOTEL	10
8	GÜRE SARUHAN TERMAL OTEL	9
9	KAZDAĞLARI ALLIA THERMAL HEALTH&SPA	12
10	MUSHO OTEL	10
11	MUTLULAR GÖNEN TERMAL RESORT	0
12	OTEL EKEN PRESTIGE	11
13	SINDIRGI OBAM TERMAL RESORT & SPA	3
14	WILLMONT HOTEL	11
15	ADRINA HEALTH & SPA HOTEL	10
16	GOLDEN STONE	0
17	GRAND ASYA HOTEL	12
18	GRAND TEMİZEL OTEL	11
19	HALİÇ PARK HOTEL	0
20	RAMADA RESORT KAZDAĞLARI TERMAL OTEL	1

Table 5.1. Distribution of Hotels According to Visibility Score Ranges

Score Range	Number of Hotels	Percentage (%)
10–12 (High)	9	45%
5–9 (Medium)	2	10%
1–4 (Low)	2	10%
0 (None)	7	35%
Total	**20**	**100%**

It can be stated that hotels with scores between 10 and 12 constitute 45% of the sample, demonstrating a strong emphasis on sustainability across their web pages and social media platforms. For the 10% of hotels scoring between 5 and 9, it can be noted that they include fundamental communication elements regarding sustainability, while those scoring between 1 and 4 feature only a limited and minimal number of these elements. Finally, it is observed that a significant proportion of hotels (35%) possess no communication elements at all; despite having obtained a sustainability certificate, these establishments exhibit a high rate of absence regarding any sustainability emphasis, including the certificate itself.

Table 5.2: Hotels with the Highest Visibility Scores

Hotel Name	**Score**	**District**
BALIKESİR ALTIN OTEL & SPA	12	Altıeylül
KAZDAĞLARI ALLIA THERMAL HEALTH & SPA	12	Edremit
GRAND ASYA HOTEL	12	Bandırma

It is observed that the hotels with the highest scores based on the visibility ranking share the same score values. These hotels are found to provide a combination of sustainability pages, environmental policies, energy-water-waste information, and social media integrations on their websites.

5. Conclusion

The United Nations, Turkey, and their partners have established 17 interconnected Sustainable Development Goals (SDGs) aimed at addressing the primary global challenges by 2030. These goals include climate action, environmental protection, affordable and clean energy, responsible production and consumption, and clean water and sanitation—all of which directly pertain to the tourism sector. The objective of these targets is to transform sustainability into a way of life for both individuals and institutions, ensuring it is adopted as a core principle across all sectors during production and consumption. Achieving this requires extensive communication, information dissemination, and awareness-raising to transition this understanding into behavior and, ultimately, a lifestyle.

In this context, the concept of sustainable tourism emerges in literature and practice as a framework representing sustainability responsibility. Both practitioners and scholars emphasize that, due to the nature of the industry, all stakeholders must approach this concept with care, develop it, and assume active roles in its continuity. To protect finite tourism resources and transfer them to future generations, every producer and consumer in the sector is expected to fulfill their responsibilities and minimize the negative impacts of tourism through the benefits of sustainable tourism. From this perspective, this study evaluated the importance that hotels—as key stakeholders—attach to sustainability efforts, how transparently they communicate these efforts, and their current stage regarding visibility for the consumer. If sustainability can be transformed into a competitive arena through the power of marketing communication, it will resemble a race where there are no losers. Once it becomes a factor influencing consumer preference, the positive impacts created by hotels allocating more resources will increase the sector's overall investment in sustainability.

This study examined the websites of accommodation establishments in Balıkesir that hold a "Tourism Operation Certificate" and a "Sustainable Tourism Certificate." Within the specified criteria, 268 accommodation establishments are listed on the TGA (Turkey Tourism Promotion and Development Agency) website. Due to time constraints, the scope was limited to hotel types, and a sample of twenty 4-star and 5-star hotels was determined. One of the selected hotels was excluded from the sample as its website was under construction for an extended period. Consequently, the websites of 19 establishments were analyzed based on specific sustainability features. However, the data obtained indicates that current levels are insufficient for a region like Balıkesir where tourism is highly developed. The presence of hotels that have achieved full certification suggests that other establishments should be further encouraged to obtain such credentials. Furthermore, it was observed that fully certified hotels are concentrated in the

Edremit district, indicating that major destinations like Ayvalık require greater awareness in this regard.

The study examined how 18 communication elements—ranging from the visibility of the sustainability certificate to social media engagement—are implemented. It is significant that 68.42% of hotel websites include a dedicated tab or page for sustainability. However, a closer look at the content and details reveals that these applications are predominantly corporate-oriented and remain weak in terms of effectiveness and currency. While dimensions such as energy efficiency, waste management, nature conservation, and supply chain are featured at a rate of 68.42% in sustainability reports, topics such as contribution to the local economy, local products, and cooperation with local people show a strong distribution at 63.16%. These findings demonstrate that themes of environmental and local contribution have successfully surfaced in hotel communications. Nevertheless, descriptions regarding the applicability of targets and policies prepared with these keywords are lacking. For instance, specific promises to customers are included at a rate of only 21.05%, and certificates or reports on websites and social media either lack dates or are not current. The proportion of hotels providing up-to-date reports, certificates, or policies is only 21.05%.

Regarding marketing communication elements such as logos, icons, or social media posts, low distribution rates were found: sustainability logos (26%), environmental policy pages (26.32%), presence of the certificate (10.53%), Facebook posts (15.79%), and Instagram posts (26.32%). This highlights the inadequate interest of hotels in sustainability communication in today's era of powerful digital interaction. Finally, the total absence of social responsibility projects and a near-complete lack of policies regarding social responsibility present a negative image for these high-star-rated hotels. While these establishments have earned sustainable tourism certificates by fulfilling their operational responsibilities, they have failed to communicate this effectively to their target audience. However, it is believed that establishments which are perceived as environmentally sensitive, conscious of resource utilization, and responsible toward future generations are more effective in influencing consumer preference. Therefore, these activities must be communicated more extensively. It is essential to update certificates, sustainability reports, and public pledges, and to create more effective web pages and social media accounts.

For future research, it is recommended to expand the scope by removing constraints such as the specific province (Balıkesir), establishment type, and star rating, focusing instead on diverse regions with high tourism density. Additionally, while this study focused solely on the "Sustainable Tourism Certificate," subsequent research could investigate different certification levels or utilize alternative methods beyond content analysis. Finally, perceptions of tourism users and the views of practitioners, such as hotel managers and marketing directors, could be integrated into the research.

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A Comparative Analysis of the Healthcare Systems in KSA and UK: Towards Understanding Efficiency, Accessibility, and Quality of Care

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Abstract

Introduction: Healthcare systems reflect a country's economic capacity and institutional maturity. This comparative analysis examines Germany and Albania between 2022 and 2024, focusing on efficiency and patient care within two fundamentally different health system contexts.
Aim: The study aims to assess how healthcare systems in a high-income country (Germany) and a lower-middle-income country (Albania) perform under differing economic, institutional, and governance conditions. It seeks to identify strengths, challenges, and reform priorities relevant to each.
Method: A qualitative comparative analysis was conducted using data from official government reports, peer-reviewed literature, and international sources such as the WHO and World Bank. The study evaluates healthcare models, funding mechanisms, service delivery, and reform strategies.
Findings: Germany offers universal access, strong infrastructure, and high patient satisfaction. However, it faces challenges in allocative efficiency and fragmented care coordination. Despite advanced digital health legislation, adoption remains limited. Albania, transitioning from a centralized and underfunded system, struggles with low spending, high out-of-pocket costs, workforce inefficiencies, and corruption. It is leveraging Public-Private Partnerships and digital tools to expand access and improve services, but progress is hindered by systemic governance issues.
Conclusion: Germany is optimizing a well-established system, while Albania is undergoing foundational reform. Their contrasting paths highlight how economic strength and institutional capacity shape healthcare performance and reform outcomes.
Originality and Value: This study contributes a nuanced, evidence-based comparison of two healthcare systems at different development stages, offering insights into how structural context influences efforts toward efficiency and patient-centered care.

Keywords: healthcare systems, efficiency, patient care, health reform, germany, albania, high-income countries, lower-middle-income countries.
Jel Codes: I15, I18

1.Introduction

This paper undertakes a comprehensive comparative analysis of the healthcare systems in the Kingdom of Saudi Arabia (KSA) and the United Kingdom (UK), specifically examining their performance from 2022 to 2024. The primary objective is to delineate and contrast the efficiency, accessibility, and quality of care delivered within these distinct national frameworks. Drawing upon recent data from official government reports, peer-reviewed academic journals, and reputable international organizations such as the World Bank and the World Health Organization (WHO), this study aims to provide an evidence-based assessment that informs a deeper understanding of their respective strengths, weaknesses, and evolving dynamics.

The healthcare landscape in KSA is currently undergoing an ambitious and extensive transformation, largely driven by the overarching objectives of Vision 2030. This national strategic blueprint seeks to profoundly modernize, privatize, and enhance the Kingdom's healthcare services to effectively meet the evolving needs of its rapidly growing population

(Global Health Saudi, 2024; International Trade Administration, 2023). This transformation encompasses substantial investments in infrastructure development, widespread adoption of digital health technologies, and a concerted focus on healthcare workforce development. The ultimate aim is to achieve universal health coverage and significantly improve patient outcomes across the board (Global Health Saudi, 2024).

In parallel, the UK's National Health Service (NHS) operates on foundational principles established at its inception: universal care, provided free at the point of delivery, based solely on clinical need, and funded predominantly through general taxation (HM Government, 2022). The NHS is a vast and intricate system, characterized by its complex, multi-organizational structure that operates across central, national, regional, and local tiers (NHS England, 2024). It is a system in perpetual evolution, with recent legislative changes, such as the Health and Care Act 2022, designed to foster greater integration and enhance overall efficiency across its diverse components (NHS England, 2024). This comparative analysis will delve into how these fundamental differences in structure, funding, and strategic direction manifest in the practical delivery of healthcare services in both nations.

2.Healthcare System Structures and Governance

Understanding the foundational structures and governance mechanisms of each nation's healthcare system is paramount to appreciating their operational dynamics and performance. Both KSA and the UK exhibit distinct models shaped by their historical contexts, economic priorities, and national visions.

2.1.Saudi Arabia's Healthcare System: Vision 2030 Reforms and Governance

The healthcare system in Saudi Arabia is centrally governed by the Ministry of Health (MOH), which serves as the primary regulatory and oversight body. However, the Kingdom is currently immersed in a profound restructuring effort under the ambitious umbrella of Vision 2030. This strategic initiative is systematically reorienting the healthcare sector towards a more privatized, performance-driven, and patient-centric model (Global Health Saudi, 2024; International Trade Administration, 2023). A key structural change involves the organization of the system into "health clusters," designed to enhance the efficiency of service delivery and improve coordination across different levels of care. As of 2022, KSA had established 20 such health clusters, strategically distributed across its five main regions (Alhuseini et al., 2025).

Financially, healthcare is a declared top priority for the Saudi government, reflected in substantial budgetary allocations. In 2023, spending on health and social development surpassed USD 66.6 billion, with a further commitment of SAR 214 billion (approximately USD 57.04 billion) in 2024 (Global Health Saudi, 2024). Historically, government spending has constituted the majority of the nation's healthcare expenditure, accounting for over 60% (International Trade Administration, 2023). However, a significant policy thrust under Vision 2030 is the aggressive promotion of privatization and Public-Private Partnerships (PPPs). This strategy aims to strengthen healthcare services and infrastructure by leveraging private investment and expertise. The Ministry of Health anticipates initiating over 100 PPP projects in health services within the next five years, attracting an estimated $12.8 billion in private sector investment (International Trade Administration, 2023).

In terms of governance and strategic initiatives, Vision 2030 is committed to achieving universal health coverage (UHC) for its population (Global Health Saudi, 2024). This commitment is supported by widespread adoption of healthcare technology, including a significant allocation of USD 1.5 billion for health information technology to bolster telemedicine capabilities (Global Health Saudi, 2024). Accreditation programs are also being implemented to drive better patient outcomes (Global Health Saudi, 2024). The Healthcare Sector Transformation Program, a core component of Vision 2030, specifically focuses on privatization, the development of integrated health clusters, and innovations in e-health (Global Health Saudi, 2024). Furthermore, the Saudi Data & AI Authority (SDAIA) has been established to spearhead the adoption of artificial

intelligence and strategic data utilization within the healthcare sector (Global Health Saudi, 2024). The Council of Health Insurance (CHI) has reported a notable increase in health insurance beneficiaries, rising from 11.5 million in 2022 to 12 million in 2023, with an ambitious target of achieving over 95% basic healthcare coverage by the end of 2024 (Ministry of Health (KSA), 2023). Official statistics from the General Authority for Statistics (GASTAT) confirmed that 100% of Saudi citizens had basic healthcare coverage in 2024, with the overall coverage rate for the entire population reaching 95.9% (General Authority for Statistics (GASTAT), 2024). Workforce development is another critical pillar of Vision 2030. The Kingdom aims to recruit an additional 175,000 healthcare professionals by 2030, including 69,000 doctors and 64,000 nurses, to meet the needs of a growing population. Concurrently, a "Saudization" initiative is underway to gradually replace expatriate healthcare workers with Saudi nationals, further increasing the demand for qualified local medical staff (Global Health Saudi, 2024).

A critical observation regarding KSA's healthcare transformation is the potential for a dual impact from its aggressive privatization strategy. While the push for privatization (with a goal to increase private sector contribution from 40% to 65% by 2030) and the expansion of health insurance beneficiaries can introduce efficiencies, foster innovation, and reduce the direct financial burden on the state, it simultaneously carries the risk of exacerbating health inequalities if not meticulously managed (Global Health Saudi, 2024; International Trade Administration, 2023; Ministry of Health (KSA), 2023; General Authority for Statistics (GASTAT), 2024). The current private health insurance model in KSA, for instance, primarily emphasizes treatment rather than preventive care, which could limit its overall effectiveness in comprehensively addressing the rising burden of non-communicable diseases (Redesign Health, 2023). This suggests a potential tension between the economic objectives of privatization and the broader public health goals of achieving universal, equitable, and preventive care. The challenge for KSA lies in ensuring that increased private sector involvement genuinely expands access and elevates the quality of care for all segments of the population, rather than inadvertently creating a two-tiered system where those with superior insurance coverage receive preferential care, potentially leaving the public system under-resourced for vulnerable populations or for essential preventive health initiatives.

2.2.United Kingdom's National Health Service (NHS): Structure, Governance, and Funding Principles

The NHS in England operates not as a monolithic entity, but as an intricate network comprising hundreds of diverse organizations at central, national, regional, and local levels, each endowed with distinct roles and responsibilities (NHS England, 2024). This complex structure positions the NHS as one of the largest employers in Europe (NHS England, 2024).

The funding model for the NHS is predominantly based on general taxation, supplemented by contributions from National Insurance, prescription charges, and dental service charges (NHS England, 2024). The central government, led by the Prime Minister, ultimately determines the overall financial allocation to the NHS and sets the overarching strategic priorities (NHS England, 2024). In 2024, the total healthcare expenditure in the UK was approximately £317 billion (provisional estimates), with government-financed healthcare accounting for a substantial £258 billion (Office for National Statistics (ONS), 2024). The share of government spending in total healthcare expenditure increased to 81.3% in 2024, up from 79.0% in 2019, underscoring its primary role in funding (Office for National Statistics (ONS), 2024). The Department for Health and Social Care (DHSC) reported spending £191.3 billion in 2023-24 (National Audit Office, 2025; The King's Fund, 2024).

Governance within the NHS is multi-layered. The DHSC holds overall financial control, oversees NHS delivery and performance, and is responsible for setting health and social care policy (NHS England, 2024). NHS England (NHSE) serves as the single national regulatory body, providing unified leadership and overseeing the funding, planning, delivery, transformation, and performance of NHS healthcare across England (NHS England, 2024). The Health and Care Act 2022 significantly reformed the NHS by formalizing the merger of several key organizations, including NHS Improvement, Health Education England, and NHS Digital, into NHSE (NHS

England, 2024). A pivotal development stemming from this Act was the establishment of 42 Integrated Care Systems (ICSs) on a statutory basis on July 1, 2022. These ICSs are collaborative partnerships of health and care organizations tasked with planning and delivering joined-up services at a regional level, playing a crucial role in commissioning services and implementing the NHS Long Term Plan (NHS England, 2024; NHS England, 2023). The Care Quality Commission (CQC) operates as an independent regulatory body, responsible for monitoring, inspecting, and rating health and social care providers to ensure quality and safety (NHS England, 2024).

Digital transformation is a significant strategic objective for the NHS. NHS Digital is instrumental in developing and operating national IT and data services that support clinicians and patients (NHS England, 2024). The long-term vision aims for the NHS to become the most AI-enabled care system globally, with a focus on empowering patients through a single, secure, and authoritative account of their health data via the NHS App (HM Government, 2022).

A significant characteristic of the NHS is what can be described as a centralized-decentralized paradox in its reform efforts. While the NHS is structurally diverse, comprising numerous organizations, NHS England exerts unified national leadership, dictating overall direction and resource allocation (NHS England, 2024; National Audit Office, 2025). The establishment of Integrated Care Systems (ICSs) under the Health and Care Act 2022 represents a move towards greater local autonomy in service planning and delivery, seemingly decentralizing care (NHS England, 2024). However, NHSE continues to set national targets (such as the 18-week treatment target and 4-hour A&E waits) and maintains stringent financial oversight (NHS England, 2025b; National Audit Office, 2025). This creates a constant tension between the desire for national consistency and equity, and the need for local responsiveness and integration. The effectiveness of ICSs fundamentally relies on their ability to innovate and tailor services to local community needs while simultaneously adhering to national performance standards and navigating significant financial constraints. This balancing act frequently results in trade-offs between local flexibility and national accountability. The principle of using a "weighted capitation" formula for resource allocation (NHS England, 2023) is a robust mechanism to ensure equitable distribution of funds based on population health needs, aiming to reduce health inequalities (NHS England, 2025a). However, the ongoing challenges within the system suggest that even with this principled approach, the overall resource envelope may be insufficient to meet escalating demand, thereby posing a continuous challenge to truly reducing health disparities.

3.Efficiency of Healthcare Delivery

Efficiency in healthcare delivery is a multifaceted concept, encompassing financial resource utilization, administrative overhead, operational productivity, and the responsiveness of service provision. A comparative examination of KSA and the UK reveals distinct approaches and challenges in achieving optimal efficiency.

3.1.Healthcare Expenditure and Financial Performance

The financial commitment to healthcare in KSA and the UK demonstrates contrasting scales and funding models. In KSA, the current health expenditure as a percentage of GDP was 5.97% in 2021 (World Health Organization (WHO), 2023). Total healthcare spending in the Kingdom reached SAR 227.68 billion in 2023, marking a 3.56% increase over 2022. A notable shift in funding sources is evident: government spending decreased by 2.65% in 2023, while expenditure by insurance companies surged by 21.35% in the same period (Ministry of Health (KSA), 2023). The government's direct spending on health and social development was $50.4 billion in 2023 (International Trade Administration, 2023).

Conversely, the UK's healthcare expenditure as a share of GDP stood at 11.1% in 2024, a figure comparable to 11.0% in 2023 (Office for National Statistics (ONS), 2024; The King's Fund, 2024). Provisional estimates indicate that total healthcare expenditure in the UK was approximately £317 billion in 2024, with government-financed healthcare accounting for £258 billion (Office for National Statistics (ONS), 2024). Government healthcare expenditure in 2023, when adjusted to 2024 prices, was £252 billion, representing a 0.9% real-terms decrease compared to 2022 (Office for National Statistics (ONS), 2024).

This comparison highlights a significant divergence in funding trajectories. KSA's health expenditure as a percentage of GDP is considerably lower than that of the UK. However, KSA's overall spending is on an upward trend, accompanied by a notable strategic shift towards greater reliance on private insurance and private sector investment. In contrast, the UK, despite maintaining a high overall expenditure as a proportion of GDP, experienced a real-terms decrease in government spending in certain areas in 2023. This difference in approach suggests varying strategies for achieving financial sustainability. KSA's model, by actively transferring financial burden and attracting investment from the private sector, potentially aims to achieve greater fiscal flexibility for the government, allowing it to reallocate resources towards other Vision 2030 priorities or critical infrastructure development. The UK's system, heavily reliant on general taxation, appears more vulnerable to economic fluctuations and increasing demand without corresponding increases in tax revenue, leading to real-terms cuts in areas such as preventive care despite substantial overall investment.

Table 1. Comparative Healthcare Expenditure (2022-2024)

Indicator	Saudi Arabia (KSA)	United Kingdom (UK)
Current Health Expenditure (% of GDP)	5.97% (2021)	(2024)
Total Healthcare Spending (SAR/£ Billion)	SAR 227.68 (2023)	£317 (2024, provisional)
Government Spending on Health (SAR/£ Billion)	SAR 156.92 (2023)	£252 (2023, in 2024 prices), £258 (2024)
Insurance Company Spending (SAR Billion)	SAR 38.63 (2023)	N/A (Predominantly tax-funded)

Note: KSA data for 2022-2024 is limited in snippets, using latest available. UK data for 2024 is provisional.

3.2.Administrative Costs and Operational Productivity

Administrative efficiency and operational productivity present distinct challenges in both nations. In KSA, the government is actively working to enhance spending efficiency through periodic fiscal policy reviews (Ministry of Finance (KSA), 2024). While specific figures for administrative costs are not detailed, the strong emphasis on digital transformation, including AI adoption and significant investment in health IT, indicates a strategic intent to streamline processes and improve overall efficiency (Global Health Saudi, 2024; General Authority for Statistics (GASTAT), 2024). However, the management of chronic care in KSA still faces considerable challenges, including fragmented Electronic Medical Record (EMR) systems, bottlenecks in referral pathways, and gaps in inventory management, all of which contribute to systemic inefficiencies and an estimated annual economic burden of US$24.4 billion due to non-communicable diseases (Redesign Health, 2023; United Nations Development Programme (UNDP), 2024).

In the UK, administrative costs for the Department for Health and Social Care (DHSC) and the wider health and care system are reported to be just over 1% of the total budget (The King's Fund, 2024). Despite this seemingly low administrative overhead, the NHS faces significant operational challenges. Productivity in acute hospitals has declined by approximately 8% since the financial year 2019/20, representing an estimated annual loss of £6 billion (The King's Fund, 2024). Furthermore, the NHS is projected to face a £604 million overspend in 2024/25, partly attributed to shortfalls in efficiency plans and increases in provider workforce costs (NHS England, 2025b). Efforts are underway to mitigate these costs; for example, cash spending on agency staff is forecast to reduce to £2.1 billion in 2024/25, a substantial 38% reduction from 2022/23 levels, indicating a shift towards more substantive staffing (NHS England, 2025b).

A key difference in efficiency challenges is observed in the underlying systemic pressures. KSA's efforts to enhance efficiency appear to be focused on overcoming fragmentation within its modernizing system, particularly through digital integration and addressing issues like EMR silos and referral bottlenecks (Redesign Health, 2023). The UK, despite having a relatively centralized structure and low administrative costs, is grappling with a significant decline in productivity in its acute hospitals and persistent financial deficits (NHS England, 2025b; The King's Fund, 2024). This suggests that the UK's efficiency struggles may stem from deeper systemic issues, such as an imbalance between demand and supply, chronic workforce pressures, and potentially the cumulative effect of underinvestment in physical infrastructure (NHS England, 2025b; British Medical Association, 2024; Nuffield Trust, 2025a). While the reduction in agency staff costs in the UK is a positive step towards fiscal efficiency, its long-term impact on overall productivity and service delivery will depend on addressing the fundamental workforce shortages that necessitate such temporary staffing.

3.3.Waiting Times and Service Flow

Waiting times serve as a critical indicator of healthcare system efficiency and responsiveness. In KSA, patient satisfaction surveys highlight long waiting times (38.4%) and difficulties in appointment scheduling (25.8%) as common sources of dissatisfaction (Al-Mishari et al., 2024). Specifically, a study found that 27.90% of participants reported a wait time to see a primary care physician of between 21 and 30 minutes (Al-Shahrani et al., 2025). Patients also expressed dissatisfaction with wait times for medication dispensation, vital signs measurement, dental consultations, and radiological investigations (Al-Shahrani et al., 2025). A study indicated that 32.79% of respondents were dissatisfied with wait times at registration and payment counters (Al-Shahrani et al., 2025). For newly diagnosed patients requiring tertiary care consultations, waits of 60-90 days are not uncommon, indicating significant bottlenecks in specialized care access (Redesign Health, 2023).

To address these issues, one hospital in KSA implemented an extended operating room (OR) schedule in 2024. Of the 5,024 routine surgeries performed, 31% (1,550 procedures) were

conducted during extended hours, with 21% taking place on weekends and 9% during evening hours. This initiative contributed to an increase in day surgeries (77.8% on the extended list versus 58.3% on the main list), with the majority of procedures being ophthalmology and general surgery cases (Zaman et al., 2025).

The UK faces pervasive challenges with waiting times across its healthcare services. The waiting list for hospital treatment reached a record high of nearly 7.8 million in September 2023, and the national 18-week treatment target has not been consistently met since 2016 (UK Parliament, 2025). In Accident & Emergency (A&E) departments, 43% of attendances between April 2022 and March 2024 experienced waits exceeding four hours from arrival to admission, transfer, or discharge, with 10% waiting over 12 hours (Nuffield Trust, 2024). By April 2025, 40% of patients attending major A&E departments still spent more than four hours in the department (UK Parliament, 2025). Ambulance response times for Category 2 calls (urgent but not life-threatening) peaked at over 1 hour 30 minutes in December 2022, significantly exceeding the target of 18 minutes (UK Parliament, 2025). Public surveys in 2024 revealed widespread dissatisfaction, with 62% of respondents dissatisfied with GP appointment waiting times and 65% dissatisfied with hospital care waiting times (Nuffield Trust, 2024a).

Table 2. Key Patient Waiting Times (2022-2025)

Indicator	Saudi Arabia (KSA)	United Kingdom (UK)
Primary Care Physician Wait Times (>20 mins)	27.90% of participants (study finding)	N/A (GP appointment satisfaction: 31% satisfied in 2024)
Tertiary Care Appointment Wait Times (Newly Diagnosed)	60-90 days (average wait)	N/A (Hospital treatment waiting list: ~7.8M in Sep 2023)
A&E Wait Times (>4 hours)	N/A	43% (Apr 2022-Mar 2024 average), 40%
A&E Wait Times (>12 hours)	N/A	10% (Apr 2022-Mar 2024 average)
Ambulance Response Times (Cat 2)	N/A	>1h 30m (Dec 2022 peak) vs. 18m target

Note: KSA data on waiting times is primarily from specific studies on patient satisfaction and chronic care, not national aggregate statistics comparable to UK's NHS performance data.

Table 3. Elective Surgical Volume at a KSA Hospital (2024)

Speciality	Main OR List (%)	Extended List (%)	Total (%)
Ophthalmology	12.7%	48.2%	23.6%
General surgery	25.5%	26.6%	25.9%
Orthopaedic surgery	13.4%	9.5%	12.2%
Bariatric	5.5%	6.8%	5.9%
ENT	11.9%	4.9%	9.7%
Urology	12.2%	0.8%	8.7%
Paediatric surgery	6.7%	0.3%	4.7%
Other	12.1%	22.9%	14.3%
Total	**100%**	**100%**	**100%**

Source: (Zaman et al., 2025)

This comparative view suggests a difference in the nature of waiting time issues. KSA's reported

waiting times appear to be more localized to specific process bottlenecks within primary and tertiary care, alongside a general underutilization of Primary Healthcare Centers (PHCs) (Alhuseini et al., 2025; Redesign Health, 2023; Al-Mishari et al., 2024; Al-Shahrani et al., 2025). These challenges, while significant, might be more amenable to targeted interventions such as enhanced digital solutions, improved patient flow management, and initiatives to increase the public's reliance on primary care. In contrast, the UK's waiting times are systemic and widespread across emergency, elective, and primary care settings, indicating a deeper, chronic capacity issue relative to demand. This situation likely necessitates more fundamental structural changes, sustained long-term investment, and robust workforce planning beyond simply increasing the number of General Practitioners (GPs) or reducing reliance on temporary staff.

The consistently declining patient satisfaction with waiting times in the UK underscores the severity of this issue as a major public concern that impacts overall system perception and trust (Nuffield Trust, 2024a).

4.Accessibility of Healthcare Services

Accessibility is a cornerstone of effective healthcare, ensuring that individuals can obtain the care they need, when and where they need it. This section examines the geographical distribution of facilities, the availability of healthcare professionals, and the integration of digital health solutions in KSA and the UK.

4.1. Geographical Distribution of Facilities and Infrastructure

Healthcare infrastructure and its distribution are critical determinants of accessibility. In KSA, the total number of hospitals reached 499 in 2023, with the Riyadh Region hosting the highest number at 109 hospitals (General Authority for Statistics (GASTAT), 2023). The national average for hospital beds was 2.43 beds per 1,000 people in 2022, which falls below the global average of 2.9 beds per 1,000 (Alsuwaidan et al., 2025). This national figure, however, masks significant regional disparities. For instance, while regions like Al-Jouf and Northern boast a ratio of 4.1 beds per 1,000 people, populous cities such as Jeddah and Makkah lag considerably, with 1.8 and 1.6 beds per 1,000 respectively (Alsuwaidan et al., 2025). Similarly, the ratio of Primary Healthcare Centers (PHCs) per capita declined from 8.0 per 100,000 people in 2017 to 6.6 in 2022, despite an increase in the total number of PHCs in the Eastern Province (Alsuwaidan et al., 2025). In 2022, Riyadh had 4.8 PHCs per 100,000 people, while Jeddah had a concerningly low 2.1 PHCs per 100,000 people (Alsuwaidan et al., 2025). Vision 2030 aims to address this by including major investments in healthcare infrastructure, with a goal to add between 26,000 and 43,000 hospital beds by 2030 (Global Health Saudi, 2024).

Table 4. Regional Distribution of Healthcare Facilities in KSA (2022)

Region	Population (Millions)	Hospital Beds per 1,000 people	PHCs per 100,000 people
Al-Jouf	0.33	4.1	12.0
Northern Border	0.36	4.1	11.4
Riyadh	8.15	2.5	4.8
Eastern Region	3.20	2.7	3.7
Makkah	2.31	1.6	3.5
Jeddah	4.62	1.8	2.1
KSA Average	32.18	2.4	6.6

Note: Data for Jeddah and Makkah are within the Makkah region, but shown separately due to their large populations. Data from different sources may vary slightly due to reporting periods and definitions.

In the UK, NHS England employs a sophisticated statistical formula to allocate financial

resources to Integrated Care Boards (ICBs), striving for a fair and objective geographical distribution that reflects local healthcare needs and aims to reduce health inequalities (NHS England, 2025a; NHS England, 2023). Despite this principled approach, the physical infrastructure faces challenges. The number of overnight general and acute beds decreased by 8% between Q1 2010/11 and Q4 2019/20, though it has since recovered to pre-pandemic levels. However, bed occupancy rates remain high, reaching 92.5% in Q4 2024/25, exceeding the recommended maximum of 90-92% (Nuffield Trust, 2025a). Furthermore, there has been a significant decline in specialized bed types, with mental health beds decreasing by 24% between 2010/11 and 2023/24, and maternity beds by 7% between 2010/11 and 2024/25 (Nuffield Trust, 2025a). The NHS also contends with a substantial maintenance backlog for its estates, which more than doubled in real terms from £6.4 billion in 2015/16 to £13.8 billion in 2023/24 (NHS England, 2025c).

The comparison highlights a fundamental difference in the nature of infrastructure challenges. KSA is actively engaged in expanding its bed capacity and establishing new facilities, but its primary challenge lies in ensuring equitable geographical distribution of these resources. The goal is to ensure that new investments effectively address underserved areas rather than concentrating solely in major urban centers, thereby minimizing existing regional disparities in access to both hospital beds and primary healthcare facilities (General Authority for Statistics (GASTAT), 2023; Alsuwaidan et al., 2025). In contrast, the UK's challenge is less about establishing new infrastructure and more about maintaining and expanding its existing capacity under considerable financial pressure. The significant maintenance backlog and persistently high bed occupancy rates directly impact accessibility and patient flow, potentially compromising efficiency and quality of care (NHS England, 2025c; Nuffield Trust, 2025a). While the UK's commitment to "fair shares" in resource allocation is a strong guiding principle, the data suggests that the overall capacity may be insufficient to meet the escalating demand, thereby leading to strain on the system.

4.2 Healthcare Workforce Availability and Distribution

The availability and distribution of a skilled healthcare workforce are crucial for ensuring accessible care. KSA has set ambitious targets under Vision 2030 to recruit 175,000 healthcare professionals by 2030, including 69,000 doctors and 64,000 nurses, while simultaneously implementing a Saudization initiative to increase the proportion of Saudi nationals in the healthcare sector (Global Health Saudi, 2024). In 2022, the density of physicians was 34.8 per 10,000 population, and nursing and midwifery personnel stood at 62.3 per 10,000 population (World Health Organization (WHO), 2023; World Bank, 2022). By 2023, the total number of medical doctors reached 113,300 (with 48,487 being Saudis), and nurses numbered 213,110 (General Authority for Statistics (GASTAT), 2023). Despite these efforts, a needs-based assessment indicates a shortage of 10,400 health workers for mental disorders, specifically requiring an additional 100 psychiatrists, 5700 nurses, and 4500 psychosocial care providers (International Trade Administration, 2023).

The UK, by comparison, faces a persistent deficit in its medical workforce relative to international benchmarks. England has fewer doctors per capita (3.2 per 1,000 people) than the OECD EU average of 3.9, implying a need for an additional 40,000 doctors to reach this average (British Medical Association, 2024). Significant regional variations exacerbate this issue, with some areas, such as the East of England, having as few as 2.5 doctors per 1,000 people (British Medical Association, 2024). While the overall number of doctors and nurses in the NHS has increased (26% more doctors and 25% more nurses compared to five years ago) (UK Parliament, 2025), this growth is primarily concentrated in secondary care. Critically, there were 1,094 fewer fully qualified full-time General Practitioners (GPs) in June 2025 than in September 2015. Concurrently, the average number of patients per full-time equivalent GP has risen by 17% to 2,257, indicating increasing workload pressures (British Medical Association, 2024; RCGP, 2025). This intense workload contributes to a significant proportion of doctors (38%) reporting feeling unable to cope at least once a week, with 65% regularly working beyond their rostered hours (British Medical Association, 2024).

The contrasting situations highlight different dimensions of workforce challenges. KSA's primary challenge is one of scaling up its domestic workforce and reducing its reliance on expatriate professionals, while simultaneously ensuring the development of specialized skills to meet evolving healthcare needs (Global Health Saudi, 2024; International Trade Administration, 2023). The UK, despite achieving overall growth in its secondary care workforce, is contending with a critical retention and distribution crisis in primary care. This leads to an increased patient burden per GP and widespread dissatisfaction among both patients and staff (British Medical Association, 2024; Nuffield Trust, 2024a; RCGP, 2025). This suggests that simply increasing the overall number of healthcare professionals is insufficient; addressing factors such as workload, work-life balance, and equitable geographical distribution are paramount for the UK to genuinely improve accessibility, particularly at the crucial frontline of care.

Table 5. Healthcare Workforce Density (2022-2025)

Indicator	Saudi Arabia (KSA)	United Kingdom (UK)
Physicians per 10,000 population	34.8 (2022), 33.6 (2023)	32 (per 10,000 population, equivalent to 3.2 per 1,000, England, latest)
Nurses/Midwives per 10,000 population	62.3 (2022), 64.0 (2023, based on 213,110 nurses for 33.26M population)	N/A (NHS increased nurses by 25% over 5 years)
Patients per FTE GP	N/A	2,257 (May 2025)
OECD EU Average Doctors per 1,000 population	N/A	3.9

Note: KSA data for 2023 nurses per 10,000 is calculated based on total nurses (General Authority for Statistics (GASTAT), 2023) and population (World Health Organization (WHO), 2023).

4.3.Universal Coverage and Digital Health Integration

Universal healthcare coverage and robust digital health infrastructure are pivotal for equitable access. KSA has made significant strides in this domain, with 100% of Saudi citizens reported to have basic healthcare coverage in 2024, and the overall coverage rate for the entire population standing at 95.9% (General Authority for Statistics (GASTAT), 2024). Digital health is a major strategic focus, evidenced by a USD 1.5 billion allocation for health IT to advance telemedicine (Global Health Saudi, 2024). In 2024, 24.3% of adults accessed their electronic medical records online, and 4.5% utilized teleconsultation services (General Authority for Statistics (GASTAT), 2024). The widespread availability of internet access, reaching 97.7% of establishments in 2023, provides a strong foundation for digital health initiatives (General Authority for Statistics (GASTAT), 2024). However, a significant challenge remains: only 27% of patients with chronic diseases are managed in practices capable of electronically exchanging medical records, highlighting a critical interoperability gap (Redesign Health, 2023).

The UK's NHS is founded on the principle of universal care, free at the point of delivery (HM Government, 2022). Digital tools are increasingly integrated to enhance accessibility. The NHS App, for instance, allows patients to book appointments, communicate with professionals, receive advice, and view their care plans (HM Government, 2022). NHS Digital is responsible for developing and operating national IT and data services that support clinicians and improve patient care (NHS England, 2024). The NHS has an ambitious goal to become the most AI-enabled care system globally and to empower patients with control over a single, secure, and authoritative account of their health data (HM Government, 2022). The rapid adoption of virtual consultations during the pandemic is noteworthy; by July 2020, almost 100% of Improving Access to

Psychological Therapies (IAPT) appointments were delivered virtually (NHS England, 2025c).

Both countries demonstrate strong digital health ambitions, but their implementation realities present different challenges. KSA's rapid adoption of digital technologies, particularly in telemedicine, is a clear strength, contributing to its high basic coverage rates (Global Health Saudi, 2024; General Authority for Statistics (GASTAT), 2024). However, the fragmented EMR landscape, especially for chronic care patients, could impede the realization of truly integrated care, potentially leading to inefficiencies and suboptimal outcomes for complex conditions (Redesign Health, 2023). The UK's digital initiatives, while impressive in specific areas like virtual mental health services and the comprehensive NHS App, have not yet fully resolved the underlying access and waiting time crises (HM Government, 2022; NHS England, 2025c; Nuffield Trust, 2024a). This suggests that digital transformation alone cannot compensate for fundamental systemic capacity shortfalls or persistent workforce pressures. The challenge for KSA is to ensure broad interoperability and seamless data sharing across its evolving public-private healthcare ecosystem. For the UK, the imperative is to strategically leverage digital tools not merely to digitize existing bottlenecks, but to fundamentally transform care delivery, alleviate systemic pressures, and enhance overall patient experience.

5.Quality of Care and Patient Outcomes

The ultimate measure of a healthcare system's effectiveness lies in the quality of care it provides and its impact on patient outcomes. This section examines key health indicators, mortality rates, and patient satisfaction in both KSA and the UK.

5.1.Key Health Indicators and Life Expectancy

In KSA, there has been a notable improvement in key health indicators. Life expectancy at birth increased from 70.6 years in 2000 to 76.4 years in 2021 (World Health Organization (WHO), 2023), with more recent data indicating a further rise to 78.8 years (Ministry of Health (KSA), 2024). Healthy life expectancy at birth also improved significantly, increasing by 4.44 years from 61.2 years in 2000 to 65.6 years in 2021 (World Health Organization (WHO), 2023). These gains reflect broader improvements in public health and healthcare services. Furthermore, the proportion of births attended by skilled health personnel stands at 100% (World Health Organization (WHO), 2023), and DTP3 immunization coverage among 1-year-olds was 97% in 2023 (World Health Organization (WHO), 2023), indicating strong performance in maternal and child health.

In the UK, life expectancy remains lower than the period prior to the COVID-19 pandemic, signaling a setback in population health trends (The King's Fund, 2024). However, the NHS has demonstrated improvements in specific areas, such as cancer survival rates, which are at an all-time high (NHS England, 2025c). Despite these targeted successes, the overall picture of population health is complex, with increasing obesity levels and a growing number of people living with long-term conditions, beyond what would be expected from an aging population alone (The King's Fund, 2024). This points to persistent challenges in public health and preventive

care.

5.2. Mortality Rates and Disease Burden

Non-communicable diseases (NCDs) represent a significant health burden in KSA, accounting for 73% of total deaths, closely mirroring global trends (Redesign Health, 2023). The primary contributors to mortality from NCDs include cardiovascular diseases, cancers, diabetes, and chronic respiratory diseases. The probability of premature mortality (death between ages 30 and 70) is 18.6% (Redesign Health, 2023). Ischaemic heart disease is the leading cause of death, with higher mortality rates observed in males (133.25 per 100,000) compared to females (87.84 per 100,000) (Zaman et al., 2025; World Health Organization (WHO), 2023). Diabetes mellitus also poses a substantial problem, with an estimated 18.7% of adults affected in 2021, and nearly 2 million undiagnosed cases (Public Health England, 2024a). The economic burden of NCDs in KSA is substantial, estimated at US$24.4 billion annually (Redesign Health, 2023; United Nations Development Programme (UNDP), 2024). Road traffic mortality rates have seen a significant decrease of more than 57% since the beginning of Vision 2030, a positive outcome of awareness campaigns and preventive measures (Ministry of Health (KSA), 2024). A study in Jazan found hospital mortality to be relatively low at 4.8%, though significantly higher among males (7.0%) compared to females (3.2%) (Zaman et al., 2025). ICU mortality for COVID-19 patients in KSA ranged from 25-30% during the pandemic peak (Al-Jadid et al., 2025).

In the UK, the age-standardized mortality rate for July 2023 was below the five-year average in England, indicating some recovery post-pandemic (Office for National Statistics (ONS), 2023). However, the year-to-date mortality rate for 2023 was higher than 2022 in both England and Wales (Office for National Statistics (ONS), 2023). Ischemic heart disease remains the leading cause of death (Office for National Statistics (ONS), 2023). While hospital admission rates for Coronary Heart Disease (CHD) have decreased by 46% over the past two decades, the premature mortality rate from CHD increased between 2019 and 2022 (14.6% for males, 14% for females) before stabilizing in 2023 (Public Health England, 2024a; Public Health England, 2024b). Preventable conditions contribute to a significant number of avoidable deaths; in 2022, approximately 65% of avoidable deaths in England and Wales were attributed to preventable conditions (around 82,000 deaths) (The King's Fund, 2024). Complications from diabetes, for example, led to approximately 9,500 limb amputations, 48,000 strokes, 34,000 heart attacks, and 155,000 cases of heart failure in 2022/23 (The King's Fund, 2024). Infectious diseases accounted for over 20% of hospital bed usage in 2023-24, costing nearly £6 billion (UK Health Security Agency (UKHSA), 2025). There has been a rise in endemic diseases and vaccine-preventable infections since 2022-2023, including an 11% increase in tuberculosis cases in 2023 and a further 13% in 2024 (UK Health Security Agency (UKHSA), 2025).

A critical observation is the differing nature of mortality challenges. KSA's improving life expectancy and successful reduction in road traffic fatalities demonstrate effective public health interventions and policy impact (World Health Organization (WHO), 2023; Ministry of Health (KSA), 2024). However, the high burden of NCDs, particularly cardiovascular diseases and diabetes, highlights a significant challenge related to lifestyle factors and the need for more robust preventive care strategies (Redesign Health, 2023; Public Health England, 2024a). The UK, while showing resilience in managing the COVID-19 pandemic and improving cancer outcomes, faces a persistent challenge with preventable deaths and the re-emergence of infectious diseases, often linked to health inequalities and potentially inadequate primary and preventive care (The King's Fund, 2024; UK Health Security Agency (UKHSA), 2025). This suggests that while KSA is making progress in extending lifespan, it must intensify efforts to improve health span by tackling chronic disease prevalence. The UK, conversely, needs to re-emphasize its foundational public health functions and ensure consistent delivery of high-quality preventive care to address the significant burden of avoidable illness and mortality.

5.3.Patient Satisfaction and Experience

Patient satisfaction is a direct reflection of the quality and responsiveness of healthcare services. In KSA, the overall patient experience score in primary healthcare centers (PHCCs) was 85.4% between 2022 and 2023, showing an improvement from 84% in 2022 to 86.4% in 2023 (Alhuseini et al., 2025). Satisfaction was highest in the registration process (88.6%) but lowest in the "moving through" domain (79%), indicating issues with service flow (Alhuseini et al., 2025). Elderly patients reported higher satisfaction than younger adults, and male patients slightly higher than females (Alhuseini et al., 2025). Despite these positive overall scores, long waiting times (38.4%) and appointment difficulties (25.8%) were frequently cited as drawbacks in patient satisfaction surveys (Al-Mishari et al., 2024). A significant proportion of respondents (30%) had never utilized PHC services despite being aware of them, and 44% perceived emergency department services as superior to PHC, suggesting a need to enhance the perceived value and accessibility of primary care (Alhuseini et al., 2025).

In the UK, public satisfaction with the NHS has plummeted to record lows. In 2024, only 21% of British adults reported being 'very' or 'quite' satisfied with the way in which the NHS runs, the lowest level recorded since the survey began in 1983, and a steep decline of 39 percentage points since 2019 (Nuffield Trust, 2024a). Dissatisfaction reached 59% in 2024, up from 52% in 2023 (Nuffield Trust, 2024a). This dissatisfaction is widespread across all service types, with A&E services (19% satisfied), NHS dentistry (20% satisfied), and GP services (31% satisfied) recording particularly low satisfaction levels (Nuffield Trust, 2024a). The primary reasons for dissatisfaction are overwhelmingly related to waiting times for GP and hospital appointments (cited by 69% in 2022), staff shortages (55%), and a perception of insufficient government funding (50%) (The King's Fund, 2022). While 51% of the public were satisfied with the *quality* of NHS care, dissatisfaction with waiting times for GP appointments (62%), hospital care (65%), and A&E (69%) was widespread and consistent across demographics (Nuffield Trust, 2024a).

The stark contrast in patient satisfaction figures reveals different underlying issues. KSA's improving satisfaction in primary care, despite identifiable process-related drawbacks, suggests that ongoing reforms and digital initiatives are having a positive impact on the patient experience, particularly in basic service delivery (Alhuseini et al., 2025). The challenge for KSA is to address the specific pain points like waiting times for specialized services and to increase the utilization and perceived value of primary healthcare, which is crucial for a preventive-focused system (Alhuseini et al., 2025; Al-Mishari et al., 2024). The UK's crisis in patient satisfaction, however, points to a systemic failure to meet fundamental expectations, particularly around timely access to care (Nuffield Trust, 2024a; The King's Fund, 2022). The widespread dissatisfaction with waiting times and staff shortages indicates that even the perceived quality of care is being overshadowed by issues of accessibility and capacity. This suggests that while the NHS may still be valued for its founding principle of free care, its ability to deliver that care in a timely and efficient manner is severely compromised, eroding public trust and satisfaction.

5.4. Hospital Length of Stay

The average length of hospital stay (LOS) is a key indicator of both efficiency and quality of care. A meta-analysis of studies on stroke survivors in Arab countries and Saudi Arabia found that the pooled mean LOS was 25.67 days [95% CI: 16.22–35.11]. However, the study revealed significant variations depending on the country and type of care setting.

Table 6. Average Length of Stay (LOS) for Stroke Patients

Region/Setting	Pooled Mean LOS (Days)	95% Confidence Interval
Saudi Arabia	37.03	24.11–49.95
Other Arab countries	8.87	4.90–12.84
Rehabilitation Centers	46.71	33.18–60.24
Acute Hospital Settings	9.07	5.27–12.86

Source: (Al-Jadid et al., 2025) meta- analysis.

The average length of stay for emergency admissions in the UK increased from 7.9 to 9.1 days between 2019 and 2022, a 15% increase. In contrast, the average length of stay for elective admissions decreased slightly from 5.2 to 5.1 days over the same period (Health Foundation, 2023). This increase in LOS for emergency admissions, particularly among older patients, contributed to a reduction in shorter stays and put pressure on already strained hospital capacity (Health Foundation, 2023).

6. Challenges and Ongoing Reforms

Both KSA and the UK face unique and overlapping challenges in their healthcare systems, driving ongoing reforms.

6.1.Saudi Arabia: Modernization, Privatization, and Workforce Development

KSA's healthcare system is undergoing a profound transformation as part of Vision 2030, a comprehensive plan to modernize the economy, society, and culture (Global Health Saudi, 2024). A core challenge is the rapid population growth, projected to reach 45 million by 2030, necessitating a significant expansion of healthcare capacity, including adding 26,000 to 43,000 hospital beds (Global Health Saudi, 2024).

The strategic push for privatization and Public-Private Partnerships (PPPs) is a key reform. This aims to leverage private investment to strengthen infrastructure and services, with plans to privatize 290 hospitals and 2,300 health institutions (Global Health Saudi, 2024). While this can bring efficiency and innovation, a potential challenge is ensuring that this shift does not compromise the goal of universal health coverage and equitable access, particularly given that the current private health insurance model tends to focus more on treatment than prevention (Global Health Saudi, 2024; Redesign Health, 2023). This necessitates careful regulatory oversight to ensure that market-driven incentives align with public health objectives, especially in managing the rising burden of non-communicable diseases (NCDs) which account for 73% of total deaths (Redesign Health, 2023).

Workforce development is another critical area. KSA aims to recruit 175,000 healthcare professionals by 2030, coupled with a Saudization initiative to replace expatriate workers (Global Health Saudi, 2024). This involves a massive investment in training and education to build a sustainable local workforce. The current reliance on expatriates (e.g., 60% of physicians, 57% of nurses are expatriates) (Global Health Saudi, 2024) presents a challenge in ensuring a smooth transition and maintaining service quality during this demographic shift in the healthcare labor force. The identified shortage of mental health professionals further underscores the need for targeted workforce planning (International Trade Administration, 2023).

Digital transformation is a significant reform area, with substantial investment in health information technology and telemedicine (Global Health Saudi, 2024). The challenge here lies in

ensuring seamless integration and interoperability across systems, as fragmented Electronic Medical Records (EMRs) and referral bottlenecks currently hinder efficient chronic care management (Redesign Health, 2023). Overcoming these digital silos is crucial for realizing the full potential of e-health innovations and improving patient journeys.

6.2 United Kingdom: Demand, Workforce, and Infrastructure Pressures

The NHS in the UK faces persistent challenges stemming from increasing demand, workforce pressures, and an aging infrastructure. The founding principles of universal care, free at the point of delivery, are under immense strain (HM Government, 2022).

Demand for services continues to outstrip capacity. The waiting list for hospital treatment reached a record 7.8 million in September 2023, and key targets, such as the 18-week treatment target, have not been met for years (UK Parliament, 2025). Emergency department performance is also a significant concern, with a high proportion of patients experiencing long waits (UK Parliament, 2025; Nuffield Trust, 2024). This reflects a chronic imbalance between patient needs and available resources, exacerbated by an aging population and increasing prevalence of long-term conditions (The King's Fund, 2024).

Workforce shortages are a critical and ongoing challenge. Despite an increase in overall doctor and nurse numbers, there is a significant decline in the number of fully qualified General Practitioners (GPs), leading to increased patient burden per GP and widespread staff burnout (British Medical Association, 2024; RCGP, 2025). The high rate of doctors leaving the NHS due to concerns about health and work-life balance further compounds this issue (British Medical Association, 2024). The NHS Long Term Workforce Plan aims to address these issues, but its success hinges on effective recruitment, retention, and addressing the underlying causes of dissatisfaction among healthcare professionals (NHS England, 2025c).

Infrastructure decay and capacity limitations present another major hurdle. The maintenance backlog for NHS estates has more than doubled, reaching £13.8 billion in 2023/24, indicating significant underinvestment in physical assets (NHS England, 2025c). High bed occupancy rates, exceeding recommended levels, contribute to patient flow issues and impact efficiency (Nuffield Trust, 2025a). Reforms such as the establishment of Integrated Care Systems (ICSs) aim to improve local integration and efficiency (NHS England, 2024), but their effectiveness is constrained by these fundamental resource and capacity deficits. The challenge for the NHS is to secure sustained, long-term investment to modernize its infrastructure and adequately staff its services, thereby alleviating the pressures that compromise accessibility and quality of care.

6.3.Comparative Analysis and Key Insights

A comparative analysis of the KSA and UK healthcare systems reveals distinct strengths, weaknesses, and strategic directions, driven by their unique contexts and reform agendas.

6.4. Efficiency

KSA's healthcare expenditure, while lower as a percentage of GDP compared to the UK, is characterized by increasing overall spending and a deliberate shift towards private sector involvement (World Health Organization (WHO), 2023; Ministry of Health (KSA), 2023). This approach aims to enhance fiscal flexibility and attract private investment for infrastructure development (Global Health Saudi, 2024; International Trade Administration, 2023). However, the system faces operational inefficiencies stemming from fragmented electronic medical records and referral bottlenecks, particularly in chronic care management (Redesign Health, 2023). The UK, in contrast, dedicates a significantly larger portion of its GDP to healthcare, predominantly through government funding (Office for National Statistics (ONS), 2024; The King's Fund, 2024). Despite relatively low administrative costs, the NHS struggles with declining productivity in

acute hospitals and persistent financial deficits (NHS England, 2025b; The King's Fund, 2024). The UK's waiting times for elective treatments, A&E, and primary care are severe and widespread, indicating a chronic demand-supply imbalance (UK Parliament, 2025; Nuffield Trust, 2024). KSA's waiting times, while present, appear more localized to specific process inefficiencies rather than pervasive systemic capacity shortfalls (Redesign Health, 2023; Al-Mishari et al., 2024; Al-Shahrani et al., 2025).

A key observation here is the **divergent funding trajectories and their implications for fiscal flexibility**. KSA is actively shifting financial responsibility and investment towards the private sector, potentially freeing up government funds for other national priorities or large-scale infrastructure projects under Vision 2030. This model, if successful in attracting consistent private investment and managing costs effectively, could lead to greater fiscal maneuverability. The UK's model, heavily reliant on general taxation, is more susceptible to economic downturns and the escalating costs of healthcare without proportional increases in tax revenue. This can lead to real-terms reductions in certain areas, even amidst high overall expenditure, creating a continuous struggle to meet demand.

6.5.Accessibility

KSA is actively expanding its healthcare infrastructure, aiming to add tens of thousands of hospital beds by 2030, and has achieved near-universal basic healthcare coverage for its citizens (Global Health Saudi, 2024; General Authority for Statistics (GASTAT), 2024). Digital health initiatives, particularly telemedicine, are a major focus, with substantial investments (Global Health Saudi, 2024). However, significant regional disparities in the distribution of both hospital beds and primary healthcare centers persist, indicating an uneven spread of resources across the Kingdom (Alsuwaidan et al., 2025). The workforce strategy centers on ambitious recruitment targets and "Saudization" to reduce reliance on expatriates (Global Health Saudi, 2024). The UK's NHS, while founded on the principle of universal access free at the point of delivery, struggles with overall capacity and an aging infrastructure, leading to high bed occupancy rates and a substantial maintenance backlog (NHS England, 2025c; Nuffield Trust, 2025a). Despite overall increases in doctor and nurse numbers, a critical shortage of General Practitioners (GPs) and high workload burdens on existing staff severely impact primary care access and patient experience (British Medical Association, 2024; Nuffield Trust, 2024a; RCGP, 2025).

This comparison highlights the **contrast between quantity and distribution challenges in infrastructure and workforce**. KSA's challenge is primarily one of scaling up its healthcare capacity and ensuring equitable distribution of new investments across its diverse regions, moving beyond concentration in major urban centers. The UK's challenge, conversely, is more about maintaining and adequately funding its existing, extensive infrastructure and addressing critical shortages in specific workforce segments, particularly primary care, under sustained pressure. The UK's commitment to equitable resource allocation through formulas is strong, but the overall resource envelope appears insufficient to meet demand, leading to strain on the system.

6.6. Quality of Care

KSA demonstrates improving life expectancy and healthy life expectancy, along with high rates of skilled birth attendance and childhood immunizations (World Health Organization (WHO), 2023; Ministry of Health (KSA), 2024). Patient satisfaction in primary care shows positive trends, although issues with waiting times for specific services remain (Alhuseini et al., 2025; Al-Mishari et al., 2024). The Kingdom is actively addressing the high burden of non-communicable diseases (NCDs), which are the leading cause of mortality (Redesign Health, 2023). The UK has achieved successes in areas like cancer survival (NHS England, 2025c). However, overall public satisfaction with the NHS has fallen to record lows, driven primarily by dissatisfaction with waiting times and perceived staff shortages across all services (Nuffield Trust, 2024a; The King's

Fund, 2022). The UK also faces a significant burden from preventable conditions and the re-emergence of infectious diseases, highlighting gaps in preventive care and public health (The King's Fund, 2024; UK Health Security Agency (UKHSA), 2025).

This analysis points to the **critical role of patient experience and public health in defining perceived quality**. KSA's progress in life expectancy and primary care satisfaction indicates positive outcomes from its reform efforts, but its focus must broaden to comprehensive NCD prevention and management to improve overall health span. The UK's declining patient satisfaction, despite clinical successes in some areas, underscores that timely access and adequate staffing are fundamental components of perceived quality. The high rates of preventable conditions and re-emerging infections in the UK suggest that a strong, well-resourced public health infrastructure is essential to buttress clinical services and improve population health outcomes.

In essence, KSA is building and reforming its system with a strong emphasis on digital transformation and private sector engagement, facing the challenge of ensuring equitable distribution and comprehensive preventive care. The UK is striving to sustain its universal, tax-funded model under immense pressure, needing to address chronic undercapacity, workforce burnout, and infrastructure deficits to restore timely access and public confidence.

7.Recommendations

Based on the comparative analysis of the healthcare systems in KSA and the UK, the following recommendations are put forth to enhance efficiency, accessibility, and quality of care in both nations.

7.1. For Saudi Arabia:

Strengthen Preventive Care and Chronic Disease Management

While KSA is making strides in overall health outcomes, the high burden of non-communicable diseases (NCDs) and the treatment-focused nature of current private insurance models necessitate a greater emphasis on preventive care.

- **Action:** Implement policies and incentives within the evolving public-private framework to prioritize and fund robust preventive health programs, including widespread screening, health education campaigns, and lifestyle intervention initiatives. This should aim to shift the focus from reactive treatment to proactive health management, thereby reducing the long-term economic burden of NCDs.
- **Action:** Develop and enforce standards for private health insurance to include comprehensive preventive services and chronic disease management programs, ensuring that private sector involvement contributes to, rather than detracts from, public health goals.

Enhance Digital Health Interoperability and Utilization

KSA's significant investment in digital health and telemedicine is commendable, but the fragmented EMR systems pose a barrier to integrated care.

- **Action:** Prioritize the development and mandatory adoption of national interoperability standards for electronic medical records across all public and private healthcare providers. This will facilitate seamless data exchange, improve care coordination, and enhance efficiency, particularly for patients with complex or chronic conditions.
- **Action:** Launch targeted public awareness campaigns and digital literacy programs to encourage greater patient engagement with online medical records and teleconsultation services, addressing any barriers to adoption and maximizing the utility of digital health investments.

Address Regional Disparities in Infrastructure and Workforce Distribution

Despite overall growth in facilities and workforce, significant geographical imbalances in healthcare access persist.

- **Action:** Develop and implement a data-driven national health infrastructure plan that specifically targets underserved regions, ensuring equitable distribution of new hospitals, primary healthcare centers, and specialized services. This should include incentives for healthcare professionals to practice in rural or remote areas.
- **Action:** Accelerate the "Saudization" initiative with a focus on specialized training and retention strategies for Saudi nationals, ensuring that the growing domestic workforce is adequately prepared and distributed to meet the diverse healthcare needs across all regions.

7.2.For the United Kingdom

Prioritize Long-Term Investment in Capacity and Infrastructure

The pervasive waiting times and aging infrastructure indicate a fundamental mismatch between demand and resources, which digital solutions alone cannot fully resolve.

- **Action:** Secure and commit to a sustained, multi-year funding uplift for the NHS that specifically targets increasing overall bed capacity, modernizing existing estates, and clearing the maintenance backlog. This is essential to alleviate pressure on emergency services and reduce elective waiting lists.
- **Action:** Develop a comprehensive, long-term infrastructure investment plan that includes clear targets for facility upgrades, new builds where necessary, and technological modernization across the entire health and social care system.

Implement a Comprehensive Workforce Retention and Recruitment Strategy for Primary Care

The critical shortage of General Practitioners (GPs) and the high burden on existing staff are major drivers of access issues and declining patient satisfaction.

- **Action:** Develop and implement a multi-faceted strategy focused on retaining existing GP staff, including initiatives to improve work-life balance, reduce administrative burdens, and enhance professional development opportunities.
- **Action:** Significantly increase training places for GPs and implement robust recruitment campaigns, potentially including financial incentives for practice in underserved areas, to address the long-term workforce deficit in primary care.

Reinvigorate Public Health and Preventative Care

The burden of preventable conditions and re-emerging infectious diseases highlights gaps in proactive health management.

- **Action:** Increase investment in public health initiatives and local authority public health grants to strengthen community-based prevention programs, health promotion, and early intervention services.
- **Action:** Enhance surveillance and response capabilities for infectious diseases, ensuring adequate resources for vaccination programs and rapid outbreak control to prevent widespread hospital admissions and mortality.

7.3.Joint Recommendations (Applicable to both KSA and UK):

Leverage Data for Continuous Improvement

Both countries have significant digital health ambitions. Utilizing data effectively is key to improving efficiency and quality.

- **Action:** Establish robust national health data analytics platforms that integrate data from various sources (e.g., EMRs, patient satisfaction surveys, administrative data) to provide real-time insights into system performance, identify bottlenecks, and inform evidence-based policy decisions.
- **Action:** Foster a culture of continuous learning and improvement within healthcare organizations, utilizing data to drive performance management, identify best practices, and implement rapid cycle improvements.

Prioritize Patient-Centered Care and Feedback Mechanisms: Patient satisfaction is a critical indicator of quality and identifies areas for improvement.

- **Action:** Implement standardized, regular patient experience surveys across all levels of care, ensuring that feedback is systematically collected, analyzed, and integrated into service design and delivery improvements.
- **Action:** Empower patients with greater control over their health information and care pathways through user-friendly digital tools, fostering shared decision-making and promoting active participation in their own health management.

8.Conclusion

The comparative analysis of the healthcare systems in KSA and the UK reveals two nations at different stages of their healthcare evolution, each grappling with distinct yet instructive challenges in their pursuit of efficient, accessible, and high-quality care. KSA, propelled by Vision 2030, is undergoing a transformative period marked by ambitious infrastructure expansion, a strategic shift towards privatization, and significant digital health integration. Its progress in life expectancy and basic health coverage is notable, reflecting a determined effort to modernize its system. However, the Kingdom must navigate the complexities of equitable resource distribution across its regions and ensure that its privatization efforts do not inadvertently compromise the comprehensive and preventive aspects of care, particularly in managing the burgeoning burden of non-communicable diseases.

Conversely, the UK's National Health Service, a long-standing model of universal, tax-funded healthcare, is facing unprecedented strain. Despite its foundational principles and high overall expenditure, the NHS is contending with chronic undercapacity, widespread and escalating waiting times, an overstretched workforce, and an aging infrastructure. While showing resilience in certain clinical outcomes like cancer survival, the dramatic decline in public satisfaction underscores a critical disconnect between public expectation and service delivery, largely driven by issues of timely access and staffing.

The experiences of both countries offer valuable lessons. KSA's rapid digital adoption and strategic investment in new facilities demonstrate a capacity for swift modernization, but its success will hinge on ensuring that growth is equitable and that preventive health remains central.

The UK's challenges, deeply rooted in a persistent demand-supply imbalance and workforce pressures, highlight the imperative for sustained, substantial investment and fundamental structural reforms that go beyond incremental adjustments. Ultimately, both systems stand to benefit from leveraging data for continuous improvement, prioritizing patient-centered care, and fostering resilient workforces capable of meeting the complex health needs of their populations in an ever-evolving global health landscape. The journey towards optimal healthcare efficiency, accessibility, and quality is continuous, demanding adaptive strategies and unwavering commitment to the well-being of their respective citizens.

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Capacity Building for Sustainable Tourism

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Abstract

Introduction: The current paper concentrates on the issue about capacity building within companies in tourism and hospitality sphere that follow policies of sustainability.
Aim: The aim of the paper is to trace some new scientific considerations about the focus of sustainability in tourism and to analyze and systematize the support capacity building elements revealed in the context of job offers in tourism and hospitality sphere.
Method: The core method applied is content analysis reduced to a narrower format and suggested by the author as "20:20 content snapshot analysis". The one searches to identify core capacity building elements that can be found in job positions offered. Literature review is the first step to defining the context of sustainability in tourism.
Findings: Results show that each company has to strongly define its own field of sustainability and lead its policy according to four main structural capacity building elements: jobs specification, field of sustainability measures and initiatives, specification of working conditions and a set of pre-established requirements for qualification, skills and knowledges. A main part of capacity building models within the travel and hospitality companies turn to be educational activities and trainings.
Conclusion: In the conclusion a definition for capacity building in travel and hospitality industry is suggested.
Originality and value: The paper is valuable for its focused overview on the current means and measures within the tourism companies in their action to find proper workforce for job positions related to sustainability.

Key words: capacity building, sustainable tourism, travel and hospitality, jobs
Jel Codes : J23, J81, L83

1. Introduction

The issue of sustainability in tourism is already widely spread. Especially during the last decade, achieving sustainability is perceived as the main tool along the world path to ecologically clean environment (even in urban conditions), human-centred societies, culture-preserved destinations and economic success. Academic researchers together with policy makers have integrated their efforts to establish powerful synergies for sustainability. The connections and influences between overtourism and the cultural sustainability of tourist destinations in the context of globalization are studied, the role of tour operators and travel agencies in the development of sustainable tourism is compared, good practices between countries are compared, and in recent years attention has been paid to Sustainable Use of Water Resources in the Hospitality Industry. Green Economy as the Basis for Innovative Environmentally Sustainable and Green Innovation as a Factor of Economic Growth and Development are analysed (Varadzhakova, 2020), (Raykova et at., 2023), (Gojaeva et at., 2024), (Babayeva, et al., 2024). In a document, prepared in 2017 by the World Travel and Tourism Council (WTTC, 2017) it is underlined that reporting sustainability progress in travel and tourism companies, is not a common process. Until 2016 for instance travel agencies and tour operators hold only 16% of the universe reporting. For the same period airlines take the share of 35% of the universe reporting. Nevertheless, this data shows quite a vague engagement of the world tourism and travel industry to sustainability problems. In 2015 the UNWTO declares via a strategic document, that tourism is strongly related and

possesses the toolset to achieving the world sustainability. The Organization formulates 17 sustainable development goals (SDG) to be followed and implemented until 2030 (UNWTO, 2015). Further along, 2017 is proclaimed to be International Year of Sustainable Tourism for Development. Major activities and initiatives are highlighted which should play important role in fostering sustainability strategic thinking of countries. Results from a report of the National Assembly (General Assembly, 2018) show that some of the worldwide businesses in travel and tourism together with some international non-government organizations, have commenced a serious process in changing their sustainability mindset, demonstrating involvedness by organizing numerous initiatives promoting sustainability. Furthermore, consumer attitudes are also changing, with a growing interest in sustainability (Byanova, 2024). This can be considered as one of the first significant signs that tourism as one of the most dynamically developing and enlarging sectors, can drive influential changes in the world sustainability culture and policy. Hence, organizations (as a common case NGOs) proclaiming the need of jointly developed standards for sustainable tourism training have been established. They systematically research key training needs for the proper capacity building in sustainable tourism (STTfT, 2019).

Nowadays, when destinations and businesses are looking for resilient models for progressive sustainability processes, the question of capacity building to support these processes is quite actual. European parliament defines “capacity-building” as a core concept for the development of any policy and adds that it includes planned activities that develop knowledge, skills and other capabilities through trainings, incentives and technological means (Zamfir, 2017). Another concept says that personnel is the investment in the capacity building process and the fulfilling of its mission requires sufficient staff with adequate knowledge and skills. It can also be connected with recruiting new team members (Westat, 2015). Capacity building can be explored in different fields such as management, innovations, infrastructure etc. The focus of this work is the human factor in tourism and hospitality (T&H) sphere concerning its great importance for the development of policies of sustainability in business enterprises and destinations.

The subject of the current research is capacity building process (CB) in T&H sphere. Two research tasks are set:

1) to overview selected new scientific considerations about the context of tourism sustainability and proper education;

2) to analyze and systematize the CB elements that job offers in T&H industry reveal.

2. Materials and Methods

The methodology followed in the paper consists of two main elements. Firstly, literature review and analysis of up-to-date scientific sources is made. The author’s searches are in the context of sustainability lines followed in T&H organizations and the place of CB in them. Secondly, an analysis based on content analysis principle is conducted. For the needs of the current research it is defined as “20:20 content snapshot analysis” where 20 job positions, posted within the 20-day period are contextually processed and analyzed. They are subjected to inductive qualitative data analysis while quantitative parameters are not an object of this process. Categories and themes emerge directly from the texts of the jobs posted. They are not pre-established. Significant patterns are identified within the sample material. The principle of frequency is followed basing on contextual meaning and predefined terms. As a result, coding scheme is elaborated. Following this, first up to ten positions are driven out to identify each code. Partially, outcomes from secondary sources are used to support the author’s research findings. Approaches such as synthesis of information and historical retrospection are actively applied. Codification works for turning some key for the research terms and phrases in order to structure and standardize the content.

3. Literatute review

As the processes in sustainability thinking are pretty dynamic the author’s literature review fall in the timeframe of the last five years. The following lines give an overview of how authors

relate CB to sustainable tourism and where they find the sustainability in tourism at all. Li, Liu and Sulangi analyse some factors and strategies for the implementation of sustainable tourism in China's economy. In relevance to the world-renowned postulate, they claim that tourism affects environment society and economy and therefore capacity building for encouraging sustainable tourism practices is needed (Li et al., 2024). They relate the term "capacity building" to training and supportiveness mainly for local communities and companies to gain knowledge and skills and improve standards of tourism services. According to the same authors capacity building and training encourage sustainable tourism and employment creation. Education and training for sustainability is a well-spread key factor in the context of sustainable tourism. According to Ren (2022) on the course of education should be supported organizations that include eco and green activities for wide-generation scope.

According to Endarto and company (2020), capacity building itself is a capital for the tourism sector to survive the inevitable environmental changes. Development of personal creativity and applying creativity approaches according to Stanoeva (2023) are essential basement for the sustainability in tourism. Her scientific searches are in the frames of cultural tourism and the exchange of skills and knowledge between a guest and a host. The author argues that sustainability in tourism strongly depends on the level of education and income of visitors. Ioannides et. al (2021) have noticed a kind of contradiction in the idea about sustainability in tourism. They've observed that one of the most demanded requirement to tourism workers is their mobility from the point of view of being available anywhere any time. In the same time, they are supposed to establish stable ties to the local communities, culture and nature that are a part of sustainability which seems to be not quite sustainable strategic thinking. This puts a social element to their views and opposes the phenomenon sustainable tourism employment to sustainable social attitude to environment, economic etc. Some authors relate sustainability in tourism with eco and green practices. The scientific team of Mínguez (2021) puts to question contemporary teaching practices for building capacity of young professionals at universities. He claims that the nowadays theoretical education is not the proper tool for preparing competent workforce to move sustainable tourism processes and the model should be changed supplying balance, inclusiveness and enrich the values of sustainability. Pololikashvili (2022) claims only 50% of workers in tourism and hospitality companies "go beyond developing secondary skills". Thus, according to him behavioural skills such as following or giving instructions, relating with others or communicating ideas remain not enough developed. Zhang and Tavitiyaman (2022) argue that a wide range of university courses have "exerted efforts to introduce the sustainability concept into their program curricula". However, the research gap between education and practitioners, following the course of sustainability still remains.

Boone in a group of scientists (2023) see the future of "green jobs" that suffer certain changes in response to fuel transition measures, responsible production and consumption and so on. The authors predict that green jobs will provoke the employers' demand of skills such as problem solving and capabilities for nonroutine activities. They oppose traditional jobs to green jobs and argue that the second require on-the-job training necessary to meet skills demand in green and sustainable positions. Silva and company (2025) put acquiring competences for the green tourism in the context of lifelong learning. However, they relate sustainability in the sector also with digital, social and cultural skills and add that to obtain them properly a cooperation between government, businesses and academia is needed. The field of academia in relation to "sustainability driven tourism" is further researched by Chen et. al (2022). They pay attention to some teaching and learning methods put to practice for supplying this sustainably driven tourism. According to them the appropriate skills contributing to this current trend in the sector are system thinking, experiential learning skills and developed techniques for increasing environmental awareness. With key importance are also pointed cooperative and interdisciplinary learning skills.

Dosquet et. al (2022) argue that students should acquire both hard and soft skills necessary for implementing sustainable practices in tourism. This includes fostering global competence, social responsibility, and civic engagement, which are essential for future leaders in the tourism sector.

After the review, two outcomes can be made:

Firstly: Sustainability in frequently put in the context of employment creation, development of contemporary skills and knowledge in an appropriate educational environment and green and socially oriented practices.

Secondly: Human resource capacity upon contemporary model is possible to be formed that can be capable to serve adequately to sustainable company policies.

The following analysis is to reveal current stage of the capacity building (CB) process among tourism and hospitality (T&H) employers.

4. Content analysis of sustainable tourism jobs

In order to have a fully current overlook at what exactly tourism employers look for, abiding by their policies of sustainability, the author makes a point-in-time contextual analysis to show concrete results. For this purpose, the Hosco (2025) platform is estimated to be a proper space for this research. Hosco is the biggest worldwide web-platform that is specialized for posting job positions and support educational courses for the needs of the T&H sector in striving to update and upskill its labour work capacity. It pretends to meet jobseekers with the proper employers supporting both sides in finding the most appropriate match.

For the needs of current research among all the positions one keyword is defined to filter the jobs for the sample. The relevant one is considered to be "sustainability". Upon this, 220 jobs are suggested by the searching algorithm of the website. The first twenty posted in the period 11-31.01.2025 (20 calendar days) are subjected to content analyzing.

Four research questions are preliminary set. They collectively aim to explore the current labour market dynamics surrounding sustainability roles in the tourism and hospitality (T&H) sector. They are designed to extract insights that can inform targeted capacity-building strategies and education/training interventions to better align the workforce with the evolving demands of sustainable tourism. Together, these questions provide a well-rounded methodology for assessing both the demand side (employers) and the structural elements (skills, roles, working conditions) of sustainable tourism employment. The insights derived will be critical for designing responsive educational and training pathways, supporting workforce development, and ultimately strengthening the sector's transition toward sustainability.

The categories defined show quite a wide range of professional roles put by employers in the context of sustainability. The first five positions relate to the largest amount of context. They include forming human capital capacity in the spheres of sustainability and environment management, hospitality and hotel management, recreation and guest experience, human resource and training, food and beverage management. Hence, these five fields turn to be strategic ones for implementation of sustainable practices. As a complimentary proof supporting the above results come PANTOUR expert group's suggestions for several future job profiles (PANTOUR, 2024)

The first research question (RQ1) is "*Which are the main professional fields in which job positions of sustainability are concentrated*? Its purpose is to define key domains within the T&H sector where sustainability roles are most prevalent. The limit is set to defining ten main positions. After thorough work on title names of job positions the following job fields can be formulated (Table 1).

The research consortium challenges itself to formulate ones in answer to the new CB demands on the labor market. In relevance to results from RQ1 the following of them deserve mentioning:

1) Sustainability manager in tourism – this professional is supposed to develop, implement and manage corporate sustainability startegies; to manage and maintain sustainability systems together with corporate social responsibility (CSR).

Table 1. Main job categories in sustainable T&H jobs

	Job categories in T&H sector (JC)	**Job context covered**
1.	*Sustainability & environment management*	Sustainability Officer, Sustainability Program Associate, Marine Biologist, Nature Reserve Manager
2.	*Hospitality & Hotel Management*	Assistant General Manager, Cluster Director of Engineering, Executive Housekeeper, Colleagues Accommodation Manager
3.	*Recreation & Guest Experience*	Training and Coaching Specialist, Leadership and Mentoring Roles
4.	*Human Resources & Training*	Maintenance Manager, Engineering Manager, Project Manager (FLEX Director, Engineering)
5.	*Food & Beverage (F&B) Management*	Assistant Restaurant Manager, Executive Head Chef, Sous Chef
6.	*Administration & Office Support*	Sustainability and Admin Assistant, Executive Assistant
7.	*Marketing & Communications*	Public Relations Executive, Social Media & Content Creator
8.	*Engineering & Maintenance*	Recreation/Sustainability Manager, Public Relations Executive (Social Media & Content Creator)
9.	*Operations & Logistics*	Housekeeping Management, Room Division Management
10.	*Technology & IT*	IT and Technology Manager, Digital Systems Specialist

2) Tourism experience designer/Emotions designer – this professional is supposed to research and define new "instagrammable" places; to prepare competitor analysis; to initiate researches in order to understand the complex of preferendes and design personalized experiences; to create immersive tourism product

3) Sustainable gastronomy expert and Food waste coordinator – Tackling food waste is a major challenge for destination management. A cost-effective and environmentally responsible strategy is needed to help reduce food waste and create a place with successful regulation for the benefit of the local economy and consumers (Mancheva-Ali, 2023) Professionals are supposed to promote innovations that increase resource-efficiency and design, new ideas, methods, and improved solutions; to plan menus and optimizations (for example, Tsanevska agrees with the statement that the menu should be easy to read, with appropriate colors and font) (Tsanevska, 2021); to collaborate with local farmers and producers in support of sustainable agriculture; to implement measures to certify and commit restaurants to develop sustainable processes in gastronomy; to adapt and improve food-waste management systems; to plan trainings in the course of sustainability gastronomy policy etc.

The second research question (RQ2) is "*What kind of measures of sustainability are evident from the posted job positions*?" In Table 2 is shown the context in which T&H companies are leading their policies of sustainability.

Table 2. Measures of sustainability in sustainable T&H jobs

	Measures of sustainability T&H sector (MS)
1.	Involvement in **educational programs** and community development. Employee **Training** & Development. Internal training on sustainability principles, environmental impact, and responsible business practices.
2.	Encouraging **sustainable food sourcing**, organic farming, and farm-to-table initiatives in hospitality - Sustainable hospitality and operations.
3.	Compliance with **regulatory frameworks** like Corporate Sustainability Reporting Directive (CSRD) and European Sustainability Reporting Standards (ESRS).
4.	Hiring **employees** with strong commitment to sustainability, conservation, and corporate responsibility
5.	Focus on **sustainable procurement**, including eco-friendly materials and responsible supply chains.
6.	**Community Engagement** & Corporate Social Responsibility (CSR)
7.	Organizing local conservation projects, marine life protection, and **responsible tourism initiatives**. Promoting zero-waste strategies, responsible waste management.
8.	Achieving and maintaining **sustainability certifications** (e.g., ESG, CSR, and environmental performance tracking).
9.	**Encouraging innovation and leadership** in sustainability across various departments.
10.	Implementation of **energy conservation activities** (e.g., monitoring energy consumption, optimizing efficiency, and reducing emissions).

It is evident that trainings and education in the course of sustainability is a main part of them continuing with sustainable food sourcing and employee growing for the needs of sustainable company practices. The competitiveness of these holdings should be shaped by effective management, innovation, and the integration into sustainable food supply chains (Byanov, 2021).

Further on, the current snapshot content analysis concentrates on required qualifications, skills and knowledges (QSK) that employees usually are looking for. The research question is: *What are the qualifications, skills and knowledges set required by employers*? (RQ3)

The analysis shows that the most noticeable outlined among the selected sustainable job positions in the T&H sector groups of qualifications, skills and knowledges shown on Fig.1.

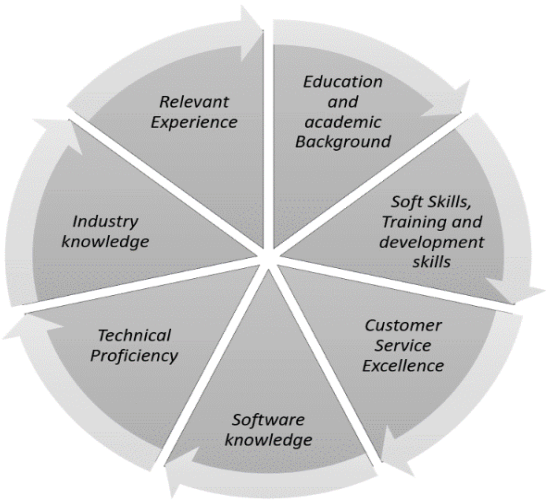


Figure 1. Sustainability qualifications, skills and knowledge

According to the context concerned, they can be explained as follows:

- ✓ Education and academic background - a high school diploma or GED is required for some positions, while others may require a 2-year degree in relevant fields such as health education, Hospitality management, or environmental science. Bachelor's degree is preferred in fields such as Environmental Science, Hospitality Management, Maintenance manager (engineering), Culinary Arts or related areas.

- ✓ Soft skills, training and development skills – the most demanded ones turn to be problem solving skills (attitude for identifying issues and implementing effective solutions); adaptability (flexibility to adjust to changing circumstances and learn on the job); attention to detail (keen focus on details to maintain high standards in service and operations); organizational skills (proficiency in planning and prioritizing tasks to ensure smooth operations); communication skills (strong verbal and written communication abilities to interact with guests and colleagues); team management skills (skills in supervising and managing team members effectively). Training and development skills is the capability to coach, mentor, and train team members. Here can be added ones in supervising teams, training staff, and fostering a collaborative work environment.

- ✓ Customer service excellence – the employees searched should be committed to provide and enhancing guest satisfaction and exceptional service.

- ✓ Software knowledge – these include knowledge of Building Management Systems (BMS) and energy efficiency programs (for Engineering roles). Adobe Creative Suite (for Marketing & PR roles).

- ✓ Technical proficiency - Familiarity with MS Office applications and other relevant software tools (e.g., computerized maintenance systems).

- ✓ Industry knowledge - Strong knowledge of environmental sustainability practices, conservation. Familiarity with engineering systems, building maintenance, and sustainability reporting (for Engineering roles).

- ✓ Relevant experience - Positions often require 1-2 years of experience in related roles, such as recreation management, administrative support, or sustainability practices.

Conditions of work (C) that T&H companies offer to jobseekers are structured by extracting keywords from the context using the approach of meaning units and terms. The research question (RQ4) is: *What are the most frequently offered conditions by T&H employers*?

To understand the employment conditions typically associated with sustainability roles in the sector. The above key elements defined in the work environment of companies reveal the entrepreneurs' willingness to offer modern and attractive work conditions. Except requiring education and knowledges for the sustainability job-offers, it is evident that they establish company conditions for inside on-course trainings. Together with the global opportunities they create quite a perspective career landscape. Work-life balance, benefits and high standards form an environment attractive for new employees. Supportive management in combination with inclusion is a good offer for those who have some concerns of being excluded or not accepted for certain reasons. In a globalized world the issue about working in a multicultural environment becomes quite sensitive.

The analysis shows the following ones, systemized on Table 3:

Table 3. Work conditions in sustainable T&H jobs

Number	**Employment Conditions Associated with Sustainability Roles**	
	Conditions defined	***Context***
1.	Diversity and Inclusion	Equal opportunities, diverse workforce and inclusive culture.
2.	Training development	Structured training plans, in-house trainers, paid training courses, career progression opportunities.
3.	Sustainability focused work environment	Sustainability certifications, sustainability programs, environmental stewardship.
4.	Work-Life Balance	Flexible schedules, workplace nursery schemes, access to wellness programs.
5.	Employee benefits	Pension schemes, cycle-to-work schemes, discounted dining policies, Perkbox membership.
6.	Recognition and Rewards	Length-of-service awards, performance appraisals, individual coaching.
7.	Team environment	Mutual trust and respect among team members, collaborative work culture
8.	Global Opportunities	International brands with global teams and career mobility.
9.	High standards	Luxury hospitality environments, guest satisfaction focus.
10.	Supportive management	Empathetic leadership style, mentoring and guidance from managers.

5. Results

After the review of a certain amount of academic thought, here can be drawn some evident conclusions. Firstly: Tourism as a separate economic sector has proven its influential role over sustainability at a global level. Secondly: According to scientists, tourism sustainability can be put in different contexts with world significance such as ecology, social policies, developing specialized forms of tourism etc. However, the issue about conditions of forming human resource capacity through education and training is one of the core sides of the problem. Thirdly: Scientists pay more and more attention to the proper forms and methods of training and education in the course of building the proper capacity for T&H sphere.

Results from the 20:20 content snapshot analysis provoke the author to elaborate systematized conclusions on the elements of the CB in T&H organizations presented through their job offers. They are based on a matrix shown on Table 4. The current snapshot glimpse of jobs in sustainable T&H shows that CB in companies is an essential process for fulfilling the sustainable policies of companies.

Table 4. Matrix of "20:20 content snapshot analysis"

20:20 Content Snapshot Analysis	
Element	***Description***
Source	Specialized platform for jobs in tourism and hospitality sector - Hosco
Keyword	Sustainability

Sample	First 20 job positions posted within a 20-day period
Research questions	RQ1: Which are the main professional fields in which job positions of sustainability are concentrated?" RQ2: What kind of measures of sustainability are evident from the posted job positions? RQ3: What are the skills and knowledges set required by employers? RQ4: What are the most frequently offered conditions by T&H employers?
Coding scheme	Code: JC (Job category) Code: MS (Measures of sustainability) Code: QSK (Sustainability qualifications, skills and knowledges) Code: C (Work conditions)

The following outcomes are valid upon the coding scheme:

JC: On the contemporary T&H labor market can be spoken about sustainability and environment management positions that inevitably will take place and enrich the functions of employees. Standard positions (according the common understanding in the sphere) such as Hospitality and hotel management, Food and beverage management are definitely included in the context of sustainability and the tendency is to be the main through which policies of sustainability in companies is implied. Human resource and training departments are the core to develop workers who implement sustainability lines and therefore they also need sustainably oriented workforce. Experience making is already an essential function when spoken about sustainability and evidently new job positions responsible for this are to appear as job proposals in the future as well.

MS: When striving to integrate forces for the world sustainability, some company measures turn to be more essential. Employee trainings and educational programs are a stable part of company environment. Hence, the issue of lifelong learning is addressed, yet not outside the T&H organizations (as it used to be in a period not very far from nowadays) but inside them. Measures of sustainable food sourcing and sustainable procurement are taking first places in companies' environment. T&H organizations are becoming more inclined to organize and be included in activities in the course of sustainability. These turn to be ones related to responsible tourism initiatives, responsible consumption and conservation, sustainably engaged community etc. Policies of certification are frequently followed.

QSK: Relevant for the needs of sustainable tourism education is required by employers. Academic background together with previous experience seem to be quite a competitive element in the recruitment process. Before the upskilling suggested by companies they expect capacity built by the following elements: a complex of soft skills; customer centred attitude; general knowledges of common software and some specialised technical proficiency; deep industry knowledge (i.e. tourism/hospitality and sustainability).

C: Working environment for building capacity in T&H is quite attractive and especially for young generations. Training and development opportunities inevitably come as its key component. Widely spread among job offers are proposals for work-life balance in various forms, high standards of living while working in the organization (especially in hotels) and employee benefit schemes. Supports of different kind are also offered such as mentoring, empathy, personal guidance, team-centered manners of collaboration. Last but not least a focus of sustainable oriented work environment is given, pointed at employee certifications, perpetual career progress and fitted training courses.

6. Conclusions

Capacity building is undoubtedly one of the main processes in contemporary travel and hospitality industry. Developing strong working CB models in companies is a continuous process that involves number of trial policy forms, complex of employee incentives and measures to achieve organizational profile, fitted to the world sustainability concepts. CB in sustainable tourism is strongly focused to maintaining contemporary levels of skills and knowledges together with a set of qualifications. Perpetual learning and motivated workforce are core requirements for a successful CB policy. Basing on this, a definition can be derived. Capacity building in sustainable tourism is a continuous process that includes adaptation of a specific company set of qualifications, skills and knowledge that guarantee integrating of the organization in the world concepts of sustainability. Capacity building in sustainable tourism refers to the ongoing development and strengthening of practical skills, organizational systems, and stakeholder engagement strategies that enable tourism businesses to implement sustainable practices effectively. A key component of this process is education—both formal and informal—that equips individuals with knowledge in areas such as environmental management, cultural heritage preservation, and sustainable operations. This includes hands-on training, academic programs, and workshops focused on real-world applications like energy efficiency, waste reduction, and community-based tourism initiatives, all supported by clear sustainability action plans and monitoring systems.

The labor market demands professionals equipped with specialized knowledge and practical skills in sustainability, including areas such as resource efficiency, community engagement, and sustainable planning. These roles are not limited to environmental functions but span across management, operations, and marketing, indicating a cross-sectoral integration of sustainability principles.

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In AI We Trust: Convenience Versus Competence

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Abstract

Introduction: The rapid integration of Artificial Intelligence (AI) into higher education, particularly in Business English contexts, has sparked a pedagogical debate: does AI enhance learning through convenience, or does it erode foundational student competencies?
Aim: This paper aims to critically examine the binary perspective of AI as either a solution or a problem in Business English education. It seeks to propose a pedagogical framework that integrates AI tools like ChatGPT responsibly, balancing technological efficiency with cognitive and communicative competence.
Method: The study adopts a mixed-method approach that includes theoretical analysis, classroom observation of students' use of AI tools to generate content, solve requirements during English classes and provide research findings, throughout the academic year 2024-2025, and data from a student perception survey at West University of Timișoara conducted between March and May 2025 on 1st and 2nd year Finance and Banking students. The latter evaluated AI usage patterns, critical engagement, and perceived impact on academic writing.
Findings: Survey data revealed that over 70% of students frequently use AI tools, yet fewer than 40% critically evaluate AI-generated outputs. This reliance correlates with a competence deficit in more than 50% of students, particularly in unscripted, professional communication tasks. Students increasingly exhibit functional illiteracy in domain-specific contexts like Finance and Banking, masked by AI-polished outputs but lacking independent communicative depth. Despite prior feedback and review reports, 44% of students continued to submit AI-generated responses for targeted tasks. This finding suggests that AI has become the default approach for addressing communication tasks that would otherwise require creativity and the active development of soft skills.
Conclusion and Implications: AI can be a powerful educational ally if embedded within structured, reflective learning environments. However, the findings indicate a pressing need to shift from passive acceptance of AI tools to a more intentional pedagogical grounded use. Educators must design curricula that explicitly incorporate AI literacy, guiding students to critically engage with AI-generated content rather than passively consume it. This includes balancing AI-assisted tasks with independent, creative assignments that promote soft skills such as problem-solving, adaptability, and persuasive communication.
Furthermore, institutions should implement clear guidelines and training programs to foster ethical and competent AI usage across disciplines. Without such measures, the overreliance on AI risks undermining students' long-term communicative and cognitive development, particularly in high-stakes professional contexts. Ultimately, the study underscores the importance of redefining digital literacy to include not only technical fluency but also reflective, ethical, and context-aware engagement with AI technologies.
Originality and value: This paper contributes original empirical insights into student perceptions of AI use in Business English and offers a pragmatic, ethics-centered pedagogical model. It redefines AI not as a shortcut, but as a cognitive partner, equipping students for real-world business challenges that demand both technological fluency and human competence.

Key words: AI tools, business english education, soft skills, convenience, competence
Jel Codes : I21, J24, O33, Z13

1. Introduction

The COVID-19 pandemic accelerated the widespread expansion of digitalization across all sectors. Virtually no domain remains untouched by, or independent from, the use of digital data, and the field of education is no exception. AI-powered language tools like ChatGPT have become increasingly prevalent in higher education, offering quick access to information, enhanced writing assistance, and simulated business communication. In fields such as Finance and Banking, where professional communication is pivotal, AI seems to offer an ideal solution for Business English learners. However, the ease of relying on AI introduces a pedagogical dilemma: does this convenience come at the cost of core competencies?

Accordingly, the debate surrounding AI in education often falls into a binary framework: AI as a solution versus AI as a problem. On one hand, AI can personalize learning, simulate business scenarios, and assist with vocabulary acquisition (Popenici & Kerr, 2017). On the other, it can foster over-reliance and discourage critical thinking (Holmes et al., 2022). This polarity is particularly visible in language learning, where linguistic intuition and pragmatic awareness are developed through active, reflective use not passive reception. But how do we bring to attention students who rely on visual memory rather than auditory memory? Can we force them into attention or should we ignore their shortage altogether?

The result, a clear issue in academia, namely the diminished emphasis on developing original writing and critical analysis skills. For example, we observe students frequently using AI to draft business emails or executive summaries and often submitting the output with minimal revision. While these tasks may appear well-completed, students are repeatedly unable to explain or defend their content when questioned, revealing a lack of ownership and understanding. Simultaneously, teachers struggle to assess actual language competence, as traditional grading no longer reflects the student's individual capability.

In the labor market, this disconnect becomes even more problematic. While the executive director of the European Cybersecurity Competence Centre (ECCC), Luca Tagliaretti, has recently declared that Artificial Intelligence (AI) is the number 1 investment priority, with more than 160 projects developed across Europe, employers in finance and banking increasingly report frustration with new graduates who are proficient in generating text but lack initiative, business nuance, interpersonal communication skills or overall soft skills. Recruiters note that many candidates can construct AI-assisted proposals but fail during job interviews or client-facing simulations where spontaneous articulation, persuasive reasoning, and emotional intelligence are critical (Holmes et al., 2022). In turn, the curriculum is reviewed, stakeholders are involved, and traineeship programs are implemented to restore the balance. But does it?

Moreover, there is growing concern about ethical responsibility and trustworthiness. Students employ AI to cut corners and oversimplify daily tasks creating input that is detrimental to AI programs and give way to flawed routines. Yet, businesses value employees who can evaluate risk, justify decisions, and adapt language to fit sensitive or strategic contexts. This goes to show that when AI is used without a strong foundational knowledge of communication practices, it becomes a liability rather than an asset. Thus, both academia and industry face a common challenge: how to ensure that students become not just users of AI, but competent, reflective professionals who can apply language skills flexibly and responsibly.

2. Literature Review

The integration of Artificial Intelligence into educational practice has been met with both optimism and caution in academic literature. Scholars such as Popenici and Kerr (2017) argue that AI holds transformative potential in personalizing learning and supporting instructional delivery, particularly in higher education contexts. Similarly, Luckin et al. (2016) advocate for the pedagogical value of AI when it is used to scaffold learner autonomy and engagement. However, a contrasting view is presented by Holmes et al. (2022), who caution against the over-reliance on AI tools, highlighting the risk of diminished critical thinking and a superficial grasp of content. Sun (2023) further critiques the substitution effect, wherein students increasingly

replace active cognitive effort with AI-generated outputs, thereby undermining deeper linguistic competence.

These concerns align with the emerging discourse on functional illiteracy in technologically mediated learning environments, especially in disciplines that demand nuanced communication such as finance and business. This paper builds upon and extends this body of literature by focusing on Business English education, where the tension between convenience and competence is particularly pronounced, and by proposing pedagogical interventions that reconcile AI use with core communicative skill development.

3. Materials and Method

This study adopts a mixed-methods approach to examine the pedagogical implications of AI integration in Business English education, focusing specifically on the tension between convenience and competence. The core data set stems from a student perception survey conducted in early 2025 at the West University of Timișoara. The survey targeted undergraduate students enrolled in English for Business courses within the domain of Finance an Banking. A total of 55 responses were collected, assessing frequency of AI use, types of tasks completed with AI assistance, critical evaluation habits, and perceptions regarding AI's impact on learning and academic integrity.

We than analyzed quantitative data using basic descriptive statistics and, in parallel, observational data were gathered from classroom interactions and assignment submissions throughout the academic term. Particular attention was paid to student performance in both AI-assisted and AI-independent tasks, such as domain-specific writing requirements, role plays, and live debates. This triangulation of data provided a more nuanced understanding of the actual versus perceived benefits of AI in language learning. To contextualize findings, the study also draws on relevant literature in AI and education, cognitive linguistics, and business communication pedagogy.

Together, these methods allowed for a comprehensive analysis of not only how AI is used by students but also how it shapes learning outcomes, instructional dynamics, and professional preparedness in Business English contexts.

3.1. The Risks of Convenience: The Competence Deficit

Students in Business English courses increasingly use AI to solve more and more of the tasks that should be based on creativity, critical thinking and problem solving skills. While this enhances surface-level performance, it undercuts the development of foundational skills such as audience awareness, discourse structuring, and language precision (Sun, 2023). Moreover, without guided engagement, students do not recognize AI errors, taking AI provided information for granted which inevitably leads to the reinforcement of misconceptions. The long-term risk that we anticipate lies in the emergence of graduates who, while adept at prompt design, lack the ability to perform effectively in unscripted communication scenarios that are typical in real-world business environments. In other words, they do not truly perform but rather replicate actions mechanically, reinforcing the notion that they engage in a superficial copy-paste approach without a clear understanding of the underlying processes.

Findings from a 2025 student perception survey on AI use in academic writing that we conducted support this concern. Although a majority of students (over 70%) reported using AI tools more than three times per week for assignments, only 38% stated they consistently double-check AI-generated responses. The average trust rating in AI's reliability for academic research was just 2.6 on a 5-point scale, indicating a notable gap between usage frequency and critical awareness. This over-reliance, paired with minimal verification, underscores the danger of convenience masking cognitive disengagement. The risk is not merely academic, it sets a precedent for professional complacency in high-stakes business environments.

As such, an increasingly alarming challenge in the Finance and Banking sector is the rise of

functional illiteracy among graduates, i.e. individuals who, despite holding academic qualifications, struggle to perform tasks requiring professional-level comprehension and communication. This becomes especially problematic when AI-generated content is used to mask language deficiencies. Entry-level employees may appear capable on paper, producing polished emails, memos, or client reports, yet lack the ability to engage in meaningful dialogue, negotiate contracts, or interpret financial documents accurately. This superficial fluency leads to errors in judgment, miscommunications, and even reputational risk for financial institutions relying on such employees in client-facing or compliance-heavy roles.

The competence deficit is often most visible in tasks that require critical reading of regulatory texts, synthesis of financial data, or presentation of investment strategies to stakeholders. These tasks demand precise terminology, persuasive logic, and adaptive tone, skills that are not reliably developed through passive use of AI. Financial firms require employees who can read and write between the lines, assess risk implications, and anticipate communicative subtleties. In this sense, our findings show a strong consensus regarding the indispensability of AI in the future workplace, with more than 80% of students expecting it to play a crucial role. However, many AI-reliant graduates find themselves unequipped for these challenges, unable to meet the expectations of a dynamic and linguistically demanding workplace.

Furthermore, functional illiteracy in this domain often translates into missed professional opportunities. Junior analysts or assistants who rely heavily on AI may struggle during evaluations, leadership training, or upward mobility discussions, particularly when spontaneous presentations, report briefings, or high-stakes meetings reveal their lack of communicative depth. Supervisors and HR departments increasingly cite underwhelming verbal and written performance as a primary reason for stagnation or early termination. The illusion of competence, created by polished AI-enhanced documents, cannot compensate for the absence of independent linguistic reasoning and domain-specific literacy. To understand why such gaps persist despite the availability of sophisticated tools, it is essential to examine the underlying technology that powers them.

Deep learning, which underpins tools like ChatGPT, is designed to mimic patterns of human communication by processing massive datasets. However, it does not ‘understand’ language in the human sense. This distinction is critical: when students rely on outputs generated by deep learning models, they may mistake fluency for understanding. This illusion of competence can discourage students from engaging in the necessary cognitive effort to internalize vocabulary, syntax, and business communication strategies. Furthermore, deep learning systems are probabilistic, i.e. they generate the most likely next word or phrase based on training data, not contextually nuanced reasoning. This can result in subtly incorrect outputs that go unnoticed without trained human scrutiny. Students get henceforth trapped in a false system of learning through basic repetition, unfortunately of incorrect patterns. Breaking these patterns and correcting a faulty information, once learnt, is extremely difficult and requires double the time and effort from both student and teacher. What is more, students of the GenZ tend to respond better to tasks that involve instant gratification, consequently anything that requires time and attention is openly rejected.

Addressing this issue requires a pedagogical rethinking that aligns language instruction with domain-specific communication competencies. Business English educators must train students to internalize and practice the genre conventions of finance and banking communication, emails, executive summaries, compliance reports, and presentations, while fostering linguistic agility, contextual sensitivity, and critical evaluation. Only then can students navigate both AI and professional demands with authenticity and confidence.

3.2. Rethinking Pedagogy: AI as a Teaching Tool

Rather than banning or ignoring AI, teachers should integrate it into Business English classrooms through guided, reflective use. For instance, tasks that involve critiquing AI-generated texts, revising outputs, or comparing human and AI writing can sharpen students' language awareness

and critical thinking (Luckin et al., 2016). Prompt engineering can become a skill in itself, teaching students how to interact effectively with AI to achieve communicative goals.

The same survey data mentioned earlier reinforce the pedagogical potential of AI when paired with structured guidance. Students widely acknowledged AI's ability to improve efficiency and make learning more interactive, with over 70% agreeing on both counts. However, fewer than 35% strongly believed that AI had helped them become better independent learners or critical thinkers. This discrepancy suggests that while students benefit from AI's functionality, its educational value is limited unless embedded within a reflective, skill-building framework. Therefore, AI should be positioned as a scaffold, used to support, not replace, core language development in finance and business communication.

A reoriented pedagogy that accounts for how deep learning functions is crucial. Since AI lacks genuine understanding, students must be taught to recognize the limitations of machine-generated language. Assignments should emphasize metacognitive skills such as evaluating AI's output against task expectations, identifying vague or misleading phrasing, and practicing human revision to achieve clarity and accuracy. Teachers might design comparative tasks where students produce parallel texts: one AI-assisted and one fully human-written. Through reflective analysis, students can identify how deep learning enhances or obscures meaning, thus reclaiming their agency as communicators in high-stakes financial environments. In practical terms, integrating AI responsibly into English for Business courses requires a combination of innovation and structure. One effective strategy involves designing assignments that include both AI-generated drafts and student-led revisions. This dual-stage process helps students move beyond passive consumption and into active engagement with the language. It also provides them with self awareness and increases self confidence.

Another approach is to encourage transparency through process documentation, requiring students to submit their prompts, edits, and reflective notes alongside their final work. This not only demystifies the use of AI but also reinforces accountability. Teachers can also introduce AI literacy modules that equip students with a critical understanding of the ethical dimensions surrounding the use of large language models (LLMs). One of the key ethical challenges is plagiarism, which becomes more complex in the context of AI-generated content. Students must be taught that while AI tools can assist in brainstorming or drafting, submitting AI-generated text as their own work without proper attribution is a form of academic dishonesty. This is particularly important as LLMs can produce coherent, polished text that may tempt some learners to rely excessively on AI, blurring the lines between original work and machine-assisted writing. By integrating discussions on plagiarism, teachers can help students appreciate the value of intellectual honesty, the importance of citing sources appropriately, and the need to develop their own critical thinking and writing skills rather than depending solely on AI outputs.

In addition to plagiarism concerns, AI literacy modules should address the risks of hallucinations, namely instances where large language models generate plausible but factually incorrect or misleading information. These hallucinations pose a significant challenge because students automatically accept AI-generated content at face value, trusting the apparent fluency and confidence of the text without verifying its accuracy. Educators need to emphasize that LLMs do not possess true understanding or factual databases; instead, they predict language patterns based on training data, which can lead to errors, outdated facts, or fabricated details. By raising awareness about hallucinations, teachers encourage students to critically evaluate and cross-check AI-generated information before integrating it into their academic work or decision-making processes. This critical approach not only mitigates misinformation but also fosters digital literacy skills that are increasingly vital in an era dominated by AI technologies.

Equally important in today's AI-driven learning environment are AI-free tasks such as role plays, live debates, and impromptu presentations. These activities foster essential communication skills that AI tools cannot replicate, especially those that rely on spontaneity, emotional intelligence, and face-to-face interaction. Role plays, for example, simulate real-life scenarios where students must think on their feet, adapt their language and tone to different contexts, and respond

authentically to their peers. This type of practice builds confidence in verbal expression and encourages creativity, qualities that are difficult to develop through AI-generated content or pre-prepared scripts.

Live debates further enhance critical thinking and quick reasoning by requiring students to construct arguments, listen actively, and respond persuasively in real time. Unlike AI, which can only provide pre-generated information, human interaction in debates challenges learners to engage with diverse perspectives and sharpen their interpersonal skills. Similarly, impromptu presentations push students to organize their thoughts quickly and communicate clearly without relying on rehearsed material or AI assistance. By incorporating these AI-free tasks, educators ensure that students develop a well-rounded skill set—one that balances technological proficiency with genuine human communication abilities, preparing them for real-world social and professional interactions. Together, all these strategies ensure that AI is not viewed as a shortcut but embraced as a cognitive partner in the language learning process.

4. Results

The findings of this study reveal a stark contrast between students' high frequency of AI usage and their low level of critical engagement with AI-generated content. According to the 2025 student perception survey, more than 70% of Business English students reported using AI tools like ChatGPT at least three times per week to complete written assignments. The most common uses included drafting business emails, summarizing texts, and generating vocabulary for specialized fields like finance and banking. However, when asked whether they verify the content provided by AI, only 38% admitted to consistently reviewing and editing the output. Even more telling, the average student trust rating in AI for academic reliability stood at just 2.6 out of 5, indicating a dissonance between usage and confidence.

Classroom observations further reinforced this pattern. In written tasks such as executive summaries and email communication, students often submitted polished, fluent content with minimal grammatical errors. However, during oral assessments and spontaneous speaking tasks (e.g., client role plays and debates), these same students frequently struggled to articulate the content they had submitted in writing. They demonstrated difficulty paraphrasing ideas, explaining terminology, or adapting language tone to context, revealing a gap between surface performance and deeper linguistic competence.

Moreover, educators observed that students who frequently used AI tended to develop passive learning behaviors. Rather than actively engaging with vocabulary, grammar structures, or rhetorical strategies, they often relied on AI outputs as finished products. This reliance correlated with a decrease in creativity and initiative, especially in tasks requiring personalized or situational judgment. In contrast, students who participated in AI-reflective tasks—such as comparing human-written and AI-written drafts—demonstrated improved metacognitive awareness, linguistic flexibility, and communicative confidence.

These results affirm that while AI tools can enhance productivity and provide linguistic scaffolding, their uncritical use contributes to a growing competence deficit, particularly in the areas of independent thinking, contextual awareness, and domain-specific language application.

5. Limitations

Despite its valuable insights, this study is subject to several limitations that should be acknowledged. First, the research sample was limited to undergraduate students from a single Romanian institution, West University of Timișoara, primarily enrolled in English for Business courses. While the findings provide a focused look at AI use in this particular educational and cultural context, they may not fully capture trends present in other disciplines, institutions, or international learning environments. Broader demographic and institutional diversity would be required for generalizable conclusions.

Second, the student perception survey, while informative, relies on self-reported data, which is

subject to biases such as overestimation of skill, underreporting of AI dependence, or social desirability. Although classroom observations served as a useful supplement to self-reports, they, too, may be affected by observer bias or limited sampling windows. The study would benefit from more structured, longitudinal tracking of individual student performance over time, especially to gauge long-term effects of AI integration on communicative competence.

Another limitation lies in the lack of experimental controls. The study did not compare separate AI-integrated and AI-free cohorts using standardized language assessments. Instead, it relied on interpretive analysis of student behavior and performance within organically occurring classroom dynamics. While this provides authentic insights, it restricts causal claims about AI's direct impact on language development.

Lastly, the rapidly evolving nature of AI technology presents a moving target. The capabilities of tools like ChatGPT continue to advance, and student behaviors may shift accordingly. As such, conclusions drawn from current practices may need to be revisited or revised in light of emerging AI features and updated pedagogical models.

6. Future Directions

In light of the results and limitations, several avenues for future research and pedagogical innovation emerge. First, future studies should expand in scale and scope, involving cross-institutional and cross-cultural samples to determine how AI usage in Business English education varies by context. Comparative studies between institutions that fully integrate AI into their language curriculum and those that restrict or exclude it could yield valuable insights into best practices and measurable learning outcomes.

Second, there is a pressing need to develop and implement formal assessment frameworks that account for both AI-assisted and AI-independent language tasks. Such frameworks should distinguish between competence that stems from genuine linguistic development and performance that is simply AI-polished. Rubrics that include reflective documentation—e.g., AI prompts, revision histories, and critical self-assessment—would promote transparency and learner accountability.

Additionally, future research could focus on the design and testing of AI-literacy modules embedded within Business English programs. These modules should include training on prompt engineering, ethical use of AI, recognition of hallucinations, and strategies for validating information. Evaluating the effectiveness of such modules through pre- and post-intervention assessments would provide concrete evidence of their pedagogical value.

Another promising direction involves the longitudinal tracking of AI's impact on student employability. Partnerships with industry stakeholders in finance and banking could provide data on how AI-assisted graduates perform in real-world roles, particularly in tasks that require interpersonal communication, critical thinking, and adaptability. This data could then inform curriculum design and bridge the gap between academic preparation and labor market demands.

Finally, future work should explore interdisciplinary collaborations between language educators, AI developers, and communication specialists. Such collaborations could lead to the creation of tailored AI tools for Business English learning—tools that are pedagogically informed, context-sensitive, and transparent in their linguistic modeling. By actively shaping how AI is used in the classroom rather than passively reacting to it, educators can ensure that technological convenience does not come at the expense of communicative competence.

7.Conclusions

The convenience offered by AI in Business English education is undeniable, but it must be counterbalanced with deliberate strategies to foster student competence. By embedding AI into pedagogical design rather than resisting or over-embracing it, teachers can ensure that learners are not only technologically adept but also linguistically and professionally competent.

Just as the timeless fable advises teaching the cat how to fish rather than simply giving it the fish, teachers today face a similar challenge with AI in the classroom. Instead of handing students ready-made answers generated by AI tools, the goal is to teach them how to set and reset AI applications to curate information that meets their specific needs. Much like fishing equips the cat with a lifelong skill to secure its own food, teaching students to skillfully manage AI empowers them to take control over their learning process. They learn to guide AI tools by refining prompts, evaluating outputs critically, and adapting the technology to fit different tasks thus transforming AI from a passive source of information into an active collaborator.

This approach encourages autonomy, critical thinking, and digital literacy, ensuring that students do not become dependent on AI's immediate responses but instead harness its potential thoughtfully. By mastering the art of "fishing" with AI, students develop the ability to navigate vast digital resources responsibly and creatively, just as the cat thrives independently once it learns to fish. These skills are not only essential for academic success but also foundational for their future career paths. In a rapidly evolving job market shaped by AI and automation, the capacity to learn continuously, adapt to new tools, and critically evaluate information will distinguish successful professionals. Teaching students to engage actively and reflectively with AI equips them for lifelong learning, an ongoing process that enables them to grow, innovate, and remain relevant in their chosen fields. Ultimately, this skill set fosters resilience and empowers students to take ownership of their personal and professional development throughout their careers.

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Important and Urgent: A Strategic Prioritization Approach in Institutional Building of Human Security

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Abstract

Introduction: Following the February 6, 2023 Kahramanmaraş-centered earthquakes, this study examines how disasters generate multidimensional threats to human security beyond physical destruction. It argues that traditional security approaches focused on military risks or technical response capacity are insufficient and calls for a human-centered perspective that prioritizes lived experience and dignity.
Aim: The study explores the role of the human security approach in growth and development by drawing on post-earthquake experiences. It analyzes vulnerabilities across economic, food, environmental, health, personal, community, and political security dimensions and rethinks decision-making practices through a conceptual matrix for prioritization in disaster management.
Method: Field research was conducted within a TÜBİTAK 1001 project using a qualitative design. Data were collected through semi-structured interviews with 73 individuals, two focus group discussions, and participant observation in container settlements, and were analyzed thematically.
Findings: Disasters were found to create multidimensional human security threats that existing disaster management plans fail to address. Neglect of vulnerable groups, perceived injustices in aid distribution, eroding trust in public institutions, and weakening social solidarity compound insecurities and deepen long-term impacts.
Conclusion: The study argues that disaster management must move beyond speed- and operation-oriented logics toward a holistic, inclusive model that centers human dignity, social integrity, and the freedom to live in safety.
Originality and value: The research grounds the human security approach in survivors' experiences, maps vulnerabilities across seven security dimensions, and proposes the Eisenhower Decision Matrix as a policy framework for prioritizing "urgent" and "important" human security needs in crisis management.

Keywords: human security, disaster management, eisenhower decision matrix, priority matrix, risk management
JEL Codes: D81, Q54

1. Introduction

Natural disasters are among the fundamental threats to human security, causing physical destruction and directly impacting individuals' living conditions, access to fundamental rights, social order, and state capacities (Altun, 2016; Korkietpitak et al., 2013). The narrow framework of the traditional security approach, focusing on military threats, falls short of understanding and addressing the multidimensional human insecurity created by disasters (Cameron, 2014; Karaman & Yiğittepe, 2022). Therefore, disasters and high-pressure moments of crisis, where decision-makers are forced to make critical and multidimensional decisions in very short timeframes must be managed with policies based on a human-centered security approach. The human security approach goes beyond the traditional security paradigm and offers a multidimensional understanding of security that centers on the individual's quality of life, dignity, and fundamental rights (Kış, 2010; Thakur, 1997). This approach offers an ethical, comprehensive, and contextual decision-making framework for determining who should intervene during disasters, when, and with what priority (Zack, 2010). However, the decision-making process during disasters is shaped by technical response capacity, resource mobilization, and hierarchical management patterns. Questions such as which components of human security are prioritized, what dynamics inform these choices, and how decision-makers shape these choices are not adequately addressed in the literature (Gasper & Gomez, 2014).

Disasters threaten the right to shelter while simultaneously affecting many areas of security, such as food security, access to clean water, sustainability of health services and protection of livelihoods, causing multiple human security crises (Bacon & Hobson, 2014; Yıldız & Yıldız, 2023). The consequences of disasters, coupled with social vulnerabilities, are even more devastating, and disadvantaged groups, such as women, the elderly, children, the disabled, and the vulnerable, face serious obstacles in accessing basic services (UNDRR, 2022; UNDP, 2022). In this context, the 1994 United Nations Human Development Report defines human security elements as being shaped at seven fundamental levels: economic, environmental, personal, community, health, political and food security (UNDP, 1994). However, one of these changes is that sudden, high-vulnerability, and resource-limited events, such as disasters, are not organized with the same level of visibility. This intertwining of connections, relationships, institutional and social responsibilities bring the concept of the "moment of decision" to the forefront and it becomes important which dimensions of human security are highlighted by the decisions made at the time of disaster (Pavleski, 2023).

The February 6, 2023, earthquakes, epicentered in Kahramanmaraş and described as the disaster of the century, marked a significant turning point in disaster management for Türkiye and globally. This disaster once again demonstrated the devastating effects of earthquakes, leaving profound impacts on economic, health, environmental, and community security, and demonstrating that disasters trigger multiple human security threats simultaneously and interconnectedly. While disaster management in Türkiye has undergone significant institutional transformations, it has been observed that while disaster relief efforts prioritize speed and operational effectiveness, they also fall short of prioritizing human security, such as protecting vulnerable groups and maintaining dignified living conditions. Consequently, the multifaceted nature of disaster-induced devastation necessitates addressing human security with holistic, preventative, people-centered, and universal principles. The moment of decision that emerges in these multilayered crisis environments should be considered a technical need for intervention and a critical threshold for prioritizing human security components. At this point, analyzing the interrelationships among security components will guide decision-makers in determining which human values to prioritize. Developing strategies that specifically address the needs of vulnerable groups, aim to reduce inequalities, and align with ethical responsibilities will enable disaster management to evolve into a security vision focused on social transformation through the "moment of decision" (CHS, 2003; Mandel, 2002; Pavleski, 2023; UNDP, 1994).

2. Human Security Focused Decision Making in Disasters

The disaster management literature generally addresses decision-making processes within risk analysis, crisis response, and coordination-based approaches. These approaches often focus on structural measures and managerial capacity (Kadıoğlu, 2011; UNISDR, 2015). Within this framework, decision-making during disasters is defined by technical response capacity, resource mobilization, and hierarchical management patterns, and the question of how decisions are shaped based on prioritization logic and which humanitarian impacts they consider often remains in the background. However, disasters involve risks, threats to human security, and physical destruction. Therefore, during the decision-making stages of disaster management, managers must first develop solutions for who needs to be protected and why, while determining what needs to be done.

The human security approach goes beyond the traditional security paradigm and introduces a human-centered perspective to disaster decision-making. Human security, as defined in the 1994 UN Human Development Report, aims to protect individuals from threats in various areas, such as economic deprivation, health risks, housing insecurity, environmental fragility, and physical threats (UNDP, 1994). Unlike the state-centric threat perception of the classical security approach, human security centers decision-making processes on factors such as individual quality of life, dignity, and fundamental rights (Thomas & Tow, 2002; Gasper, 2010). This approach provides an ethical, comprehensive, and contextual decision-making framework for determining who should respond, when, and with what priority during disasters. However, international documents and national disaster plans offer limited practical guidance on applying this approach in decision-making situations. While global documents such as the Sendai Framework (2015) emphasize protecting vulnerable groups, prioritization has not yet been systematic. In this context, how prioritization is structured in the decision-making process, which actors prioritize which groups, and the normative basis used in these choices, remain an area that has not yet been adequately studied.

Disaster management in Türkiye has undergone significant institutional transformations since the 1999 Marmara Earthquake. With the establishment of AFAD (Disaster and Emergency Management Presidency), response and risk reduction processes were structured more thoroughly through TAMP (Disaster Response Plan of Türkiye), TARAP (Disaster Risk Reduction Plan of Türkiye) and similar plans. However, on February 6, 2023, the Kahramanmaraş Earthquakes demonstrated the inadequacy of these plans in practice in providing prioritization that prioritizes human security. The existence of risks that threaten human security in various areas, such as disruptions in the delivery of basic services during crises, inability to ensure personal safety in temporary shelters, inequalities in access to healthcare, and the invisibility of the needs of vulnerable groups, has revealed that the technically focused structure of disaster management documents is inadequate in practice. This demonstrates the need to restructure disaster decision-making processes based on human values, vulnerability analysis, and prioritization. In this context, making human security in disasters practical through priority matrices has the potential to make both a theoretical and methodological contribution.

3. Methodology

This study employed a qualitative research method focusing on the contextual richness of different environments (Denzin & Lincoln, 2017; Yin, 2016), using semi-structured in-depth interviews, focus group discussions, and participant observation as data collection tools. The primary objective of this study is to analyze how decision-making processes in disaster management can be structured through a human security-based framework, with a focus on the experiences of individuals affected by the February 6 Kahramanmaraş earthquakes. By addressing the multidimensional impact of human security components on decision-making processes, the study aims to rethink decision-making practices through a conceptual matrix.

The study sample consisted of individuals who directly experienced the February 6th earthquakes and lived in container cities (CC) after the disaster. A total of 73 individuals were interviewed through semi-structured in-depth interviews. In addition, two separate focus group interviews, each consisting of 10 participants (5 female, 5 male), were conducted. Focus group participants were selected based on similar socio-demographic characteristics; The aim was to analyze shared experiences and collective perceptions of vulnerability through intragroup interactions.

A semi-structured interview form, focus group discussion guidelines, and participant observation notes were used as primary tools during the data collection process. The interviews were audio-recorded and later transcribed into written text to create analyzable raw text. All participant observations were conducted within the container city environment where the interviews took place, enabling the authors to actively observe and obtain contextual and consistent data.

Qualitative thematic analysis was applied to the data obtained as part of the field research. The interview transcripts were analyzed using MaxQDA 24 qualitative data analysis software. The coding process was structured at the level of main themes based on the seven components of human security (economic, food, health, environmental, personal, community, and political security); the content under these themes was systematically organized into umbrella categories and subcategories. The coding process was conducted both deductively (based on predefined themes) and inductively (based on open codes derived from the data). Because some themes, particularly community security and housing, were expressed with greater emphasis, first-, second, and third-level subcategories were created under these themes. Furthermore, when analyzing focus group data, group dynamics (e.g., consensus, conflict, silence, dominant speaker influence) were also considered, assessing not only the content but also the expression of the themes. A descriptive analysis strategy was employed to present the data holistically, and the themes were supported by participant quotes to provide an empirical basis.

As a result of this analysis process, the themes, structured along the seven fundamental components of human security, were evaluated using the priorities and risk perceptions expressed in the participants' narratives. Based on this assessment, a four-domain Decision Matrix was created, positioning the themes according to their urgency and importance. This matrix aims to facilitate strategic prioritization from a human security perspective in disaster management decision-making processes. The matrix presented in the conclusion section contains practical recommendations for decision-makers at both the crisis and risk management levels.

4. Findings and Discussion

This section examines the integration of the human security approach into the decision-making stages of disaster management processes, drawing on the experiences of survivors of the February 6 Kahramanmaraş-centered earthquake. The findings reveal the problems encountered in seven fundamental human security components and the impact of these problems on the lives of earthquake survivors. The discussion section evaluates the relationship of these findings to current disaster management planning.

Disasters and physical destruction profoundly impact societies' social, economic, and psychological fabric. The February 6th earthquakes demonstrated the risks threatening human security in disasters and the profound interaction between human security components. In the face of such large-scale disasters, disaster management processes can move beyond emergency response to provide a people-centered and comprehensive framework, integrating human security dimensions into every phase of the disaster cycle (preparedness, response, recovery) with a holistic approach. Sustainable disaster management must move beyond a technical process that repairs physical destruction to a resilient mechanism that rebuilds society's socio-economic fabric, mental well-being, and public trust.

Earthquake survivors' experiences demonstrate that significant problems exist across economic, food, environmental, health, personal, community, and political security components, and these problems compound each other, deepening vulnerabilities. This section will present key findings for each component and discuss how a human security approach can be integrated into disaster management.

4.1. Economic Security

The findings under the heading of economic security indicate that earthquake survivors' livelihood problems have worsened as they experience income losses, economic losses, resort to debt, have difficulty accessing social assistance, and have increased expenses for basic needs.

Participants stated that their job opportunities decreased after the earthquake, businesses were destroyed or ceased operations, and this situation seriously affected their income continuity.

“My husband is unemployed. After the earthquake, his employers experienced losses; he did not work for six months. He was working for minimum wage.” (Female, 36, Married, Umutkent Koç CC)

The fact that only one-quarter of those receiving social assistance suggest that there may be poverty and compromises in minimum living standards.

"Yes [working for minimum wage], there was a debt. Yes, we took out a loan. They gave it to my husband from his workplace, and they deducted it from his salary. Because our house was destroyed, they gave it to us as a priority. (Female, 35, Married, Müsiad Deik CC)

It was reported that the state-supported pensions for persons with disabilities and older adults proved insufficient in the face of rising living costs, social support mechanisms operated inadequately and irregularly, and injustices occurred in the distribution of aid.

“...the government gives a disability pension of fifty hundred and seven Turkish liras – is that enough for anyone?” (Male, 43, Widower, Umutkent Koç CC)

Renters affected by the disaster were systematically excluded from aid applications due to assessments based on their tenancy status.

"[Esenkart] They cut that off for us. It's been about six months, and I went to apply with the children with this misery. I asked the administration, and they said, 'Your building is undamaged.' What does that undamaged building matter to us? We were tenants there. I said this, and they said, 'It's cut off. Not just yours, everyone's.' You can't say anything; there's nothing you can do. I turned around and came back." (Female, 43, Married, Havaalanı CC)

Maintenance and repair needs in temporary container shelters were left to the earthquake survivors themselves, creating an additional economic burden.

"We spent ten thousand lira to build our own front porch. We tried to make a balcony so that we'd have a place to sit, because you can't even fit inside the container otherwise." (Female, 36, Married, Umutkent Koç CC)

Uncertainty in the housing market and exorbitant rent increases threatened the affected populations' housing security and weakened their capacity for economic planning.

"But money's value is gone – after the earthquake, everything's value spoiled. For example, they give retirees a raise, and Allah knows, the owner didn't leave us alone. He raised the rent from one and a half to six thousand liras, then after two months, it went up to eleven to twelve thousand again." (Male, 56, Married, Expo 2 CC)

Field research revealed that low-income groups already lived in economic insecurity before the disaster and that the catastrophe deepened these vulnerabilities. Particularly vulnerable groups, women, youth, and small shopkeepers were forced into informal and precarious work. Although relief measures such as employer contributions and tax deferrals (Şen, 2023; Taşçı, 2023), temporary public employment programs like TYP, and short-term work allowances were implemented, their effects on creating long-term employment opportunities were limited (Pınar et al., 2025; Uğur & Yılmaz, 2024), and especially women and youth were observed to resort to informal, insecure jobs. After the February 6 earthquakes, cash assistance programs, funeral aid, and monetary compensations were carried out under the coordination of AFAD and the Ministry of Family and Social Services (Şen, 2023; Taşçı, 2023), but these measures lacked continuity and, due to their uncertainty, failed to fully resolve the problems. Moreover, the post-disaster vulnerabilities in livelihoods and employment demonstrated that existing disaster management plans give limited attention to micro-level needs. For example, TAMP's economic security measures are largely confined to the donation-based "Finance and Administrative Affairs Group," TARAP and IRAP focus mainly on infrastructure resilience, and although TASİP aims to support local employment and micro-enterprises, its inclusivity and monitoring-evaluation mechanisms for vulnerable groups remain unclear.

4.2. Food Security

Findings regarding food security indicate that, despite the intensive humanitarian aid provided for basic needs such as food and water following the disaster, problems with resource management and distribution, or the failure to consider individual needs, constituted a comprehensive problem area.

In the first days of the disaster, serious difficulties were experienced in accessing basic foodstuffs and clean drinking water.

"When the aid arrived, it was the fourth day or so, we had nowhere to stay… We were stuck in the car, with no fuel or fuel, in the cold with our children… We stayed in the car for three days, in the cold, and we pulled ourselves out of the rubble. We had no food or drink. Finally, the helpers came and gave us a glass of soup. We had a very difficult time." (Female, 53, Married, MÜSİAD CC)

The lack of systematic information about aid distribution points resulted in many people being unaware of the aid or unable to access it.

"It wasn't being done; everyone who saw it was taking it, so they were hiding it without any announcements so they could collect it themselves." (Female, 39, Married, Türkoğlu CC)

Disorganization and waste were observed in the planning of food aid. Problems arose, such as the same people receiving aid multiple times, the aid being stockpiled, and it not reaching those in real need.

"...some people received too much [food aid], and it was gone by the time it reached us." (Female, 31, Married, Koç Umutkent CC)

It was also reported that products that were expired or spoiled due to improper transportation were thrown away.

"... after the earthquake, they used to throw out expired rice and lentils and put them in the trash. If we had distributed it equally and given it to those who didn't have it, it wouldn't have been such a problem." (Male, 43, Married, Airport CC)

Access to clean water continued to be a problem in container cities. The undrinkable quality of tap water and water outages negatively impacted sanitation. Earthquake survivors have had to meet their drinking water needs largely by purchasing it, which has also created an economic burden.

"Sister, the water here is undrinkable. We don't drink it here; it's only used for dishes and toilets. We do it with our own afford... I mean, we do what we can. Sister, we buy water. Ready-made water costs 20 lira. Sometimes we go and fetch water from spring water in canisters. Otherwise, 5 liters of water costs 20 lira. I buy bread. I buy 5-6 loaves of bread a day. Sister, if you calculate it, if you add water with 50 lira to your daily consumption, what are you going to do with your salary?" (Male, 48, Married, Türkoğlu CC)

Vulnerable groups, especially the elderly, children, people with disabilities, and chronic illnesses, have faced greater difficulties accessing food and water, and their personalized nutritional needs have not been fully met. Women, while juggling responsibilities such as child and elderly care, have faced additional burdens in food procurement and cooking.

"...I have a disabled child. You haven't called me or asked for months. You haven't even asked where my disabled child is... You say disabled people are at the forefront everywhere. But you forget about disabled people... Do disabled people have food? Do disabled people have anything to drink? You should look at that first. You haven't even looked at that." (Male, 59, Married, Umutkent CC)

Problems experienced in food aid distribution processes demonstrate the need to strengthen disaster management plans regarding fundamental aspects of food security. The principles and regulations defined in the Turkish Red Crescent (KIZILAY) Guide were not systematically implemented during the initial post-disaster response phase. Furthermore, the disruptions in distribution processes during this period may be due to the limited pre-disaster food security planning in the TARAP and IRAP (Provincial Disaster Risk Reduction Plans) documents and the deficiencies in logistics and storage space. The inability to meet basic needs for access to clean water and food demonstrates the inadequacy of disaster management plans for short- and long-term nutrition. While post-disaster infrastructure problems (Uzun, 2023; Kızıltan, 2023; Şimşek et al., 2024; Toprak et al., 2024; Şenol Balaban et al., 2025) are thought to hinder access to clean water, disaster management plans appear to lack holistic and scripted response strategies for implementation. Another important finding suggests that vulnerable groups face more challenges in post-disaster food security. Some studies conducted after the February 6 earthquakes also reveal that vulnerability among these groups, especially women, increased for the second time and more significantly (Ayata et al., 2023; Eşik, 2023; Kaçar et al., 2024; Türkmen, 2025; Yağ-Ak & Uyurdağ, 2024).

4.3. Environmental Security

Findings regarding environmental security indicate that multiple environmental risks persist in the post-disaster period, including physical shelter, hygiene, infrastructure, transportation, climate resilience, and spatial justice. Participants reported that although container cities are more organized than tents, environmental security risks persist and have evolved.

It was stated that tents arrived very late in the early days of the disaster, cold weather conditions were very harsh, and earthquake survivors were forced to shelter in makeshift nylon tents. This situation brought about greater risks (fire, poisoning), such as installing stoves inside the tents for heating.

"After the earthquake, we slept in tents for five or six months. I still have this backache, and it never gets better. We slept on concrete. It was like being in a greenhouse, with no mattresses or blankets. Just like soldiers sleeping." (Male, 48, Married, Airport CC)

Spatial and structural problems were identified in container cities. The containers' proximity and inadequate sound insulation have led to discomfort. The inadequate thermal insulation, which results in very hot summers and frigid winters, has led to the use of electric heaters, which increases the risk of fire.

"...We had a tough winter. For example, I have bronchitis and asthma. If you don't turn on the air conditioning here, you can never sit in a container in the extremely hot summers. We weren't like that in our homes. For example, we could sit without the air conditioning. But because it's made of iron, it's taking the heat. It gets extremely hot in the winter, too. That's why children are coughing. They cough excessively." (Female, 30, Married, Hospital CC)

Water shortages, bacterial contamination, and a lack of clean water infrastructure have increased health risks. Pest problems, waste accumulation, and inadequate environmental sanitation have negatively impacted the hygiene of living spaces. The construction of container cities near wetlands or agricultural land has increased mosquito density and, due to the soil's inadequacy for anchoring the containers, made them vulnerable to natural events such as floods and winds.

"There's a dam nearby, so there are insects, flies, and bugs. There aren't many mosquitoes in the summer, but inside, bugs are coming out from under sinks." (Female, 59, Married, GS NEF CC)

The remote location of container cities from the city center and the inadequacy of public transportation have caused access problems, especially for older people, women with disabilities, and women with children. The lack of accessibility features such as ramps and grab bars for people with disabilities has made their daily lives difficult.

"We wanted to have a disabled ramp built here. Normally, disabled people are given priority immediately. The people here tried to do it. We built it ourselves, and we poured asphalt. We built the asphalt here ourselves, and we poured the concrete ourselves. They ignore what is here. My friend, the people who stay here are here because they must." (Male, 34, Single, Umutkent Koç CC)

Problems related to temporary shelter conditions are prominent in the immediate post-disaster period. Yanardağ et al. (2025) also highlighted the disruptions experienced with temporary shelter, particularly in the immediate aftermath of the disaster. These findings suggest that disaster management plans should consider temporary shelter conditions more comprehensively within environmental security. Although the Turkish Red Crescent and AFAD were identified as key solution partners in meeting the initial shelter needs of earthquake survivors within the scope of TAMP, systematic disruptions were observed in the processes related to the delivery, distribution, and installation of tents. Another issue is the existence of various risks associated with the spatial layout and structural conditions in container cities. Studies in the literature also address errors in selecting the locations where container cities will be built as a significant problem (Giyik, 2024; Özmen et al., 2024). The uncertainty surrounding permanent housing among earthquake survivors living in container cities demonstrates that they need shelter and access to safe living spaces. A look at disaster planning reveals no plans in TAMP or TARAP to address post-disaster permanent housing needs. Although Kahramanmaraş IRAP prioritizes residential buildings as a priority among its "structural risk reduction" targets, no details are provided regarding the process.

4.4.Health Security

Health security was affected by the earthquake both in the acute and long-term, causing significant problems. Participants expressed various issues, from physical and psychological well-being to hygiene and nutritional needs.

Because post-disaster food aid was determined by standardized menus, the special nutritional needs of those with chronic conditions, such as diabetes, were not adequately met.

"I have diabetes... There are times when I can get milk here, and there are times when I can't." (Woman, 56, Widow, Umutkent CC)

There were regional and individual differences in access to psychosocial support services, and some participants received support for limited sessions.

"I applied to all of them, not for myself, but for my son. They took me once for play, but no one took me for a second time." (Woman, 40, Widow, Airport CC)

The psychological effects of the earthquake were long-term; symptoms such as constant vigilance, fear of entering buildings, and anxiety about the future were commonly experienced.

"...At first, I couldn't sleep until morning... I could sleep just in case the weather was about to lighten. Otherwise, I couldn't sleep." (Male, 43, Widow, Umutkent CC)

Caring for disabled and elderly individuals faced physical, social, and structural barriers. The inaccessibility of container settlements increased the risk of falls and made access to basic hygiene difficult.

"I have a hearing-impaired neighbor. The authorities' monitoring process is inadequate. They don't come and go; we meet their needs." (Female, 50, Married, Umutkent CC)

During the tent city and container city processes, difficulties were experienced in providing basic hygiene; difficulties with bathing, laundry, and epidemics (rotavirus, scabies) were observed.

"There was no bathroom, no water, no rain for a month [referring to the period in the tent]" (Female, 75, Widow, Yukarı Pazarcık Hospital CC)

Access to healthcare services was problematic in the early days, and a lack of coordination was felt in obtaining medication.

"For example, during this period, I had a tough time getting my medications and my normal expenses. I had a tough time because the government wasn't covering the medication I was getting. For example, I had a tough time because of the earthquake, so they should have covered it, and they did not cover my medications." (Male, 43, Widow, Umutkent CC)

The findings suggest that dynamic programs that address individual nutritional needs should be developed instead of focusing solely on calorie intake in post-disaster emergency response processes. Some studies focusing on the post-disaster period (Kishimoto & Noda, 2013; Ryan et al., 2019; Bilgehan et al., 2025) also reveal that failure to meet the nutritional needs of individuals with conditions such as diabetes and hypertension complicates glycemic and blood pressure control, exposing these individuals to serious health risks. Major disasters such as the Kahramanmaraş earthquakes have been observed to have long-term and multifaceted impacts on mental health. Response teams need to provide integrated mental health services in the post-disaster period. Participants also noted that the inaccessibility of container settlements for individuals with disabilities and the elderly increases the risk of falls and creates difficulties accessing basic hygiene.

Furthermore, the lack of coordination in the provision of medications and medical supplies for individuals with chronic diseases has made glycemic and blood pressure control difficult, increasing the risk of long-term complications. The findings indicate that the resilience strategies emphasized by UNISDR (2015) for disaster risk reduction were not sufficiently implemented during this period. Furthermore, while disaster management plans addressed the need for specialized planning for individuals with chronic illnesses, it is noteworthy that they lack a comprehensive framework for rehabilitation services, particularly physical and long-term rehabilitation. For example, while the TAMP document includes statements regarding psychosocial support services, a detailed framework is needed to address the sustainability of these services and their sensitivity to individual needs.

4.5. Community Security

Findings regarding community security indicate that cultural conflicts, identity-based divisions, the breakdown of family structures, loss of privacy, the weakening of social capital ties, and the erosion of a sense of belonging are occurring due to the lack of harmony between different socio-cultural groups in container cities.

The breakdown of family structures, the damage to privacy, and the weakening of social capital ties have been observed. The transition from extended families to nuclear families has accelerated, and the number of women abandoned by their husbands has increased, leading to the isolation of vulnerable groups.

“Now, people are disconnected from one another; there is no longer love, respect, friendship, kinship, or close ties.” (Male, 43, Married, Airport CC)

Neighborhood relations have been reshaped in container cities, and community solidarity has developed.

"We just sit around, and they come, and everyone's like this, one makes coffee, the other makes meatballs, and we just sit around like that." (Female, 43, Married, Airport CC)

The perception that aid wasn't distributed fairly, the distrust of administrators, and the lack of oversight reinforced individuals' feelings of exclusion and helplessness. It was believed that rural areas and tenants were particularly overlooked.

"[The aid] was given without any research. People came and went, but they didn't list or do any research. For example, clothes came, people took clothes, people took them, or what can I say? The aid came; the money came. For example, when I came here, I had nothing. My house, everything, was gone. I had also separated from my in-laws, and I had no income from the partnership. For example, I couldn't receive any aid or anything, only because my husband had insurance." (Female, 25, Married, Resident CC)

It has been observed that local culture, customs, and traditions changed in container cities after the disaster.

"Well, we had a funeral. Three days ago, the funeral service was held for three days. Now they bury us one day, and the next day, they're done and the food is served, and it's over." (Female, 35, Married, Residential, CC)

The fact that individuals from different socio-cultural backgrounds were forced to live together in post-disaster container cities has brought with it the potential for social tension.

"There are Abdals, Gypsies, Syrians, and we don't care much, but these are the ones who cause the most from the events anyway." (Male, 43, Married, Airport, CC)

Findings about community security indicate that the emergence of risks that threaten community security during disasters is closely linked to the effects of government structures, social interactions, and organizational patterns. Some studies in the literature (Booth, 1991; Wæver, 2008) have also emphasized that the emergence of these risks is not coincidental. Findings indicate that from the outset, inadequate institutional coordination and unclear information led to significant uncertainties in accessing aid and services. Weak control mechanisms and perceived favoritism fueled behaviors such as theft and violence, further eroding the sense of security. During this period, distrust of administrators and the inability to participate in processes deepened exclusion and accelerated social disengagement. Life in container cities fragmented extended families and limited privacy, increasing the care burden, particularly for women, and weakening family solidarity. However, new neighborhood bonds built on shared traumatic experiences strengthened collective coping capacity in some container areas. Furthermore, identity-based tensions with Syrian migrants living together in container cities exacerbate social cohesion and increase security risks. Although reports such as TAMP, TARAP, and IRAP on disaster planning contain explanations regarding inclusive governance, transparent auditing, and participatory communication networks, there are deficiencies in the effective use of social resources and dynamics.

4.6. Personal Security

Findings regarding personal security indicate that various personal security issues persist in container cities, including the threat of crime, obstacles to seeking rights, limited access to public information, and gender-based insecurity. Interviews reveal an increase in personal security concerns due to the increased visibility of vulnerable groups, particularly women, children, and single individuals.

Women felt more vulnerable to "invisible threats" such as sexual threats, harassment, and surveillance, and responsibilities such as child and elder care increased their burden. Women living alone and single parents experienced greater insecurity.

"Well, I'm telling my husband, 'Don't go,' he says, 'We don't have water,' and the other one says to my husband, 'Hey, look, the kid's scared, don't go,' and he says, 'Hey, how can I not go? Maybe if I go, I'll save another person.' Now we're sitting here, everyone's hiding stones, another one's hiding guns, another one's hiding sticks, and another one's hiding something else. Everyone's on guard duty, sleeping cautiously." (Woman, 40, Married, EXPO-3 CC)

It has been stated that crime rates (substance use, prostitution, theft) have increased in container cities, that entry and exit remain uncontrolled, and that lack of inspections contributes to the spread of these crimes.

"There's a fight, the police come by idly waving their hands and arms, having a look at the action, and then they leave" (Female, 35, Married, Airport CC)

earthquake survivors stated that the distribution of aid during the aid process is not equitable and fair, which damages trust and turns into a humiliating experience.

"[Injustice in aid] Yes, it happened, I mean, what we heard, and saw was, you wait in line for so long, they say it's over, they say it's over, it's past time, but they let their acquaintances in first, and we witnessed this all the time." (Female, 41, Married, MÜSİAD CC)

Children's education was disrupted, and safety concerns increased due to physical limitations, psychosocial trauma, internet access problems, and school bus service fees. Some parents were forced to withdraw their children from formal education and transfer them to distance education due to security concerns.

"[Security issue] Of course, street vendors come in here. I hate them. All kinds of people come here, for example, Afghans. I don't like them for the safety of our children. Street vendors used to enter from outside. Container city directors stopped their entrance and gave them issued security cards. Just the vendors with the cards should enter, but that did not start; no vendor cared, nor did any authorities take action. Everyone comes in and out.... There is no security. Why should we lie? We cannot even send out children to school with trust. Fathers and friends take them to the schools, and the teachers keep warning us. On the way, gypsy children are taking their pocket money by showing knives to our children. So, it is not a trusty environment" (Female, 43, Married, Airport CC)

Findings indicate that women's workload and care responsibilities increase significantly after a disaster. Studies in the literature also parallel these findings, suggesting that women's care responsibilities increase after a disaster (Akbal & Taşbaş, 2024; TBB, 2024). Lack of control over entry and exit to container cities and other inadequacies in inspections are considered primary reasons for the prevalence of crimes such as theft, substance abuse, and prostitution. Furthermore, the close settlement patterns and sound permeability in container cities prevented individuals from feeling comfortable and safe. Demir et al. (2024) demonstrated that disaster-related stress led to an increase in other criminal behaviors, such as domestic violence, child abuse, and violence against women.

4.7. Political Security

Findings regarding political security indicate that, despite the beginning of life in container cities and the passage of time, participants continue to feel insecurity, exclusion, and a lack of representation. Participants stated that they experienced difficulties accessing public institutions, were excluded from decision-making processes, and were not provided with fair distribution of aid and resources.

The late arrival of response teams in the early stages of the disaster, disorganized aid systems, and the inadequate visibility of security units raised significant questions about the state's crisis management capacity and reinforced the feeling of being "alone" among earthquake survivors.

"I couldn't see the Kahramanmaraş Metropolitan Municipality. That was the most painful and angry thing about it. If they had come and helped, most people wouldn't have died because we could hear their voices, but they weren't in a position where we could handle or help them because they were buried under tons of rubble. It was a very painful thing to hear their voices and not be able to help them." (Woman, 46, Married, Expo 1 CC)

The lack of visibility of political actors like members of parliament and local officials on the ground, their limited communication, or their visits being limited to protocol, has weakened the public's sense of representation and belonging.

"...I mean, no one came, they didn't call or ask... Even the mukhtar (village headman) knocked on doors when he was going to be mukhtar, said he would take care of our affairs, collected our votes, and then he didn't recognize us." (Woman, 55, Married, Airport CC)

The perception of injustice in the aid distribution processes, bureaucratic confusion, and micromanagement issues in temporary shelters have led to a breakdown in trust in the state. Tenants and those living in disadvantaged neighborhoods, felt they were being left out of aid mechanisms.

"For example, if I had the authority to manage this place, First, I would be honest and do everything with justice. For example, the conditions in our homes are difficult in the winter; the conditions here are very difficult… I would give a large family a second container, for example, I provided food once a month…" (Female, 54, Married, MÜSİAD CC)

Difficulties in accessing information, the lack of clarity of announcements, and reliance on word-of-mouth rather than official sources of information have undermined trust and paved the way for disinformation.

"[Announcement, awareness of the event] No, nothing like that happens. I mean, when people use a word-of-mouth system, for example, things are distributed, either by going to the administration or by the community… So, when neighbors see people carrying bags, we do something, we go and get them, and that's how the aid is provided." (Female, 41, Married, MÜSİAD CC)

Children's access to education has been damaged due to problems accessing educational services, physical damage to schools, transportation difficulties, a shortage of teachers, and a lack of study environments in container cities. Syrian refugee children face additional obstacles such as language barriers, spatial isolation, and a lack of institutional infrastructure, leading to their exclusion from the education system.

"Oh, there's no school or education, for example. One teacher comes into the lesson and says this and that, okay, it's over... especially about education. I really want to see the developments in education, at least for our students who are eager to read. Also, tell me who the teachers are who are really watching over the students in these containers. The problem is, even our students who are eager to read don't read ..." (Female, Married, 35, Airport CC)

The findings emphasize that the state perceives its visibility in the field in an organized, fair, and inclusive manner as a criterion of trust during post-disaster crises. Inequitable aid and services, bureaucratic chaos, and micromanagement issues in temporary shelters have reinforced this perception. While efforts were made to increase visibility through the coordinator governors during this process, initial delays and inequalities limited these efforts. The TASİP (Post-Disaster Recovery Plan of Türkiye), prepared in the post-disaster period, emphasizes the principles of transparency, participation, and social inclusion and can be considered a significant step toward rebuilding political security through institutional trust. However, the mechanisms that will materialize the document's practical implementation in the field remain unclear. Furthermore, while the principles of TAMP, TARAP, and IRAP regarding multi-level governance appear strong, there are still gaps in practical implementation in critical areas such as access to decision-making processes and openness to auditing.

5. Conclusion

The research is based on some of the results of a TÜBİTAK 1001 project, in which the authors participated as researchers and directors, examining the potential for integrating the human security approach into sustainable disaster planning in Türkiye in the context of the February 6, 2023, Kahramanmaraş-centered earthquakes. Our findings reveal that disasters are not limited to physical destruction and loss of life; they also create profound and multidimensional vulnerabilities across all dimensions of human security (economic, food, health, environmental, personal, community, and political security). Furthermore, while national plans such as TAMP, TARAP, and TASİP, and digital tools such as AYDES (Disaster Management and Decision Support System Project), developed by Türkiye after the 1999 Marmara Earthquake, are essential steps, the February 6 earthquakes also clearly highlighted the need to strengthen the implementation capacity of these plans on the ground, particularly in terms of sensitivity to local needs, participation, and inter-institutional coordination. Research findings highlight the importance of "decision-making and prioritization in decision-making processes" in implementing a disaster management approach to ensure human security and produce practical results. In this context, it is recommended that decision prioritization matrices such as the Eisenhower Decision Matrix be utilized to integrate the human security approach into the decision-making stages of disaster management processes. Such tools will strengthen institutional capacity and provide an objective and transparent framework for addressing which human security components to prioritize, when, and with what priority. This will also enhance resource efficiency and strategic planning while preventing disruptions in institutional functioning.

With its four-part structure based on the dimensions of "importance" and "urgency," the Eisenhower Decision Matrix offers a functional prioritization tool that addresses this need, particularly in disaster management processes with high decision intensity.

Integrating the Eisenhower Matrix into disaster management processes serves as a strategic guide for decision-makers in risk management (pre-disaster) and crisis management (response and recovery) phases. During the risk management phase, this matrix can be used to determine which steps among preventive activities aimed at early detection of hazards and reducing vulnerabilities are prioritized in terms of time and resources. During the crisis management phase, the matrix categorizes urgent decisions that must be made while the effects of the disaster are still ongoing, streamlining and making response processes more manageable. For decision-makers facing numerous needs and limited capacity, determining which intervention areas are both essential and urgent provides a significant advantage in terms of time management and human security. Consequently, structured decision-making tools such as the Eisenhower Decision Matrix facilitate the integration of a human security approach across all phases, including reducing pre-disaster risks, ensuring effective response during disasters, and generating sustainable solutions during post-disaster recovery. This integration elevates disaster management to a framework prioritizing human dignity, quality of life, and social cohesion. Table 1 presents the operational integration of human security, considering the Eisenhower decision matrix.

Table 1. Integration of Human Security in the Context of the Eisenhower Decision Matrix

	Urgent & Important (Do)	Important but Not Urgent (Schedule)
RISK MANAGEMENT	-Establishing a human resources management system for AFAD personnel -Ensuring the readiness of personnel involved in disaster management through regular training and exercises -Establishing continuous and effective communication channels among stakeholders -Designing joint operation protocols and information sharing platforms -Developing a common AI-supported and cloud-based operations management system -Increasing the number of mobile health units and health response teams -Expanding disaster management training for healthcare personnel -Updating first aid kits -Increasing field first aid training -Conducting studies to raise disaster awareness by ministries -Establishing alternative and redundant communication networks -Storing critical communication lines and equipment -Increasing mobile base stations -Creating AI-supported communication centers -Strengthening strong logistics infrastructures -Creating alternative supply sources -Creating and regularly training transportation alternatives -Increasing mobile service capacity for food. -Increasing the stockpile of quickly deployable units such as modular shelter units, tents, or container systems. -Preparing logistics chains and shipping plans.	-Integrating disaster training into educational curricula -Establishing volunteer disaster support teams -Preparing educational materials and disaster preparedness guides for vulnerable groups -Conducting regular disaster preparedness drills using disaster scenarios at the provincial, district, and neighborhood levels -Making adjustments to disaster-related legislation and plans -Restructuring job descriptions between central and provincial organizations

CRISIS MANAGEMENT	-Establishing a distribution system that prioritizes vulnerable groups within disaster logistics and is supported by digital monitoring and guidance - Developing a locally based, needs-sensitive plan for food access that includes the active participation of stakeholders - Strengthening mobile health units, disaster field hospitals, and local health teams - Pre-planning shelter areas - Raising awareness of risks that could threaten environmental security - Planning training on ethical behavior for those involved in aid distribution - Planning safe aid areas to prioritize the privacy of earthquake survivors - Establishing preventive services and support lines against sexual violence and abuse - Establishing multi-actor committees to coordinate and manage aid mechanisms - Establishing representation points specific to neighborhoods or temporary shelters - Establishing ethical guidelines and monitoring systems to prevent discrimination and exclusion - Implementing transparent and fair systems in the distribution of resources - Increasing the authority of local governments	-Providing vocational training and establishing cooperatives to ensure the employment of women and youth living in container cities -Implementing programs that support rural livelihood production and producers -Providing opportunities such as grants and low-interest loans to SMEs and small businesses -Accurately identifying vulnerable households and supporting them with services such as food aid cards and food vouchers -Expanding social markets that facilitate access to food -Providing micro-agriculture opportunities around temporary shelters -Establishing waste and garbage separation and water management systems in temporary shelters -Developing urban transformation projects that incorporate ecological sensitivities -Increasing the capacity of permanent health units and psychosocial support centers in temporary shelters -Establishing early warning systems to monitor the health status of vulnerable groups -Implementing structural measures (lighting, camera systems, security guards, etc.) to ensure security and prevent violence in temporary shelters -Constructing safe living spaces for vulnerable groups -Planning solidarity-focused social spaces in temporary shelters -Organizing social visits and support activities focused on individuals living alone -Implementing volunteer-based programs to increase the social participation of the young population -Distributing resources and assistance, and sharing public information about intervention efforts -Establishing monitoring mechanisms that enable the participation of local residents
	Urgent but Not Important (Delegate)	**Neither Urgent nor Important (Eliminate)**
RISK MANAGEMENT	-Creating a digital automated assignment system that ensures rapid, fair, and transparent task distribution during a disaster -Clarifying employee responsibilities by clarifying job descriptions -Developing standard workflows and protocols for areas such as logistics, communication, and administrative processes for all types of disasters -Making flexible workflows tailored to the type of disaster -Ensuring information sharing and coordination between central and provincial organizations through cloud-based digital platforms	-Simplifying bureaucratic processes with low strategic and operational contribution -Clarifying hierarchical communication chains and areas of responsibility -Developing prioritization-based decision-making capabilities -Clearly defining concrete output and outcome indicators for monitoring and evaluation systems -Predetermining the decision type, stage, hierarchical level, and authority of each institution and stakeholder in potential disasters -Making decision-making processes open and transparent on digital platforms

CRISIS MANAGEMENT	-Establishing rapid cash support funds -Expanding the use of social assistance cards -Establishing grant programs for small business owners and tradespeople -Establishing mobile food supply days -Planning nutritional support for special occasions -Increasing inspections to ensure order and hygiene in public food distribution areas -Regular disinfection, hygiene checks, and infrastructure improvements in temporary shelters -Conducting regular health screenings in temporary shelters -Ensuring the regular distribution of hygiene product packages -Creating medication kits that address the needs of those who use regular medications and planning special stocking plans for container cities -Implementing complaint reporting boxes and support lines in temporary shelters -Providing social environments through shared space practices -Ensuring the sustainability of activities in areas such as sports and arts for children and youth	-Implementing practices to ensure the participation of earthquake survivors in employment -Offering incentives to women and youth to increase entrepreneurship -Implementing mentoring programs -Creating income-generating job opportunities (such as piecework, remote work, and working from home) in temporary shelters -Establishing regional post-disaster economic development agencies -Ensuring collaboration among actors such as İŞKUR and professional chambers -Effectively utilizing food cooperatives to create a resilient food chain -Providing awareness training to prevent food waste -Establishing community-supported agriculture systems -Implementing ecosystem-based disaster risk reduction strategies -Developing disaster-resilient settlement plans -Integrating green infrastructure (green roof systems, rain gardens, etc.) into urban transformation for risk reduction and climate adaptation in post-disaster reconstruction -Making community-based mental health centers permanent -Establishing health literacy programs to increase post-disaster self-care capacity -Social Creating activity spaces to foster resilience -Establishing social cohesion centers, such as co-production workshops -Creating programs that increase intergenerational solidarity, such as pairing young and old in temporary shelters -Creating platforms and dialogue mechanisms where all segments of society, such as local people and civil society organizations, can directly contribute

Accurately classifying risks in disaster management is critical for preventing loss of life and property and ensuring the continuity of institutional functioning. The Eisenhower Decision Matrix, used within this framework, allows tasks and priorities to be categorized according to "urgent" and "important" levels. The "Urgent and Important" category includes key elements requiring direct intervention, particularly personnel management, coordination mechanisms, health and communication infrastructure, and shelter. The February 6 earthquakes demonstrated that a lack of preparedness in these areas seriously undermines response effectiveness. Therefore, resolving structural issues such as human resources management, inter-agency communication, and cooperation with local governments in advance is crucial. The "Important but Not Urgent" category encompasses strategic preparations that must be made before a disaster. This includes community-based disaster education, awareness campaigns, institutional capacity building, and structural reforms. Failure to make timely preparations in these areas further exacerbates the effects of a disaster. The "Urgent but Not Important" category includes tasks that must be resolved quickly in the event of a disaster but have limited strategic impact. These operational tasks are managed through digital task assignment systems, helping decision-makers focus on critical security risks. The "Neither Urgent Nor Important" category includes bureaucratic procedures that can waste time and distract attention in disaster management. Simplifying these processes, establishing oversight mechanisms, and supporting decision-making processes with digital systems will increase management capacity. The February 6 earthquakes demonstrated how administrative burdens slow down the response process. Consequently, this classification system contributes to integrating human security into disaster management by guiding pre-disaster planning, resource allocation, and task clarification.

In this regard,

-A prioritization unit established within AFAD can coordinate a structure that simplifies tasks and clarifies strategic decision-making areas. This process accelerates disaster response and strengthens coordination and institutional responsiveness during crises.

-Digital automation systems and structures that ensure clear delegation of duties with clear authority definitions should be mandatory in all disaster management plans. Similarly, the outcomes of risk reduction efforts should be regularly monitored, disclosed to the public, and this data should form the basis for policy revisions.

Future work should focus on strengthening digital capacity in disaster management. The development of AI-powered and cloud-based social vulnerability analysis systems, in particular, offers a critical avenue for more detailed pre-disaster risk mapping, prioritizing resources for vulnerable groups during response, and ensuring equitable recovery processes. Priority research should include model designs based on multi-source data integration, pilot applications, and field-based effectiveness evaluations. Furthermore, the potential for integrating prioritization tools such as decision matrices into digital platforms to accelerate decision-making and optimize resource utilization should be tested through field-based case studies. Research examining the impact of digital automation systems, centralized registration infrastructures on disaster logistics, aid distribution, and institutional coordination processes will generate new technology-based solutions that will contribute to the institutionalization of the "disaster-resilient society" vision.

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An Examination of Sustainable Education Policies in Türkiye

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Abstract

Introduction: The United Nations Educational, Scientific and Cultural Organization has set 17 fundamental goals for sustainable development. One of these 17 fundamental goals is quality education. These components vary according to countries' education policies. Over the past 20 years, education policies in Turkiye have been built on both increasing access and accelerating digital transformation.
Aim: The purpose of this research is to examine sustainable education policies in Turkey. The research is based on the document review method. The study examined the Strategic Plans of the Ministry of National Education (2010–2014, 2015–2019, 2019–2023, 2024–2028)
Method: The research is based on the document review method. The study analyzed the Ministry of National Education's Strategic Plans
Findings). The findings show that school enrollment rates have increased over the years. Inclusiveness has increased, especially at the high school level. Digitalization has gained momentum, but digital support needs to increase for sustainability. While policies are positive in terms of sustainability, their widespread implementation across all schools should be a priority.
Conclusion : Economic sustainability is supported by an increased education budget. In this context, the efficient and equitable distribution of resources is critical.
Originality and value: Turkiye has made significant progress in various dimensions of sustainable education policies. However, some areas require strengthening.

Key words: Education, Sustainability, Strategic Plan
Jel Codes : I21, Q56, Z13

1. Introduction

According to the World Business Council for Sustainable Development, if current development patterns continue, the human population will reach 9 billion by 2050, requiring an area approximately 2.3 times the size of the Earth to meet current resource and energy consumption levels (Bell, 2016). Sustainable development requires simultaneous planning and implementation of social, economic, and environmental dimensions. Education is also one of the key elements for achieving sustainable development (Bulut & Çakmak, 2018).

The United Nations Environment and Development Commission's Brundtland Report define education for sustainable development as “meeting the needs of the present generation with the awareness that the needs of future generations must also be met” (WCED, 1987). Mckeown (2014) defines education for sustainable development as an educational approach that encourages the development of attitudes, values, skills, and beliefs that enable students to contribute to a sustainable world for current and future generations. Education for sustainable development is not just a matter between students and teachers. School administration, the school environment, local governments, and parents should also contribute to the process (Gökmen et al., 2024). The United Nations Educational, Scientific and Cultural Organization (UNESCO) has set 17 fundamental goals for sustainable development. The fourth of the 17 fundamental goals is quality education. (UNESCO, 2015). On the other hand, it should be noted that the components within this structure vary according to countries' education policies. For example, while the number of students entering university is a criterion for quality education in the UK, in Finland,

this criterion is accepted as the contribution of education to individuals' well-being (Kaynak et al., 2023). How to achieve quality education can be explained in more detail by addressing it at the micro, meso, and macro levels (Boeren, 2019). According to Boeren (2019), the micro level consists of students and families, the meso level consists of schools, and the macro level consists of existing inclusive education systems, socio-political ideologies, and policies. At the micro level, increasing the welfare levels of students and families and their knowledge and skills regarding sustainable development goals will help them access quality education (Boeren, 2019). At the meso level, increasing school enrollment rates and school quality plays an important role in accessing quality education. Here, improving school quality can be expressed as improving the quality of spaces, teachers, administrators, and support staff that can meet students' needs (Kaynak et al., 2023). Over the past 20 years, education policies in Turkey have been built on both increasing access and accelerating digital transformation. However, regional differences, socio-economic inequalities, and infrastructure problems pose significant obstacles to achieving sustainability goals in education.

1.1. Research Objective and Sub-Problems

This research examines the development of sustainable education policies in Turkey (2010–2014, 2015–2019, 2019–2023, 2024–2028) within the framework of strategic plans. To this end, the following problems have been identified:

How have school enrollment rates changed in Turkey over time?

To what extent have EBA and digital education applications developed?

To what extent are education policies aligned with the targets in the MEB strategic plan?

How do socio-economic inequalities affect equal opportunities in education?

2. Method

The research is based on the document review method. The study analyzed the Ministry of National Education's Strategic Plans, EBA usage reports, and national/international education policy documents. The data obtained were presented in tables and graphs, separated into periods (2010–2014, 2015–2019, 2019–2023, 2024–2028 targets/projections).

3. Findings

The findings of this research are presented in line with four sub-problems identified in the context of sustainable education policies.

3.1. How school enrollment rates have changed in Turkey over time Development of School Enrollment Rates

Table 1. Periodic Development of School Enrollment Rates in Turkey (%).

Report	Period School enrollment coverage	Ratio/target mentioned in the report
2010–2014	Secondary education (gross)	Target: Gross enrollment rate to be increased to over 90%.
	Vocational-technical secondary education	Target: Increase the “enrollment rate” to at least 50%.
2015–2019	Compulsory education + levels	Indicator: “Net enrollment rate (%)” (for preschool/primary school/middle school/secondary education) — values are included in the plan as indicators.
2019–2023	Primary education (elementary school)	Actual example: 2017–2018 primary school net enrollment rate 91.54%.

	Primary education (general)	Indicator: "School enrollment rate in basic education (%)".
	Secondary education (14–17)	Indicator: "School enrollment rate for the 14–17 age group (%)".
2024–2028	Secondary education (14–17)	Indicator: "School enrollment rate in secondary education (14–17) (Age Group) (%)". KPI and target path: Start 94.50 → 2025: 95.00 → 2026: 95.50 → 2027: 96.00 → 2028: 97.00.

Table 1 shows that throughout the four strategic plans, the "school enrollment rate" highlights access-focused targets such as increasing gross enrollment in secondary education to ≥90% in 2010–2014 and reaching a 50% threshold in vocational-technical education. In 2015–2019, the net enrollment rate for all levels became the key performance indicator. In the 2019–2023 plan, the approach matured, combining concrete examples of achievement (e.g., net 91.54% in primary school, net 98.35% for ages 6–9) and age group-based monitoring (14–17). For 2024–2028, continuity has been maintained by continuing the 14–17 age group secondary education enrollment rate as an institutional KPI. Thus, the goal of expanding access in the context of quality education has evolved into a standardized measurement framework over time. Comparable monitoring across levels/age groups and over years has become possible.

Table 2. Level of use of EBA and digital education applications

Report	**EBA usage/data indicator**	**Value / target**
2010–2014	"e-Learning Education Portal" setup (predecessor to EBA)	Usage data is not included.
2015–2019	EBA acronym and digitalization context	Direct EBA usage figures are not included.
2019–2023	EBA Course Portal monthly average unique visitors	Start: 1,386,838; targets: 1,705,000 → 2,110,000 → 2,600,000 → 3,100,000 → 3,500,000
	Average monthly time spent on the system per user (min)	Start: 65 min; targets: 81 → 102 → 120 → 135 → 150 min
2024–2028	Number of teaching materials added to EBA (PG 5.2.2)	(metric name appears in the plan table; target values are in the table context)
	Number of educational videos and simulations added to EBA (PG 5.2.3)	(metric name appears)

Table 2 shows that EBA's strategy documents focused on establishing the portal and distance learning infrastructure between 2010 and 2014. Between 2015 and 2019, the themes of digitalization and infrastructure were strengthened. However, direct usage figures for EBA were again not provided. For the first time, net usage metrics (monthly unique visitors and average time spent per user) were presented alongside the target path for the 2019–2023 period. For 2024–2028, the focus has shifted from "usage" to "content volume" (number of materials, videos, and simulations added to EBA). Throughout the four plans, the trend has progressed from infrastructure → measurement (usage) → content expansion. However, the only directly comparable usage indicator across periods is available for 2019–2023.

3.2. Education policies, alignment with the MEB strategic plan

Table 3. Teacher Training and Professional Development

Report	Name of the indicator in the document	Number of teachers (start → annual targets)	Note
2010–2014	Number of staff participating in/receiving certificates for remote in-service training activities	Number value not published (indicator name exists)	An indicator for "staff," including teachers; the table does not contain specific numbers.
2015–2019	Annual in-service training duration per employee (hours)	Not a number, but a time indicator (hours) — number of teachers not provided.	This plan focuses on "hours/ratio"; the number of participating teachers is not shared.
2019–2023	Number of teachers participating in certificate training related to digital content	0 → 500 → 1,000 → 1,500 → 2,000 → 2,500 (2019–2023)	Under the responsibility of YEĞİTEK, the target numbers by year are clear.
	Number of teachers participating in professional development activities in real work environments	1,057 → 4,000 → 8,000 → 12,000 → 16,000 → 20,000 (start → 2019–2023)	Under the responsibility of MTEGM, there is a clear numerical target path.
2024–2028	Annual in-service training duration per teacher (hours), participation level (%)	Not a number (time/rate KPIs)	The "number of teachers" is not directly measured.
	Number of teachers participating in addiction prevention training	337,748 (start, 2024) → 437,000 → 537,000 → 637,000 → 737,000 → 837,000 (2024–2028)	Within the scope of ÖERHGM, in-service training for teachers; numbers are clearly provided.

Table 3 shows that during the four planning periods, the monitoring of "teacher training and professional development" was defined in 2010–2014 as the metric "staff participating in/receiving certificates for distance in-service training," but no numerical data was provided. In 2015–2019, the focus shifted from numbers to time/rate indicators such as the annual in-service training duration (hours) per employee. In the 2019–2023 period, the number of teachers participating in digital content certification training under YEĞİTEK (from 0 to 2,500) and the number of teachers participating in professional development in real work environments under MTEGM (from 1,057 to 20,000). Although the general KPIs in the 2024–2028 plan are still based on duration/participation rates, specific programs such as the number of teachers participating in addiction prevention training have clear annual targets (from 337,748 to 837,000).

3.3. Green and Eco-Friendly School Policies

Table 4. Green and Eco-Friendly School Policies

Report	Policy Focus (Green/Environment)	Sample Program/Indicator
2010–	Environment/climate-conscious building design; resilient, safe, accessible school	Earthquake-resistant design; environmentally appropriate

2014	infrastructure	building
	Environment/climate-focused physical planning	Safe school; energy/efficiency awareness (design level)
		Resilience, accessibility applications
		School safety and disaster resilience
		Safe/accessible learning environments
2015–2019	Healthy/clean school standards; safe physical environment (indirect environment)	White Flag; Nutrition-Friendly School
		Accessibility and safety standards
		Hygiene/cleanliness certificates, maintenance-repair
		School health, environmental awareness (indirect)
2019–2023	Infrastructure and quality monitoring prioritized; limited “green school” KPI	Infrastructure/quality indicators; indirect references to the environment
		Remote/hybrid infrastructure; indirect emphasis on the environment
		School safety, quality monitoring
		Physical/digital infrastructure projects
		Environmental themes embedded in projects
2024–2028		Zero Waste; number of schools with established waste management systems
		Climate workshops; “My School is Clean” certification
		Energy efficiency, renewable energy themed events
		Green school

Table 4 shows that between 2010 and 2028, the focus of the “green/environmentally friendly school” approach was on establishing safe, resilient, and accessible school infrastructure that takes climate and environmental conditions into account between 2010 and 2014. From 2015 to 2019, the environmental theme was indirectly expressed through healthy/clean school standards (White Flag, Nutrition-Friendly School, etc.). From 2019 to 2023, the priority is infrastructure

and quality monitoring, and the term "green school" is limited. In 2024–2028, the approach clearly shifts towards climate and environmental policies. "Green school" practices are widespread with concrete KPIs such as Zero Waste, the number of schools with waste management systems, climate workshops, My School is Clean, and energy efficiency/renewable energy.

3.4. Economic Sustainability and Education Financing

Table 5. Share of Education Budget in GDP (%).

Report	Year	Share of education budget in GDP (%)
2010–2014	2010	**3,22**
	2011	**3,25**
	2012	**3,28**
	2013	**3,44**
	2014	**3,54**
2015–2019	2015	**3,42**
	2016	**3,81**
	2017	**3,53**
	2018	**3,20**
	2019	**3,40**
2019–2023	2020	3.20 (the document covers the period 2002–2020; 2021–2023 is not included)
2024–2028	—	The plan aims to diversify the resources allocated to education and increase the share; the table/data regarding the 2024+ rates is not included in the plan text.

Table 5 shows that the "share of the education budget in GDP" in strategic plans started at approximately 3.22% in 2010 and closed the period at a higher level of 3.54% in 2014. During the 2015–2019 period, it fluctuated between 3.42% → 3.81% → 3.53% → 3.20% → 3.40%. In the 2019–2023 period, the share is 3.20% in 2020. The 2024–2028 plan sets policy objectives for diversifying sources and increasing the share rather than specifying specific rates.

Table 6. Number of Students Participating in the Erasmus+ Program.

Dönem	Is the number of Erasmus+ students (in thousands) clearly stated in the document?	Relevant statement/indicator in the document
2010–2014	No	Cooperation with international organizations and participation in EU programs (e.g., "Leonardo da Vinci") are targeted; however, the number of students is not specified.
2015–2019	Partially (total, no program breakdown)	The text states that "mobility is supported through KÜDEP, Sister Schools, Erasmus+, etc.; approximately 33,000 students and 38,000 teachers participated between 2012 and 2014" (program breakdown is not provided). In addition, "the number of students participating in international mobility programs/projects" is monitored as a performance indicator.
2019–	No (ratio available,	The "Percentage of students participating in national and

2023	no number)	international projects (%)" is an indicator; the number is not shared.
2024–2028	No	Under the headings of overseas education/relations, student numbers are general (those attending official schools, those accessing TTK courses, etc.); the number of Erasmus+ participants is not provided separately.

Table 6 shows consistent, annual data on Erasmus+ student numbers in strategy documents. Participation in programs was targeted for 2010–2014, but student numbers were not provided. For 2015–2019, only total information is available without a program breakdown (approximately 33,000 students and 38,000 teachers in 2012–2014), and participation has been monitored as an "indicator." For 2019–2023, the student ratio (%) is tracked, but the actual number of students is not shared. For 2024–2028, international areas are included, but the number of participants specific to Erasmus+ is again not provided separately. The documents do not present a comparable series of "number of students (thousands)" across periods for Erasmus+ at the policy and indicator level, except for a limited total number anecdote for the 2015–2019 period.

Discussion and Conclusion

Discussion

An examination of the 2010–2028 strategic plans reveals that school enrollment rates are gradually maturing. While expanding access was the primary focus in the 2010–2014 period, subsequent plans adopted measurable indicators based on levels/age groups. This transformation is consistent with the principles of traceability and sustainability in national education policies and promotes progress towards transparency and accountability in education. However, considering that regional and socio-economic differences are reflected in school enrollment, it can be argued that increases in quantitative rates alone are not sufficient in terms of quality education.

EBA's development trajectory between 2010 and 2028 has evolved in terms of infrastructure establishment, usage measurement, and content diversity. The 2019–2023 period is notable for the first time tracking concrete usage statistics based on targets. However, the 2024–2028 plan's focus on content volume rather than measurement-oriented indicators suggests that emphasis is being placed on quantitative content production rather than effective use of the system. This is debatable in terms of the sustainability of digital education. The most important factors are not the amount of content, but interaction in teaching processes, pedagogical quality, and inclusive access levels.

In the area of teacher training and professional development, plans have focused on different criteria in different periods. While the 2019–2023 period is notable for the clarification of numerical targets, the 2024–2028 plan has returned to qualitative indicators such as duration/participation rate. This fluctuation shows that policies struggle to establish a stable measurement system in terms of long-term sustainability. In terms of green schools and environmental policies, the 2024–2028 plan contains the most concrete steps compared to previous periods. Practices such as Zero Waste, energy efficiency, and climate workshops demonstrate that sustainability in education is supported not only at the curriculum level but also in the physical school environment.

The share of the education budget in GDP has fluctuated between 3% and 3.8% over the periods. This ratio remains low when compared to the OECD average. The fact that the 2024–2028 plan does not specify a budget ratio but envisions diversification of sources indicates that financial sustainability has not yet been sufficiently institutionalized at the policy level. Furthermore, although Erasmus+ and similar international mobility programs are included in the plans, the lack of clear and regular sharing of student numbers points to a lack of transparency and measurement-evaluation in this area. Clarifying internationalization indicators is critical for

sustainable education policies.

Conclusion

During the 2010–2028 period, Turkey's education policies have seen significant progress in access, digitization, teacher development, environmental policies, and financing. However, qualitative depth in school enrollment rates, pedagogical effectiveness in digital education, a consistent measurement approach in teacher policies, alignment with international standards in education financing, and transparent and regular data sharing on international mobility are still areas that need improvement. In this context, for sustainable education policies to succeed, both quantitative growth (school enrollment, content production) and qualitative improvement (equality, quality, effectiveness) dimensions must be balanced.

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Financial Statement Manipulation in Construction: Comparative Detection Models and Econometric Evidence on Blockchain Prevention

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Abstract

Introduction: Altering financial statements undermines corporate governance and stakeholder confidence, especially in high-risk sectors such as construction, where creative accounting and fraudulent reporting may be used to meet financial targets or conceal problems, complicating reliable assessment by investors and regulators.

Aim: This study aims to assess the effectiveness of different fraud detection methods for construction companies and to examine the potential of blockchain-based accounting systems to mitigate financial statement manipulation.

Method: Using a sample of construction firms, the study applies ratio-based forensic models and machine-learning classifiers, alongside regression analysis, to evaluate how the adoption of blockchain accounting systems affects the occurrence of financial statement fraud.

Findings: Conventional detection techniques such as the Beneish M-score identify a substantial share of unreliable financial data, while more sophisticated models, including Random Forest classifiers, provide more precise identification of suspicious reporting. Blockchain use is statistically inversely associated with irregular accruals and other indicators of fraud, suggesting that construction firms using blockchain for financial reporting are less prone to manipulation, with enhanced reporting quality, stronger internal controls, and greater transparency.

Conclusion: The results indicate that combining advanced fraud detection models with blockchain-enabled accounting can meaningfully reduce manipulation risk in construction firms and support more trustworthy financial reporting for key stakeholders.

Originality and value: This study is the first to examine blockchain's role in detecting financial statement fraud specifically in the construction industry and offers auditors, regulators, and corporate decision-makers practical insights into how contemporary technologies can be leveraged to prevent financial fraud and secure financial accounts.

Key words: fraud detection; blockchain technology; alterations to financial statements.
JEL Codes: M41, M42, K42

1. Introduction

It is common for corporations to misrepresent their accomplishments or alter their financial reports. This may result in significant losses and undermine shareholder confidence. This category constitutes less than 10% of all occupational fraud instances, although it inflicts the greatest damage, typically exceeding $500,000. Major corporate scandals across various sectors have demonstrated how fraudulent financial statements may result in company bankruptcies and investor losses. This underscores the significance of robust methods for detecting and preventing fraud. The construction industry is significantly concerned about these issues. Research indicates that the construction industry is particularly susceptible to alterations in its financial statements. One study found that this industry accounted for around 16% to 17% of all documented instances of manipulation. This is the apex rate among substantial firms. The increased risk is due to various industry-specific factors: the prolonged duration of projects, the use of percentage-of-completion accounting, complex contract structures, and significant dependence on estimates and contingencies, all of which create opportunities and pressures that facilitate earnings manipulation (Setyarahman & Januarti, 2025). Construction firms encounter significant external

pressure to adhere to project timelines and financial objectives while minimizing costs. CEOs may utilize "creative accounting" to obscure the true performance of their company while adhering to specific regulations. For example, they might inflate their profits, inaccurately report their expenses, or conceal their liabilities.

Altering financial statements poses significant risks. Debtors and investors are deceived, the capital market's resource allocation is compromised, and businesses fail (Camfferman & Wielhouwer, 2019). Fraudulent reporting in construction adversely impacts investors, government contracts, infrastructure, subcontractors, and laborers. Construction firms that misrepresented their financial earnings or expenditures faced lawsuits and suffered business losses (Mahardika & Kawedar, 2024). Individuals frequently uncover instances of fraud when it is too late. When confidence in management erodes, auditors and regulators discover that the company's financials have been distorted and that its valuation is predicated on misleading data. We must prevent inaccurate financial reporting and identify it promptly.

Researchers and authorities developed methods to detect fraud in financial statements. Conventional analytical models identify discrepancies in accounting data by examining financial ratios and other indicators. Machine learning and big data are increasingly integrated into contemporary models. Fraudsters alter their habits to evade detection. No model is flawless, particularly with various industries and accounting systems (Boll et al., 2022). Generic signs of construction fraud may not be universally applicable; therefore, they should be employed solely in conjunction with appropriate detection methodologies.

It is more vital to prevent manipulation than to expose it. To prevent this occurrence, normal corporate governance and internal controls encompass audit committees, oversight, and protocols for whistleblowers. In recent years, many individuals have asserted that blockchain technology could mitigate fraud. Blockchain monitors alterations to data in a decentralized manner. It may enhance clarity and impede data modification. Blockchain maintains transaction records in a chain visible only to select individuals, complicating efforts for managers to alter earnings without detection (Dashkevich et al., 2024). Blockchain is utilized in the construction industry to facilitate payments and oversee the supply chain. We seek to determine whether blockchain enhances the accuracy of financial reports.

This study delineates two synergistic objectives within this framework. Initially, we utilize financial statements from construction firms to evaluate fraud detection methods and assess their efficacy in identifying alterations. Secondly, we empirically examine the effectiveness of blockchain-based accounting systems in reducing financial statement fraud within construction companies. We want to integrate research on blockchain technology and forensic accounting frameworks to enhance corporate transparency. The remainder of the document is organized in this manner. Section 2 reviews the literature on fraud detection models and blockchain in financial reporting. Section 3 describes the data and research methods. Section 4 presents the empirical results for construction firms. Section 5 discusses practical and managerial implications. Section 6 summarises the main findings, outlines limitations, and suggests directions for future research.

2. Literature Review

Financial statement manipulation occurs when management intentionally alters financial reports to misrepresent the company's actual performance, either positively or negatively. This manipulation can range from overly aggressive accounting practices compliant with GAAP/IFRS to outright fraud involving violations of accounting regulations and laws. Typical methods to accomplish this include accelerating revenue recognition, delaying expense recognition, utilizing off-balance-sheet financing, or fabricating fictitious revenues or assets (Awang et al., 2020). Traditional fraud theory frameworks explain why individuals manipulate financial data. Cressey's fraud triangle posits that pressure (such as financial objectives or debt covenants), opportunity (evidenced by inadequate controls or complex transactions), and justification collectively increase the likelihood of fraudulent behavior. Capability constitutes

the fourth component of a fraud diamond. This indicates that the perpetrator, typically a senior executive, is capable of executing extensive deception (Wolfe & Hermanson, 2004). Recent additions, such as the fraud hexagon, include elements such as hubris and collaboration. These are crucial in large corporations and have been associated with fraud (Achmad et al., 2022).

In the construction industry, numerous risk variables converge. Most construction projects initially incur substantial costs, need considerable time to complete, and the company receives payment only after assessing the extent of work accomplished. When management faces pressure to produce consistent earnings, altering these conditions becomes straightforward. External pressures from creditors or shareholders, coupled with ambitious financial targets, substantially affect the likelihood of financial statement fraud in construction companies. A recent study by Mahardika and Kawedar (2024) utilized the fraud hexagon theory in construction organizations, identifying high competitiveness, a characteristic inherent to the industry, and executive hubris as important predictors of fraudulent reporting. In contrast, efficient monitoring mechanisms, such as active boards or institutional investor ownership, can reduce risk. In numerous documented instances of construction fraud, senior executives circumvented constraints due to their influence and superior knowledge of the project compared to others.

Studies demonstrate that construction firms engage in deceptive practices regarding their operations. Setyarahman and Januarti (2025) contend that construction and real estate companies are the most likely offenders of financial statement fraud on the Indonesian stock exchange. A major contractor profited from the sale of completed property units, resulting in a business scandal (Kompas, 2017, as referenced in Setyarahman & Januarti, 2025). The state-owned construction corporation engaged subcontractors to enhance asset appearance and save costs. The government allocates substantial funds to this (KPK probe, 2020). Regulation and whistleblowers are crucial for detecting and preventing manipulation. Inadequate management is detrimental. Fraudsters jeopardize incarceration, financial loss, and the erosion of investor confidence. Failure to detect audit fraud can impact the accounting industry (Martins & Júnior, 2020). Reducing expenses at the expense of quality may result in construction fraud, leading to financial waste on infrastructure and jeopardizing lives. Both professionals and academics seek methods to prevent individuals in this field from falsifying their financial accounts. Corporate governance must encompass independent boards and audit committees proficient in financial management (Truong & Truong, 2021). Due to their involvement in large-scale projects and government funding, numerous countries have regulations governing construction companies that are publicly traded. Governance cannot prevent all issues; so, we must identify and mitigate them.

2.1. Models for Detecting Fraudulent Financial Statements

Several forensic accounting studies have developed models to detect earnings manipulation and financial statement fraud. Models detect financial statement fraud. Messod Beneish (1999)'s Beneish M-score uses eight financial ratios to identify earnings manipulators, including days' sales in receivables, gross margin, asset quality, and depreciation index. Before its collapse, auditors and investors labeled Enron a manipulator using the Beneish M-score. The 1990s U.S. GAAP data suggests the model may be inaccurate in industries with diverse accounting standards or practices (Kramářová & Vačková, 2020).

According to Jones' (1991) modified Jones model, normal and abnormal accruals may indicate earnings management. Dechow et al. (2011) developed the F-score (Fraud Score) to distinguish earnings management from fraud using accrual-based metrics, off-balance-sheet, and performance indicators. We assume fraudulently inflated earnings affect accrual accounts or ratios. Receivables may exceed sales due to revenue inflation, or unusual expense deferrals may affect asset quality indexes. Ratio models spot fraud and honest firms. Kenny & Wilde (2021) found that Beneish M-score, Jones model, and others missed 70–80% of European frauds due to sensitivity vs. specificity trade-offs. Ensemble and indicator choices improved detection.

Ratio models may need construction industry customization. Construction firms' percentage-of-completion accounting and high WIP cause large receivables, debt, and margin swings without fraud. High cost variances, frequent change orders, and cash flow-revenue discrepancies may indicate aggressive revenue recognition, research suggests. Pasco and Zhang (2023) recommend construction fraud detection using project backlog metrics. Financial metrics and governance factors like audit qualifications and management turnover improve sector detection models (Harris et al., 2020).

New AI/ML discoveries include financial fraud. It finds complex, non-linear patterns in annual report or news text input variables. For firm fraud detection, random forest and SVM models are trained on financial statements. In an Indonesian company dataset, Lee et al. (2025) found that Random Forest classifiers detected financial statement fraud better than logistic regression and decision tree models. MDPI.com model red flags included GPM and data-weighted AR turnover. To compare a firm's financial metrics to industry peers, ML models cluster or detect outliers (Perols et al., 2017). NLP text mining annual report narratives or news showing deception or inconsistency proved manipulation.

Despite these advances, fraud detection models are difficult to implement. High false positive rates can overwhelm auditors and enforcement agencies with "red flags". Bao et al. (2020) say prediction errors hurt a company's reputation and missed frauds cost money. The 2020 machine learning model had 17% false positives, Beneish 12%. Support audit decisions, not make them. Multiple models help auditors and forensic accountants spot red flags (Amiram et al., 2018).

Comparative construction firm studies are rare but growing. Construction-only fraud detection studies are rare. Construction fraud may overstate revenues or underestimate costs, making Beneish M-score's Days Sales in Receivables Index and Gross Margin Index relevant. Project cycles can affect construction firms' margins and receivables, complicating model calibration. This situation requires careful detection method evaluation.

2.2. Blockchain Technology and Fraud Prevention in Financial Reporting

Blockchain, popularized by cryptocurrencies, records transactions securely, transparently, and tamper-resistantly. Management, auditors, regulators, and investors access accurate accounting and financial reporting on blockchain. Blockchain transactions are encrypted, timestamped, and linked to prevent reversals. These traits address financial statement manipulation—falsifying or backdating records. Blockchain accounting systems restrict chronological chain entries to authorized users to prevent revenue recording fraud after period-end or inventory count changes (Dai & Vasarhelyi, 2017).

Blockchain may reduce financial statement fraud by improving transparency and accuracy. messing with. Dashkevich et al. (2024) propose Blockchain Financial Statements. Mdpi.com says BFSs “reduce data manipulation and the misrepresentation of company financial claims by enhancing the availability of real-time and tamper-proof accounting data”. Blockchain transparency lets auditors and regulators track transactions live for irregularities. Smart contracts (self-executing code on blockchain) can automatically enforce accounting rules like not recording revenues without digital proof of delivery or payment, aligning accounting entries with economic reality (Schmitz & Leoni, 2019).

Emerging evidence shows blockchain's impact on corporate reporting. Blockchain adoption in Chinese firms improves accounting efficiency and data reliability, improving financial reporting, according to Liao et al. (2024). Research by Sciencedirect.com found that reducing human errors and delays beats fraud prevention. Process integrity prevents manipulation and loopholes, indirectly deterring fraud. Blockchain audit and assurance research suggests external auditors can independently check transactions for discrepancies (Rozario & Thomas, 2019). Auditor trust in a client's immutable blockchain records reduces management lying.

Blockchain accounting grows despite potential. Systems compatibility, privacy (not all financial data can be ledger-shared), and industry standards are technological and organizational

challenges. Blockchain pilots used smart contracts for material and construction payments. These apps increase operations and procurement transparency, which may improve financial reporting (reducing fraud, matching expenses to payments). A blockchain-based construction firm can audit every vendor payment and project expenditure, making fictitious expenses and liabilities harder to hide.

Blockchain is flawed. Blockchain's "garbage in, garbage out" problem preserves dishonest managers' fake transactions. Blockchain data integrity is unchangeable, but entry point honesty is not. Thus, blockchain works best with IoT devices or objective validators like supply chains verifying deliveries. Bank transactions or third-party systems can verify blockchain financial reporting. Because collusion to create a chain of false entries is harder to detect, a determined fraudster may bypass blockchain controls.

The regulatory environment is slowly recognizing blockchain's potential. Some audit standards bodies are considering blockchain auditing guidance, and regulators want to know how DLT could improve financial market transparency (FASB, 2022; PCAOB, 2023). However, financial accounting adoption may take years. Construction firms gradually adopt "Construction 4.0" digital transformation. Blockchain-based project management and payment systems have reduced payment disputes and increased stakeholder trust for large European and East Asian contractors (Li et al., 2021). Operational trust increases financial trust.

Sciencedirect.com says blockchain's transparency may prevent financial statement manipulation. Proof is needed for promise. Will blockchain-adopting firms manipulate earnings less? Question our study answered. Blockchain adoption data measures financial reporting benefits, and fraud detection models measure manipulation risk.

3. Materials and Method

To investigate our research questions, we assembled a dataset of publicly listed construction companies and their financial information over a recent multi-year period. The focus on listed companies is due to data availability (audited financial statements and disclosures are publicly accessible) and because such firms have greater incentives and avenues to manipulate earnings (to meet market expectations or loan covenants). The initial sample consisted of **120 construction and infrastructure firms** from **2016 to 2022** across several markets (including companies from Asia, Europe, and North America). We included firms classified under construction, engineering, or related infrastructure development sectors in their respective stock exchanges. Financial statement data (balance sheet, income statement, cash flows) were obtained from annual reports and standardized via a financial data platform to ensure comparability. We winsorized financial ratio data at the 1% level to mitigate the influence of outliers, which can be extreme in this industry (due to very large or very small firms or one-time events).

In addition to financial data, we gathered information on **blockchain adoption** for each firm. Since firms do not explicitly report “we use blockchain in accounting” in financial statements, we used a combination of sources: news releases, company annual report sections on technology or internal controls, and industry reports. We defined a **Blockchain Adoption indicator** as 1 if the company had implemented or piloted any blockchain-based system relevant to its operations or financial processes by the year 2022, and 0 otherwise. For example, if a company announced participation in a construction blockchain consortium (for supply chain or payment management) or if its annual report mentioned use of distributed ledger technology for project management or financial record-keeping, we marked it as an adopter. By 2022, about 15% of the enterprises in the sample had commenced utilizing blockchain technology. While several levels and types of blockchain applications exist, this binary classification serves as a suitable foundation for research. This method may overlook certain complexities—some organizations might be investigating blockchain covertly, and simple announcements may not indicate actual implementation—but it is consistent with recent adoption studies (Liao et al., 2024).

3.1. Fraud Detection Models Evaluated

We applied several **fraud detection models** to each firm-year in our sample to gauge the likelihood of financial statement manipulation. The models include:

- In 1999, Beneish M-Score used eight financial data points. Use yearly researchgate.net data. Profit manipulation rises with the 8-variable model's M-Score above –1.78. Beneish calibration calls firm-years with M-Score > –1.78 "potential manipulators".
- 2011 Dechow F-Score: Model evaluates abnormal accruals, receivables, inventory, and securities issuance. F-Scores show fraud. Potential fraud cases were identified in firms with an F-Score ≥ 1.00 (Dechow et al.).
- Total accruals minus Jones regression-predicted property, plant, and equipment and revenue yielded discretion in the Jones Non-Discretionary Accruals Model (1995). Large positive discretionary accruals versus assets may indicate income manipulation. Annual red flags were raised for the top decile of discretionary accruals observations (assuming few firms manipulate accruals).
- Along with traditional models, the Machine Learning Ensemble trained a random forest classifier on our sample. Eight firm-years of accounting restatement or regulatory misreporting were "fraudulent". After random forest training with Beneish and F-Score models and operating cash flow to net income, we tested classification. The few confirmed fraud cases made this exercise exploratory and overfitting. Ranking variables by importance provided insight. Days Sales in Receivables, Gross Profit Margin, and Operating Cash Flow/Total Assets were top random forest predictors of receivable buildup and cash-profit divergence. Random forest mostly supported undetected models.

For each firm-year, we thus obtained multiple indicators of potential manipulation. In our analysis, we considered a firm-year to show **evidence of manipulation** if at least two of the detection models (e.g., both Beneish and F-Score) exceeded their risk thresholds. This conservative criterion is intended to reduce false positives – requiring corroboration across models to label a likely manipulator. By this measure, approximately **18%** of firm-year observations in our sample were flagged as suspicious. This figure is higher than the expected actual fraud prevalence (which is typically <10% of firms, per ACFE studies) because our flags include aggressive but perhaps not illegal earnings management. Nonetheless, the comparative aspect is what matters for our study: we examine how these flags correlate with blockchain adoption and how different models compare in flagging construction firms.

To compare model performance specifically, we evaluated consistency and differences: How often did Beneish flag a firm-year that F-Score did not, and vice versa? How many cases did the discretionary accruals measure catch that ratio models missed? This helps identify if one model might be more sensitive in the construction context than others. We also looked for any bias – for example, did certain models tend to flag smaller firms more often (possibly due to volatility) or firms with certain characteristics (like high growth companies)?

3.2. Econometric Analysis of Blockchain Impact

The core of our prevention analysis is an econometric model testing the association between **blockchain adoption** and the likelihood of financial statement manipulation. We specified a panel logistic regression (logit) model where the dependent variable is a binary indicator **Fraud_Flag** that equals 1 if a firm-year was flagged as suspicious by our criteria (at least two models signal manipulation), and 0 otherwise. The key independent variable is **Blockchain_Adopt**, our dummy for blockchain usage (1 for adopters, 0 for non-adopters). If blockchain prevents manipulation, Blockchain_Adopt should exhibit a negative coefficient (indicating a reduced likelihood of Fraud_Flag = 1).

We incorporate numerous variables to address diverse fraud risk factors:

- The magnitude of a corporation: It can influence the likelihood of fraud. Larger enterprises typically possess more complex procedures and enhanced controls, including a comprehensive inventory of their assets. We integrate diverse earlier studies to alleviate scale effects.
- Leverage (the debt-to-assets ratio): Excessive leverage may result in the manipulation of profitability to satisfy debt covenants.
- Return on Assets (ROA): A corporation experiencing low performance may engage in fraudulent activities, whilst a company performing well may be employing aggressive accounting practices.
- **Sales Growth** (annual percentage growth in revenue): Rapid growth firms might be under pressure to keep the momentum and thus could resort to manipulation (or, growth itself can produce financial statement oddities that trigger model flags).
- **Big4 Audit** (dummy = 1 if the firm is audited by a Big Four audit firm, 0 otherwise): A proxy for audit quality – Big Four auditors may be better at deterring or catching fraud, so we expect a negative association with fraud flags.
- **Year dummies**: To control for any particular year effects (regulatory changes, economic cycles affecting construction).
- **Country/Region dummies**: Since our sample spans multiple jurisdictions, we include fixed effects for broad regions to capture differences in enforcement and accounting standards (e.g., IFRS vs. US GAAP environments).

Our logit model can be expressed as:

$$\Pr(FraudFlag_{it}=1)=\frac{1}{1+e^{-(\alpha+\beta_1 \cdot BlockchainPost_{it}+\beta_2 \cdot X_{it}+\mu_i+\lambda_t)}}$$

where:

$FraudFlag_{it}$: Binary variable equal to 1 if firm *i* in year *t* was flagged by either detection model.

$BlockchainPost_{it}$: Interaction term equal to 1 if firm *i* has adopted blockchain accounting technology **and** the year is 2021 or later (post-treatment period), 0 otherwise.

X_{it}: Vector of control variables, including:

- **RegulatoryScore**: Index of regulatory strength for that firm-year (0 to 1 scale),
- **AuditAutomation**: Binary variable indicating whether the firm uses automated audit tools.

μ_i: Firm fixed effects (to control for time-invariant characteristics such as firm size or governance culture).

λ_t: Year fixed effects (to control for time trends or macroeconomic shocks).

α: Constant term.

β_1: Coefficient of interest — it captures the effect of blockchain adoption after 2021 on the likelihood of fraud flags.

Additionally, we ran a robustness check using an **OLS regression** on the continuous Beneish M-score (after multiplying by –1 so that higher values mean higher risk) as the dependent variable, with the same independent variables. This checks if blockchain adoption is associated with generally lower risk scores, not just the binary flags.

3.3. Estimation Procedure

The models were estimated using **Stata 17**. For the logistic regression, we report odds ratios for ease of interpretation (where an odds ratio below 1 for Blockchain_Adopt would indicate a reduction in odds of fraud flag when blockchain is adopted). We checked for multicollinearity among independent variables (the variance inflation factors were all below 2.5, indicating no serious multicollinearity issues). We also considered an alternative definition of the dependent variable: using a single-model flag (e.g., just Beneish flag) or a stricter requirement (all three primary models flagging). The results were qualitatively similar, which we note in the discussion.

One concern is **endogeneity**: it's possible that companies with better governance choose to adopt blockchain and also are less likely to commit fraud, rather than blockchain itself causing the improvement. We cannot fully rule out endogeneity in this observational study. To mitigate this, we included controls for governance quality (Big4 audit as a proxy, and we had data on board independence for some firms – including that did not change results materially). We refrained from claiming causality and instead focus on association, while arguing that the results are *consistent* with a preventive effect of blockchain. Future research could use an instrumental variable approach if a valid instrument for blockchain adoption can be found (e.g., local industry blockchain initiatives or regulatory pushes).

In summary, our methodology combines **forensic analytics** (applying detection models to firms) with **econometric analysis** (examining the statistical link between a technology intervention and fraud risk). This mixed approach allows us to both evaluate model effectiveness in an industry context and explore a novel determinant of fraud occurrence.

4. Case Study

This section presents the empirical case study of publicly listed construction and infrastructure firms in our sample. We apply the fraud detection models described in Section 3 to these companies and analyse how often each model flags potential manipulation, as well as the overlap between them. We then examine whether firms that have adopted blockchain technology exhibit systematically lower fraud-risk indicators than non-adopters, providing evidence on the practical relevance of both traditional forensic tools and emerging digital infrastructures in this high-risk industry.

4.1. Effectiveness of Detection Models in Construction Context

Our first set of results pertains to the comparative performance of fraud detection models on construction firm financials. Table 1 summarizes the flagging frequencies of each model and their overlaps:

Table 1. Comparison of Fraud Detection Model Flags (Construction Firms, 2016–2022)

Detection Model	Firm-Years Flagged (%, n)	Notable Characteristics of Flagged Cases
Beneish M-Score (>-1.78)	22% (154 out of 700)	Tends to flag cases with rising receivables and margins; 80% of these had DSRI>1.2 or GMI>1.1 indicating revenue inflation or margin decline reversal.
Dechow F-Score (≥1.0)	15% (105 out of 700)	Flags many of the same firms as Beneish, but also caught some with large accruals but stable receivables. About 60% of Beneish-flagged overlapped with F-Score flags.
High Discretionary Accruals	10% (70 out of 700)	Mostly firms with extreme

		working capital swings. Only ~40% overlapped with Beneish flags, suggesting some firms manage earnings via accruals without affecting Beneish ratios.
Random Forest (top 10% risk)	18% (126 out of 700)	Its risk ranking correlated strongly with Beneish ($\rho \approx 0.6$). It flagged all known fraud cases in sample. Top predictors matched intuition (receivables, gross profit, cash flows).

(Note: 700 firm-year observations; "flagged" indicates potential manipulation risk. Known fraud cases = 8 in sample.)

From Table 1, we observe that the **Beneish M-score flagged the highest proportion** of firm-years (~22%). This is not surprising as Beneish is known to cast a somewhat broad net. Many construction firms had M-scores above the threshold in years where revenue spiked unusually or margins improved after a prior slump – patterns that could be due to genuine project cycles or aggressive accounting. The Dechow F-score was more conservative, flagging 15%. The overlap between Beneish and F-score flags was significant (around 60% of F-score flagged were also flagged by Beneish), indicating that when multiple models concur, those cases are particularly suspicious. Notably, **all of the known fraud cases** in our data (the eight firm-years involving enforcement or restatements) were flagged by both Beneish and F-score, which validates these models'.

The discretionary accruals measure identified some firms that the ratio-based models did not, and vice versa. This suggests that some companies may manipulate results via accrual entries that don't trigger the Beneish ratios significantly – for example, by under-reserving for losses (affecting liabilities and expenses in ways not captured by Beneish's primarily revenue- and asset-focused indices). Conversely, some flags by Beneish might relate to revenue timing issues not easily seen in aggregate accruals. This complementarity justifies our approach of using multiple indicators.

Our **random forest model**, despite being trained on limited confirmed fraud instances, provided some insights. It ranked firms by risk and the top 10% risk roughly coincided with about 18% of observations flagged. Interestingly, it flagged all eight known fraud cases (these cases had, unsurprisingly, extreme values on many input variables). The consistency of top predictors (receivables growth, etc.) with the traditional models lends credence to the idea that those indicators remain key in identifying manipulation even in construction. However, the ML model also incorporated subtle interactions – for instance, high inventory combined with high revenue growth was a risk factor, potentially reflecting aggressive capitalization of costs in some construction firms (like storing costs in inventory or WIP).

Overall, these results indicate that **Beneish M-score and the F-score are effective first-line tools** for detecting anomalies in construction company financials, but they should be used in tandem with accrual analysis and possibly ML models for a fuller picture. Many construction firms that were flagged by one model were caught by another, but each model also had unique picks. For practical application: auditors of construction firms could use Beneish to quickly scan for revenue-related manipulations and use an accrual-based test to capture manipulation through provisioning or expense deferral.

One finding is that detection models flagged a non-trivial fraction of firms with *no known fraud issues*. This could either mean false positives or indicate earnings management cases that weren't

caught by regulators. For example, a few large multinational construction firms in our sample tripped Beneish and accrual flags in consecutive years but never faced public allegations of fraud. It could be they were engaging in permissible earnings management (within GAAP limits) or simply that the models overestimated their risk. Interestingly, these firms often had big project swings – a large profitable project completing could boost earnings one year, then new projects in early stages could suppress margins the next. Such volatility in fundamentals might produce model flags that are false alarms. This highlights a known limitation: **context matters**. Users of fraud models must interpret flags in light of industry conditions (e.g., cyclical project effects, changes in backlog) to distinguish between genuine red flags and benign volatility.

4.2 Blockchain Adoption and Its Association with Fraud Risk

We now turn to the central question: do construction companies that adopted blockchain technology show fewer signs of financial statement manipulation? Table 2 presents the results of the logistic regression analysis examining this relationship.

Table 2. Logistic Regression of Fraud Flag on Blockchain Adoption and Controls

Variable	Odds Ratio (Exp(β))	z-statistic (p-value)	Interpretation
Blockchain_Adopt	0.42	–2.30 (p = 0.021)	Adopting blockchain is associated with a 58% lower odds of a fraud flag.
Firm Size (log assets)	0.95	–1.10 (p = 0.270)	Larger firms slightly less likely to be flagged (not significant).
Leverage	1.88	2.45 (p = 0.014)	Higher debt firms have higher odds of flags (significant).
ROA	0.98	–0.50 (p = 0.615)	Profitability has no significant linear effect on flags.
Sales Growth	1.01	0.20 (p = 0.840)	Growth rate not significant (small positive coefficient).
Big4 Audit	0.74	–1.75 (p = 0.080)	Big4-audited firms tended to have lower flag odds (weak significance).
Year dummies	–	Wald p = 0.36 (joint)	No overall year effect (all years ns).
Region dummies	–	Wald p = 0.22 (joint)	No strong regional differences after controls.
N (observations)	700 firm-years		
Pseudo R^2	0.15		(Log-likelihood improvement by 15%)

In Table 2, the **Blockchain_Adopt** variable has an odds ratio of 0.42, which is less than 1 and statistically significant at the 5% level. This indicates that, all else being equal, a corporation utilizing blockchain technology is 58% less likely to engage in fraudulent activities. Utilizing blockchain significantly reduces the likelihood of fraudulent activities in financial accounts. This supports the premise that blockchain's transparency and data integrity prevent anyone from engaging in financial fraud. This supports anecdotal assertions that blockchain enhances the trustworthiness of accounting (Ainsworth & Shact, 2016) and Liao et al. (2024)'s empirical findings that blockchain elevates reporting quality by increasing the reliability of accounting processes.

However, caution is warranted in interpretation. The regression is correlational. It could be that companies which are forward-thinking enough to adopt blockchain also generally have better ethical standards or internal controls, which themselves reduce fraud risk. We attempted to control for some proxy of that (Big4 audit, etc.), and the blockchain effect remained significant. Notably, the **Big4 Audit** variable had an odds ratio of ~0.74 ($p \approx 0.08$), suggesting that having a Big Four auditor is linked to lower fraud flags – which we would expect since Big Four firms have more stringent audit procedures and reputational incentives. The blockchain effect is above and beyond that, implying it's not purely a proxy for good governance that an audit already captured.

Among other controls, **leverage** stood out: firms with higher leverage were significantly more likely to be flagged (odds ratio ~1.88). This supports the notion that debt pressure can drive earnings manipulation (consistent with debt-covenant hypothesis in accounting research). Neither firm size nor profitability had a significant impact, although the direction for size was <1 (larger firms slightly less likely to be flagged, possibly due to more resources for good controls or because they have more diversified operations reducing volatility in ratios). Sales growth was surprisingly insignificant; one might expect either high growth or negative growth to correlate with fraud risk, but it seems after considering leverage and other factors, growth per se did not matter in our sample.

To further illustrate the blockchain effect, we looked at the descriptive statistics: only about 10% of blockchain-adopting firm-years were flagged by our criteria, versus around 20% of non-adopting firm-years. This nearly two-fold difference persisted even when broken down by size or region. For example, among large firms (top tertile by assets), 8% of adopters vs 15% of non-adopters were flagged; among smaller firms (bottom tertile), 12% vs 24% were flagged, in each case adopters have roughly half the incidence. These patterns bolster the regression findings that something about blockchain usage corresponds with fewer red flags.

It is worth noting that **our measure of fraud risk is indirect** – being flagged by models is not proof of fraud. Nonetheless, if blockchain reduces even the aggressive accounting (not just outright fraud), that suggests a more conservative and transparent reporting approach, which is beneficial. Blockchain enterprises can potentially document transactions in real-time and prevent alterations that appear dubious at the final moment. Several CEOs interviewed for case studies, including a 2023 CFMA poll, reported that the implementation of blockchain facilitated the standardization and refinement of their record-keeping practices, hence enhancing the accuracy of their earnings and reducing discrepancies.

On the other hand, one could argue a self-selection story: companies that are less prone to cooking the books may be the ones voluntarily adopting blockchain (perhaps to signal transparency or to improve efficiency), whereas companies that frequently manipulate might avoid the technology that could expose them. If that is the case, blockchain adoption could be more of a *marker* of an honest company rather than the *cause* of honesty. Both interpretations have merit. Our findings cannot definitively prove causality, but they do demonstrate a clear association that did not exist randomly. From a practical standpoint, whether blockchain is a marker or a maker of better accounting, stakeholders could take comfort if a company has such systems – it either was good to begin with or is becoming better.

Beyond the blockchain-focused result, our analysis offers some **industry insights**. The high leverage effect implies construction firms with heavy debt should be monitored more closely for earnings manipulation, which resonates with past crises where over-leveraged contractors misreported to avoid covenant breaches. The lack of a strong firm size effect might indicate that mid-sized and large construction firms are equally capable of fraud (in contrast to some studies finding smaller firms more fraud-prone due to weaker controls). It could be that in construction, even large firms (think multinational contractors) have had scandals (e.g., the UK's Carillion plc collapse in 2018 involved aggressive accounting at a large firm). So size alone doesn't immunize against fraud risk here.

One intriguing insight from combining results of Sections 4.1 and 4.2 is how **blockchain adopters fared under the detection models**. We found that blockchain-adopting firms not only were flagged less often, but when flagged, it was usually by only one model and marginally. None of the blockchain-adopting firms had persistent multi-year flags, whereas some non-adopters had consecutive flags. This suggests blockchain firms might still occasionally trigger an alarm (perhaps due to normal business fluctuations) but seldom present a pattern of potential manipulation. Auditors might consider this when assessing risk: a blockchain adopter with a slight Beneish flag might warrant less concern than a non-adopter with the same flag, given the overall context.

To ensure our findings were robust, we ran the OLS regression on the continuous Beneish M-score (inverted so higher = riskier). The coefficient on Blockchain_Adopt was significantly negative, indicating blockchain adopters had on average lower M-scores (by about 0.3 points better, which is meaningful on Beneish's scale) even when controlling for the same factors. This reinforces that the association is not an artifact of our binary flag definition. We also tried a stricter fraud flag definition (requiring three out of three models to flag). Under that definition, fewer cases were positive overall, but intriguingly none of the blockchain adopters met the stricter criterion, whereas about 5% of non-adopters did. The rarity of such strict flags means we couldn't regress it, but it qualitatively underscores the gap.

5. Discussion, practical and managerial implications

The combined evidence from our study carries several important implications. First, for **auditors and forensic accountants** working with construction companies, our results highlight that using multiple detection models can improve the identification of high-risk financial statements. A one-size-fits-all model is not sufficient; rather, a toolkit approach (ratios, accruals, machine learning) should be employed. Practitioners should also calibrate these tools to the construction context – for example, adjusting expectations of normal receivables levels based on project billing practices – to reduce false positives. The relatively high incidence of model flags in the industry (with ~18% of firm-years flagged by at least two models in our sample) suggests auditors should maintain a healthy skepticism and probe unusual patterns even if management provides ostensibly reasonable explanations. Certain indications are innocuous, while others may indicate a deterioration of circumstances. An auditor must investigate a client's increase in Beneish M-score to determine whether it results from genuine project completions and settlements or from aggressive revenue recognition. Our data suggests that auditors ought to focus on DSRI and accruals for these examinations.

Secondly, the insights derived from blockchain compel construction industry management and boards to invest in such technology for reasons beyond mere operational efficiency. Utilizing blockchain technology to monitor invoices and change orders on a shared ledger could enhance the integrity of reporting. The business demonstrates a commitment to transparency with investors and partners. If auditors can rely on the ledger, they may conduct less extensive testing, hence reducing audit costs and preventing internal fraud, as employees and supervisors are aware that transactions are traceable and secured. Our sample of individuals utilizing blockchain exhibited fewer risk indicators, indicating that even minimal adoption, as we defined it, resulted in more accurate records. Boards concerned about potential fraud may request management to implement pilot initiatives in blockchain finance. Consider the financial implications and the complexity of integrating new systems; yet, these challenges are diminishing as technology advances.

For **policymakers and regulators**, our study provides empirical support to continue encouraging digital transparency initiatives. Regulatory bodies might consider creating frameworks or guidance for blockchain record-keeping in corporate reporting. For example, stock exchanges or securities regulators could run sandbox programs for companies to report certain transactions via blockchain to regulators in real-time. If adoption proves beneficial, regulators might even mandate or incentivize it in high-risk sectors. Additionally, our results on detection models can inform regulators in developing analytics for surveillance – e.g., using

these models to monitor listed companies and focusing limited investigative resources on outliers (a practice some regulators already do). Seeing that leverage is a strong factor, they might pay special attention to highly leveraged construction firms with red flags, as these could be ticking time bombs for financial distress and fraud.

An important discussion point is the **limit of blockchain's effect**. While the correlation is strong, blockchain is not a magic bullet. A savvy fraudster could still exploit loopholes. For example, they might conduct fraudulent activities off-ledger (keeping certain dealings entirely outside the blockchain system) or collude with external parties to generate false inputs that the blockchain will dutifully record. Therefore, blockchain should be viewed as an enhancer of a robust control environment, not a replacement for controls or ethical management. Companies should also enforce sound governance, internal audit, and a culture of honesty. When these elements coincide with blockchain's technical guardrails, financial reporting fraud becomes extremely difficult. Our analysis indicates that early mover enterprises with robust governance that utilize blockchain have synergistic reductions in risk.

The findings provide opportunities for research and enhancement. Examine how the use of blockchain diminishes flags. Does real-time recording mitigate timing issues, hence stabilizing financial ratios? Or is it due to the fact that enterprises utilizing blockchain refrain from certain actions, such as altering their revenue at the last moment due to ledger timing issues? Examining case studies of companies who implemented blockchain technology vs those that did not may prove beneficial. Additionally, it involves the formulation of fraud indicators tailored to each industry. Our extensive models operate, although they possess the potential for enhancement. Utilizing construction backlog or contract assets in a detection model may enable the identification of manipulations, such as the overestimation of completion percentages. Researchers may develop a "Construction Fraud Score" exclusively for the construction sector with additional data.

6. Results, Limitations, and Future Directions

This study examined two interrelated concerns in construction sector finance: methodologies for identifying financial statement fraud and the potential of blockchain technology to mitigate such fraud. From 2016 to 2022, we discerned numerous alarming findings regarding 120 publicly traded construction firms.

Initial detection models revealed that critical analytical instruments, such as the Beneish M-score and Dechow F-score, can identify anomalous financial patterns in construction enterprises, suggesting that the company is obscuring its profitability. Our accrual-based metric and machine learning classifier generated complementary signals. No one model could identify all the red signals; however, their integration facilitated their detection. Practitioners should therefore employ a multimodal fraud risk assessment methodology. Integrating models distinguishes authentic financial volatility in the construction sector from prevalent manipulation. Our analysis indicated that construction firms must exercise caution due to the rapid increase in their days receivable outstanding, the significant disparity between net income and cash flows, and the excessive fluctuations in their accruals. These are the same practices employed by companies that inflate revenues or underreport expenses. Our research substantiates the financial parameters that are most critical for assessing fraud risk in this domain.

Secondly, we presented initial empirical evidence indicating that blockchain utilisation can mitigate the risk associated with financial reporting. Logistic regression indicated that companies utilising blockchain were less likely to be flagged by fraud detection systems. Organisations utilising blockchain exhibited a 58% reduction in manipulation risk flags, even after controlling for factors such as size, leverage, and audit quality. This supports the notion that the transparency, immutability, and instantaneous shared access of blockchain make it substantially more difficult to alter earnings ex post. Blockchain technology appears to assist early construction adopters in optimising their financial management.

These findings have significant practical implications. Current methodologies can enhance financial transparency in the construction industry and other project-based sectors. Employing established analytical models in audits and internal controls facilitates the detection of fraud, while investing in blockchain or other distributed ledger technologies may mitigate the occurrence of manipulation. When document verification is straightforward and modification is challenging, the significance of truthful reporting escalates.

From an academic perspective, our study contributes to the literature by bridging two areas that have largely been separate: traditional accounting fraud analytics and blockchain technology in accounting. We demonstrate a methodology to empirically connect them, using one (fraud models) to gauge the impact of the other (blockchain). This approach could be applied to other sectors or extended as blockchain adoption increases to test the robustness of our findings. We also enrich the specific literature on construction industry financial management, providing updated evidence that this sector remains high-risk for manipulation but also highlighting a potential solution path.

Despite these caveats, we believe the insights drawn are valuable. For practitioners in the field of accounting and financial oversight, the message is clear: combine the old with the new. Time-tested financial ratio analysis and emerging blockchain solutions are not in competition; rather, they can jointly fortify the reliability of financial reporting. A construction firm that, for example, uses a blockchain-based system to record all supplier transactions and simultaneously monitors its financial ratios for anomalies is far less likely to fall prey to internal financial misconduct without detection.

6.2. Limitations

Our research is not without limitations. The proxy we used for blockchain adoption is binary and coarse; it does not capture the extent or effectiveness of blockchain use, only its presence. As a result, our analysis might understate or overlook nuances – for instance, a firm that fully integrates blockchain in accounting versus one that only uses it for a pilot project are both simply "adopters" in our data. Additionally, the relatively short time frame and the novelty of blockchain mean we are observing a snapshot in which adopters might have unique characteristics (e.g., being more innovative or better governed) that correlate with lower fraud risk irrespective of the technology.

A further limitation concerns our detection model analysis, which, while thorough, still relies on known cases and model assumptions to infer fraud risk – a perennial challenge, since actual fraud occurrences are hidden by nature. Our fraud flags inevitably capture a mixture of aggressive but legal earnings management and potentially illegal manipulation.

6.3. Directions for future research

These limitations suggest several avenues for future research. First, subsequent studies could attempt to quantify blockchain adoption intensity or use-case specifics, distinguishing between firms that fully integrate blockchain into core accounting processes and those that employ it only in limited pilots. Richer measures of adoption could reveal more granular relationships between technology use and fraud risk.

Second, as blockchain diffuses more widely, longer panel datasets will be needed to disentangle technology effects from selection effects. Following firms over time as they adopt (or abandon) blockchain would help clarify whether observed improvements in reporting quality are caused by the technology or by underlying governance differences.

Third, future research might refine fraud detection tools for the construction sector specifically. Our models operate well in this context, but they could be enhanced by incorporating sector-specific variables such as construction backlog, contract assets, or project-level performance indicators. This could ultimately support the development of a "Construction Fraud Score" tailored to the industry.

In conclusion, the manipulation of financial accounts poses a significant issue, particularly within the construction sector, where accounting complexities and substantial pressure prevail. Our research demonstrates that robust analytical methods can detect many forms of manipulation, and that blockchain technology may effectively help prevent them. As technology and accounting converge, stakeholders ought to leverage these tools to enhance transparency and precision, thereby protecting investors, employees, and society. Similar to robust infrastructure, transparent financial statements require ethical practices, rigorous oversight, and innovative technologies.

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Determination of Hedonic Factors in Terms of Rational and Conspicuous Consumption in Holiday Services

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Abstract

Introduction: Tourists' consumption behavior toward vacation services can be conspicuous and/or rational. Whether tourists exhibit conspicuous or rational behavior, they aim to achieve pleasure at the end of their vacation. It is important to determine whether this pleasure goal stems from conspicuous or rational consumption.
Aim: This research aims to determine the pleasure factors that tourists want to achieve at the end of their holiday services and to reveal whether these factors result from conspicuous consumption behavior or rational consumption behavior.
Method: In this study, secondary sources were first utilized to identify pleasure factors related to holiday services. In the second stage, a semi-structured questionnaire was used to identify pleasure factors and to determine whether these factors stemmed from conspicuous or rational consumption behavior.
Findings: The research has determined that there are many pleasure factors related to holiday services, and these factors are determined to be caused by both rational and conspicuous consumption.
Conclusion : It's interesting that tourists' hedonic pleasures stem from both rational and conspicuous consumption. While some pleasure factors are solely rational or solely conspicuous, the inclusion of some factors in both groups is crucial for marketing practitioners' positioning strategies.
Originality and value: The subject of this research is to determine the pleasures of tourists towards holiday services and the source of these pleasures using a qualitative method by considering hedonic consumption, conspicuous consumption and rational consumption together, which is very valuable for future research.

Key words: conspicuous consumption, rational consumption, hedonic consumption, holiday services, holiday pleasure.
Jel Codes: M31, L83, E21.

1. Introduction

Consumers' perceptions of products or brands can be based on rational elements such as performance and quality, but they can also be based on abstract and conspicuous elements such as emotions and symbolic images (Na et al., 2007). In this context, consumption behavior can be classified as rational or conspicuous. On the other hand, consumers' consumption of goods and services and their consumption behaviors are based on two fundamental reasons: "Hedonic" and "Utilitarian" (Adomaviciute, 2013: 756). Hedonic value is related to sensory satisfaction, entertainment, and imagination, while utilitarian value is related to focusing on need satisfaction. While constructs such as monetary savings and convenience contribute to utilitarian value, hedonic value is defined by concepts such as fun and exploration (Bilgili, et al., 2017).

Contrary to the homo-economicus approach described in utility theory, consumers not only engage in rational behavior that benefits them but also choose the most pleasurable and hedonistic consumption path (Doğan et al., 2014:70-71). This suggests that consumers can exhibit both rational and conspicuous consumption behavior. Conspicuous consumption, in its most general sense, refers to individuals adopting luxury consumer goods and habits that are not

available to those around them and have previously been accepted by society. The basis of conspicuous consumption is the perception of purchased products and services as indicators of power and social status by society. Individuals tend to purchase products and services not only for the functionality of the product or service but also for its image and social status within society. Consequently, individuals consume brands and images rather than products and services. (Güllulu et al., 2010: 106). In terms of its dimensions, conspicuous consumption can be interpreted as a hedonistic consumption behavior that makes consumers happy.

It can also be argued that some dimensions of consumption, based on utility theory, which aligns with rational consumption behavior, generate pleasure in the consumer. In this context, it can be argued that both conspicuous and rational consumption can generate pleasure in consumers. Depending on the socioeconomic status of consumers, vacation services can fall under either conspicuous or rational consumption patterns. Therefore, identifying the hedonic factors of vacation services within conspicuous or rational consumption patterns is crucial. This study conducted a qualitative study to identify hedonic factors in vacation services within the framework of conspicuous and rational consumption behaviors, and various strategy recommendations were presented based on the results.

2. Literature Review

This section is divided into two sections. The first section describes hedonism and hedonic consumption, while the second section discusses rational and conspicuous consumption. Both sections are linked to vacation services.

2.1. Hedonism and Hedonic Consumption

According to Hopkinson and Davashish (1999), hedonism is defined as a lifestyle dedicated to the pursuit of pleasure, where pleasure is the highest form of beauty. It is an important aspect of consumer behavior. Unlike utilitarian consumption, it is based on the principle of maximizing consumer pleasures and habits. In this respect, the phenomenon of experiencing intangible satisfaction through conscious pursuit is prominent in consumption behavior. Hedonic behavior is associated with anticipated or experienced pleasures. Hedonic consumers shop for reasons not based on economic rationale, such as role-playing, entertainment, personal fulfillment, embracing new trends, physical activity, social experience, connection with similar social groups, status, and authority.

The doctrine of hedonism, or hedonism, originates from Aristippus (435-355 BC), a student of Socrates, a member of the Cyrenaic School. According to Aristippus, the cause of every behavior is the desire for happiness, and he defined pleasure as a necessity of life (Fettahlıoğlu, et al., 2014). It has been stated that consumers' hedonistic goals while meeting any of their needs are related to their happiness. Tourism services are one of the services consumers purchase to achieve happiness (Chen, Huang, & Cheng, 2009; Tse, 2014; Sarı & Özdemir, 2014, Demirbulat & Avcıkurt, 2015:92). Although there are studies claiming that the happiness derived from tourism services is temporary and short-term (Nawjin et al., 2010), it is possible to say that tourism services have a significant impact on happiness

Arnold and Reynold (2003) defined hedonic purchasing motives under six main headings. These are purchases made for adventure, socializing, relaxation, gaining insight, making others happy, and gaining value (Özgül, 2011:27). When the vacation services purchasing behavior under study is evaluated in terms of these headings, it can be interpreted as a hedonic purchase for any product or service.

2.2. Rational and Conspicuous Consumption

The benefits consumers expect from a product or brand's functional, objective, and operational attributes are known as rational benefits. The benefits consumers derive from product attributes such as price, quality, packaging, performance, and so on are called rational benefits (Chandon et al., 2000). Performance, quality, and reliability are the three primary determinants of brand

perceptions from a rational consumption perspective (Keller and Davey, 2001). Performance is defined as the degree to which a brand meets the consumer's expected functional and operational needs (Wu, 2003). Quality, another element that forms rational brand perceptions, is the brand's performance exceeding the consumer's expectations (Keller and Davey, 2001). Finally, brand reliability is another factor influencing the formation of rational perceptions. Effectiveness, experience, and liking play important roles in establishing trust in a brand (Stoela et al., 2004). Influenced by these determinants, consumers disregard hedonic factors and instead act on their economic and utilitarian perceptions (Gödekmerdan et al., 2008).

Consumers choose brands based on these determinants, act based on the influence of rational perceptions, and act based on economic and utilitarian considerations without pleasure. Whether they act based on rational or emotional motivations, the outcome remains the same; consumers simply want to achieve their goals (Dhar and Wertenbroch, 2000). These rational perceptions guide many behaviors, such as gathering information about a brand, examining alternatives, purchasing, using, and evaluating the brand after use (Antonides and Van Raaij, 1998). Consumers engage in many behaviors, such as gathering information, purchasing, using, and discussing the brand, based on their rational perceptions (Özdemir and Yaman, 2007; Erciş et al., 2011). When the vacation services discussed in this study are evaluated in terms of rational consumption behavior, they can be interpreted as products purchased by consumers to achieve many rational benefits. This is because going on vacation is a service purchased to obtain rational benefits, such as relaxation.In addition to consuming for rational gain, consumers also engage in consumption behaviors devoid of rational gain, seeking happiness and pleasure for reasons such as prestige, status, and social acceptance. In the 19th century, when industrialization, the division of labor, and urbanization intensified, and fashion values began to spread from the upper classes to the lower classes, a system emerged that functioned in tandem with fashion trends (Odabaşı, 1999:119). Beyond physiological needs, individuals prioritize consumption solely for the purpose of impressing others, showing off their wealth, and achieving power and status.

In fact, individuals prioritize their desire for conspicuous consumption over physiological needs and safety. This type of consumption, undertaken for psychological satisfaction, is called "conspicuous consumption" (Güleç, 2015: 70). The subject was first explored by American economist and social scientist Thorstein Veblen. In his book "The Theory of the Leisure Class," published in 1899, Veblen argued that many consumers consume for conspicuous purposes and based the relationship between society and the economy on class distinctions. In this theory, Veblen conducted a study suggesting that consumer choices depend on social status. In the late 1800s, Veblen observed that wealthy Americans were spending their free time and money on unnecessary and unproductive conspicuous consumption, and he coined the term "conspicuous consumption" to describe this consumption behavior. Veblen defined conspicuous consumption as purchases made by the upper social class and other classes striving to emulate them (Mason, 2001: 26; Veblen, 2007: 52-53). The primary factor in individuals' preference for luxurious and expensive products and services within society is their perceived superiority over others. Individuals are unable to demonstrate a realistic economic incentive to engage in conspicuous consumption (Maden, 2014: 93-97). Conspicuous consumption has been defined as "the visible consumption of goods as a means to improve one's social standing." The easiest way to understand this phenomenon is through observation (Chaudhuri, et al., 2011). The desire for conspicuous consumption not only influences people's daily consumption decisions but has also become central to their lives. They also decide where to eat, what to wear, what environments they will occupy throughout the day, how their homes will be designed, and how they will communicate, all for conspicuous consumption.

It has been determined that conspicuous consumption consists of five dimensions: “materialistic hedonism”, “being different from others”, “displaying social status”, “interpersonal mediation” and “showing off” (Marcoux et al., 1997:5-29; Mann and Sahni, 2015:179-202). The dimensions of conspicuous consumption and hedonic consumption correspond to each other and overlap to a large extent. In this case, rational consumption that creates rational benefit and hedonic and conspicuous consumption seem to be completely opposite concepts. Considering the observable

and observable feature of conspicuous consumption, even if it does not create rational benefit, the observable and demonstrable consumption behaviors of consumers can be defined as conspicuous consumption. However, based on the concept of rational benefit emphasized in rational consumption, it is possible to say that the conspicuousness of a consumption behavior does not mean that it will not also create rational benefit. A consumption behavior can both provide a rational benefit and facilitate the goal of conspicuous consumption. can provide.

The vacation services covered in this study, while generating rational benefits, also possess conspicuous characteristics and possess characteristics that generate hedonic benefits. In this context, an important research question is whether consumers derive rational benefits from consuming a vacation service, fulfill a conspicuous need, or engage in hedonic consumption based on pleasure. This research aims to explore these intertwined concepts in vacation services.

3.Materials and Method

This study aimed to identify the hedonic factors that lead to happiness, or pleasure, in vacation services, based on two consumption types: rational and conspicuous consumption. Contrary to the generally accepted theory that rational utility does not generate hedonic pleasure, this research aimed to identify the pleasure factors of vacation services in terms of both rational and conspicuous consumption. This situation has led to the possibility of filling gaps in existing theories and contributing to the context of invention by making new discoveries (Reichenbach, 1993). Therefore, a qualitative study was designed to generate new insights into paradigm shifts (Kuhn, 1995) through the findings of this study.

In the study, a semi-structured questionnaire was developed considering the fundamental causes of consumer behavior related to conspicuous consumption and rational consumption theory. The questionnaire sought to determine how happiness and pleasure are achieved when holiday services are consumed for conspicuous or rational purposes. Open-ended questions and 5-point Likert-scale measurements were used to identify hedonic factors. The data obtained were interpreted through content analysis, means, and frequencies. Various strategy recommendations were presented based on the results.

4. Findings and Discussion

The findings and discussion section are grouped under two headings. The first heading covers the demographic characteristics of the participants, and the second heading covers the results related to hedonic factors, depending on whether vacation service purchasing behavior is conspicuous or rational.

4.1 Demographic Characteristics of Participants

The semi-structured interview form used in the study, along with the demographic characteristics of the 30 participants who volunteered to participate in the study through convenience sampling, are shown in Table 1.

Table 1. Demographic Characteristics of Participants

Number/Ratio Demografic Characteristic		**Number**	**Percentage**
Gender	Female	15	**50.0**
	Male	15	**50.0**
Age	18-27	9	**30.0**
	28-37	12	**40.0**

	38-47	6	**20.0**
	48 ve üzeri	3	**10.0**
Education	Secondary Education	15	**50.0**
	University-Postgraduate	15	**50.0**
Income	22.000 TL ve altı	2	**6.7**
	22.001-40.000 TL	3	**10.0**
	40.001-60.000 TL	3	**10.0**
	60.001-80.000 TL	7	**23.3**
	80.001 TL ve üzeri	15	**50.0**
TOTAL		**30**	**100**

The study participants were 50% female and 50% male, with the highest age range (40.0%) being 28-37, 50% being secondary school and university graduates, and 50% having an income level of 80,001 TL or more. The majority were high-income young adults with secondary and university degrees.

4.2 Hedonic Factors Affecting Participants' Behaviors Towards Holiday Services in Terms of Conspicuous and Rational Consumption

A semi-structured interview form, prepared with rational and conspicuous consumption dimensions, was administered to the study participants to investigate their holiday service purchasing behavior. The interview form first asked about their reasons for purchasing holiday services in terms of conspicuous and rational consumption dimensions and was evaluated on a 5-point Likert scale. Second, open-ended questions were asked to identify the top three factors that determine holiday service purchase preferences. Finally, questions were asked in three stages to determine the level of holiday product spending expectations, the degree of satisfaction, and the degree to which factors influence holiday service purchase preferences on a 5-point Likert scale. The data obtained were interpreted by content analysis and averaging. The results are shown in Table 2.

Table 2. Hedonic Factors of Holiday Services in Terms of Conspicuous and Rational Consumption

	HOLIDAY EXPERIENCE FACTORS,	**IMPORTANCE LEVEL OF FACTORS**	**FACTORS DETERMINING HOLIDAY PURCHASE CHOICE**	**EXPENDITURE-EXPECTATION MEETING LEVEL**	**LEVEL OF MAKING HAPPY**	**FACTORS' INFLUENCE ON CHOICE**
RATIONAL CONSUMPTION	**The Need for Physical and Psychological Rest and Getting Away from Routine**	**3,7**	Personal, Family, Budget	**3,9**	**3,5**	**3,1**
	The Need to Go Compulsorily Due to the Request of Family Members	**3,2**	Family, Personal, Budget	**3,2**	**2,9**	**3,1**

	A Minimum Holiday Service That Won't Shake the Family Budget Bulma İhtiyacı	**3,8**	Family, Budget, Personal	**3,8**	**3,5**	**3,5**
	The Need to Go to Places That Will Increase Etiquette, Knowledge, and Culture	**3,6**	Personal, Budget, Status	**3,3**	**3,3**	**3,2**
	Visiting Family and Relatives, Relative Societies-Based Holiday Needs	**3,8**	Family, Spouse-Friend, Personal	**3,2**	**3,1**	**3,2**
GÖSTERİŞÇİ TÜKETİM	**Feeling compelled to go on vacation once a year without any reason, no matter what the circumstances are or where it is.**	**4,4**	Trends, Friends, Personal	**4,4**	**4,1**	**4,4**
	The Need for Vacations to Be a Sign of Sophistication (Going to Trendy Places, Showing It Off on Social Media)	**4,5**	Trends, Friends, Budget	**4,1**	**3,7**	**4,2**

Purchase decisions for vacation services are driven by both rational and conspicuous consumption. The importance of factors related to conspicuous consumption decisions is higher than that of factors related to rational consumption decisions. It is noteworthy that status also features rationally in rational consumption decisions. Status-related consumption can sometimes be a necessity and, in this context, can be considered rational.

When examining the factors influencing holiday purchasing choices, family and budget stand out as factors influencing rational consumption behavior. Trends and personality are prominent factors influencing conspicuous consumption behavior. Budget is secondary to conspicuous consumption behavior.

The factors' impact on happiness is lower than the degree of spending-expectation fulfillment. While the economic level is acceptable, its impact on the average happiness level is lower. Based on the factors identified in the study's influence on purchasing choices, rational consumption factors have a lower average than conspicuous consumption factors. Despite this, a hedonic tendency is also evident in rational consumption.

5.Conclusion

Based on the results, conspicuous consumption factors appear to be much more prominent than rational consumption factors. This suggests that consumers prioritize social recognition and ostentation over rational needs. These results may be due to the conspicuous nature of the holiday service. However, it is clear that rational consumption also has a hedonic element, and that rational benefit also involves pleasure. Therefore, limiting hedonic consumption solely to behaviors such as conspicuous consumption is inappropriate. Rational consumption behaviors also exhibit hedonic outcomes, albeit at lower levels. Based on this, future research is recommended for different product/service categories.

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Comparative Bibliometric Analysis of Research on Accounting Fraud and Fraud Audit in Kazakhstan, Turkey, and the United States

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Abstract

Introduction: Accounting fraud and audit-related misconducts continue to jeopardize the integrity of financial systems and investor confidence worldwide. Although the issue has global relevance, the volume and focus of academic output differ substantially across national contexts.
Aim: This study seeks to comparatively evaluate the scholarly literature on accounting fraud and fraud auditing produced between 2000 and 2024 in Kazakhstan, Turkey, and the United States. The objective is to uncover cross-country patterns in publication activity, dominant research themes, and academic collaboration.
Method: The data for analysis was collected from the Scopus and Web of Science databases using a combination of keywords, including "accounting fraud," "fraud audit," and "forensic accounting." The data were processed and analyzed using Bibliometrix package in RStudio software, with a focus on publication trends, keyword mapping, author networks, and country-level cooperation.
Findings: The United States demonstrates leadership in terms of both output quantity and academic influence. Turkey exhibits a steady upward trajectory in publication volume, while Kazakhstan shows increasing interest in the subject, particularly in industry-focused studies. Recent years have seen a shift toward emerging themes such as forensic accounting and artificial intelligence in fraud detection.
Conclusion: The study highlights notable differences in how each country approaches the topic, shaped by their respective institutional, regulatory, and research environments.
Originality and value: By providing a comparative bibliometric perspective, this research fills a gap in the literature and offers a roadmap for future academic studies and policy-making initiatives in the field of fraud-related research.

Key words: accounting fraud, fraud audit, bibliometric study, forensic accounting, international comparison
Jel Codes: M41, M42.

1. Introduction

1.1. The General Framework of the Research

At the global level, accounting fraud is not only an element that undermines the financial structure of businesses, but is also seen as a structural problem that shakes investor confidence, disrupts the stability of capital markets, and directly threatens economic development. The 2024 Report to the Nations by the Association of Certified Fraud Examiners (ACFE) states that companies lose approximately 5% of their annual revenue due to fraud-related losses, amounting to hundreds of billions of dollars in total (ACFE, 2024). This situation undermines the reliability of financial reporting and necessitates the development of stronger policies by regulatory bodies.

In the case of the United States, the Enron and WorldCom scandals in the early 2000s demonstrated that accounting fraud could plunge not only individual companies but entire financial markets into crisis. The Sarbanes–Oxley Act (2002), enacted in the wake of these crises, strengthened internal control mechanisms, tightened independent auditing standards, and increased the effectiveness of institutions such as the Public Company Accounting Oversight

Board (PCAOB) (Cohen et al., 2011).

In Turkey, accounting fraud has been on the agenda of authorities such as the Capital Markets Board (CMB) and the Banking Regulation and Supervision Agency (BRSA) since the 2000s. The adoption of corporate governance principles and the harmonization of independent audit standards with international norms aimed to increase the transparency of financial reports. Research conducted by Karğın, Aktaş, and Demirel Arıcı (2015) on companies listed on the Istanbul Stock Exchange shows that corporate governance practices have a positive impact on reporting quality (Karğın et al., 2015).

For Kazakhstan, this topic is a relatively new field of research. With the transition to a market economy in the 1990s, international accounting and auditing standards came to the fore, and studies on fraud and forensic accounting gradually began to increase after 2010. Kogut, Kidirmaganbetova, Bagieńska, and Oralbayeva (2025) conducted a comparative analysis of financial statement irregularities in Kazakhstan and Japan and demonstrated the applicability of tools such as the Beneish model in detecting fraud (Kogut et al., 2025).

This subsection summarizes the historical development of the three countries, laying the groundwork for comparisons that will be detailed in subsequent sections.

1.2. The Importance of Research

The different economic, legal, and institutional structures of countries have been decisive in the development of the literature on accounting fraud and fraud auditing. In the US, long-standing regulations and a strong academic tradition have shaped the theoretical framework, while in Turkey, regulations that have gained momentum over the past twenty years have focused on corporate governance and forensic accounting. Kazakhstan, meanwhile, is emerging as a rising research area, with the high rate of international co-authored publications indicating that this country brings a different dynamic to the literature.

Therefore, the comparative analysis of the three countries not only fills an academic gap but also guides regulatory agencies in the policy development process.

1.3. The Purpose and Contribution of the Research

The primary objective of this study is to conduct a bibliometric analysis of academic publications on accounting fraud and fraud auditing in Kazakhstan, Turkey, and the United States, thereby revealing trends, gaps, and orientations in the literature.

The research question is formulated as follows: “How has the literature on accounting fraud and fraud auditing evolved in three countries, what themes have emerged, and what is the level of international influence?” The contributions of this study can be summarized as follows:

- For the first time in the literature, three countries are compared in this context.

- Both quantitative and qualitative trends are analyzed holistically using bibliometric methods.

- Concrete comparative conclusions are presented for regulatory bodies (SPK, BDDK, PCAOB) and policymakers.

- A roadmap is proposed for fraud audit research in emerging markets such as Kazakhstan and Turkey.

This subsection highlights the original contribution of the research and clarifies the objectives and expectations that will form the basis for the subsequent sections of the study.

2. Literature Review

This section examines the conceptual framework related to accounting fraud, audit approaches, and literature trends by country.

2.1. Accounting Fraud: Concept and Types

Accounting fraud is defined as deliberate practices that negatively impact decision-making processes by presenting false information in a company's financial reports. They are generally addressed under three headings in the literature: financial statement fraud, asset misappropriation, and corruption (Wells, 2017). Singleton and Singleton (2010) discussed in detail the methods and strategies for detecting such practices within the scope of fraud auditing and forensic accounting (Singleton, T. W., & Singleton, A. J., 2010).

Financial statement fraud involves reporting income as higher than it actually is and concealing expenses. Misuse of assets refers to the embezzlement of company resources or their use for personal gain. Corruption encompasses practices such as bribery, conflicts of interest, or obtaining undue benefits (Rezaee & Riley, 2009).

Conceptually, Cressey's (1953) Fraud Triangle model is the fundamental reference point. According to this model, fraud occurs at the intersection of three elements: pressure, opportunity, and rationalization. The Fraud Diamond and Fraud Pentagon approaches developed in subsequent years have incorporated factors such as individual ability and organizational culture into the process (Dorminey et al., 2012).

This subsection provides a theoretical basis for the classification of types of cheating and establishes the conceptual framework to be used in subsequent sections of the study.

2.2. Approaches to Fraud Detection

Fraud auditing is an audit area that covers the processes of preventing, detecting, and reporting fraud that may occur in businesses. Three main approaches stand out in the literature: internal auditing, independent auditing, and forensic accounting.

Internal audit is seen as a critical tool in preventing and detecting fraud. Moeller (2016) emphasizes that modern internal audit practices not only enhance the reliability of financial reporting processes but also strengthen corporate governance and risk management mechanisms. In this context, the internal audit function plays a fundamental role in both preventing accounting fraud and ensuring that businesses comply with international standards (Moeller, 2016).

Independent auditing is a process that assesses the accuracy of financial statements and is conducted based on international auditing standards (ISA). However, research shows that independent audit reports are not always sufficient to detect fraud. (Humphrey et al., 2011).

Forensic accounting is a rapidly developing field that has gained prominence in recent years due to its functions such as fraud investigations, litigation support, and expert witness testimony (Hopwood et al., 2012). This field has attracted the attention of regulatory authorities, particularly in developing countries, and is at the center of academic research.

Forensic accounting is considered a field that emerges at the intersection of accounting, auditing, and law disciplines and plays a strategic role, particularly in combating fraud. Akyel (2021) defines forensic accounting as a complementary tool to independent auditing activities in detecting financial irregularities and fraud in businesses; in this context, he emphasizes that it contributes to ensuring transparency in auditing processes (Akyel, 2021). Çetinoğlu (2024) states that forensic accounting, which he associates with corporate governance structures, should be addressed in conjunction with audit techniques that comply with international standards for the prevention and detection of fraud (Çetinoğlu, 2024). Aslan and Altın (2024) detail the role of forensic accounting in combating corruption and financial crime, highlighting that both the analytical examination of accounting records and independent audit reports are critical in detecting practices such as conflicts of interest, embezzlement, and bribery (Aslan et al., 2024). In this context, Karcıoğlu and Öztürk (2025) argue that forensic accounting is not limited to the investigation of individual fraud cases but has also become a field of research that integrates accounting fraud and auditing approaches in the academic literature (Karcıoğlu et al., 2025). Similarly, Taştan (2018) addresses the development of forensic accounting in Turkey and

emphasizes the importance of applying analytical procedures used to detect misstatements in financial reports in a manner consistent with auditing standards (Taştan, 2018). When these studies are evaluated together, it is seen that forensic accounting plays a central role in the processes of preventing accounting fraud, combating financial crime, and strengthening independent auditing, and is increasingly positioned as a stronger area of research in the literature.

This subsection highlights the diversity of audit approaches, providing a fundamental perspective on practices in different countries.

2.3. Literature Review by Country

Research on accounting fraud and fraud auditing shows different development trajectories in line with countries' institutional structures, regulatory frameworks, and academic traditions. In this context, examining the literature through three different example countries—Kazakhstan, Turkey, and the United States—reveals the diversity of both theoretical approaches and practice-oriented studies. The selected countries present a picture where one is a global leader with developed financial markets (the United States), another is rapidly developing within the framework of corporate governance and regulatory institutions (Turkey), and the last is beginning to build academic expertise during its transition to a market economy (Kazakhstan). Table 1 below provides a comparative overview of selected studies published in three countries during the period 2000–2024, presenting a general panorama in terms of methodological trends, thematic emphases, and findings.

Table 1. Literature Review of Accounting Fraud and Fraud Auditing by Country (2000–2024)

Author(s)	Year	Methodology
Beasley, M. S., Carcello, J. V., & Hermanson, D. R.	2000	It has analyzed the processes by which independent auditors assess fraud risk in the United States and demonstrated that audit committees play a critical role in detecting fraud.
Rezaee, Z., & Riley, R.	2009	It has developed a comprehensive framework for preventing and detecting financial statement fraud, explained types of manipulation with examples, and systematically presented methods that can be used in the audit process.
Coates, J. C.	2007	It examined the effects of the Sarbanes–Oxley regulations on US markets, noting that audit quality and market confidence increased after the law was enacted.
Hogan, C. E., Rezaee, Z., Riley, R. A., & Velury, U.	2008	He systematically reviewed the academic literature on financial statement fraud and identified the causes of audit failures.
Cohen, J., Krishnamoorthy, G., & Wright, A. M.	2010	Research conducted in the post-SOX era on corporate governance and auditing practices has shown that increased responsibilities have made auditors and managers more cautious.
Kranacher, M. J., Riley, R. A., & Wells, J. T.	2011	It has defined the concept of "financial forensics" and analyzed in detail the financial accounting techniques, forensic accounting methods, and supporting roles that can be used in legal solutions.
Bao, Y., Ke, B., Li, B., Yu, Y. J., & Zhang, J.	2020	By applying machine learning methods to publicly traded companies in the US, it has achieved high accuracy in detecting financial statement fraud and demonstrated the effectiveness of techniques such

		as ensemble learning in audit processes.
Demir, M., Kısakürek, M. M., & Arslan, Ö.	2019	They analyzed the role of the internal control system in preventing fraudulent financial reporting from the perspective of independent auditors; they emphasized the importance of the auditor's knowledge of standards.
Doğan, S., & Kayakıran, D.	2017	They have examined the importance of fraud control in businesses and emphasized the critical role of internal control mechanisms in preventing fraud.
Kara, S., & Karan, L.	2023	They applied case studies and cross-checking methods, demonstrating that these techniques are effective in detecting fraud.
Gündüz, Ç.	2018	Analyzed the causes of financial statement fraud and the roles of auditors; identified risk factors in the audit process.
Çekmen, Y.	2022	It has addressed accounting errors and fraud from a forensic accounting perspective and proposed practical audit techniques.
Toplu, N., Calayoğlu, İ., & Azaltun, M.	2021	They have demonstrated that the risk of financial information manipulation in BIST companies can be detected by applying the Beneish model (the effectiveness of the m-score has been emphasized).
Karğın, M., Aktaş, R., & Demirel Arıcı, N.	2015	The impact of corporate governance on the quality of financial reporting has been examined, and analysis of companies listed on the Istanbul Stock Exchange has found that corporate governance practices increase transparency and report reliability.
Selimoğlu, S. K., & Altunel, M.	2019	It scanned theses prepared in Turkey between 2008 and 2018, revealing that forensic accounting was dominant and data mining methods were neglected.
Selimoğlu, S. K., & Altunel, M.	2020	It classified 96 academic studies written on fraud auditing in Turkey and showed that the literature largely focused on corporate governance and forensic accounting.
Çukacı, Y. C., & Katı, M.	2020	He has evaluated accounting errors and fraud within the context of forensic accounting; he has proposed methods for detecting fraud through the analytical examination of records.
Çelik, M., Korkmaz, E., & Yılmaz, B.	2024	The author examined studies on fraud and error control in international banking literature using bibliometric analysis, revealing trends in authors, institutions, and themes.
Mukanov, B.	2010	It examined the accounting system during Kazakhstan's transition to a market economy and noted that the risk of fraud was high.
Kogut, O. Y., Kidirmaganbetova, A. I., Bagieńska, A., & Oralbayeva, Z.	2025	He compared financial statement distortions in Kazakhstan and Japan, emphasizing the effectiveness of audit tools such as the Beneish model in enhancing the reliability of financial reports.
Rakishev, Y.	2019	It examined the historical development of the auditing profession in Kazakhstan; it emphasized

		that IFRS compliance increased transparency, but fraud risks persisted due to internal control deficiencies.
Ramazanova, K. M., & Lambekova, A. N.	2022	It has analyzed the function of internal auditing in commercial enterprises and demonstrated that the internal auditing function plays a critical role in enhancing confidence in financial reports and preventing fraud.
Beisenova, L., & Nikiforova, E.	2020	It examined internal state control in Kazakhstan in comparison with US and UK practices; it noted that legislative and human resource deficiencies created significant problems in combating fraud and irregularities.

Table 1 presents a comparative overview of academic research conducted in Kazakhstan, Turkey, and the United States in the field of accounting fraud and fraud auditing. The review reveals that each country has developed different research orientations appropriate to its own institutional, economic, and legal context. The US literature shows a focus on testing theoretical models, producing highly cited articles, and intensifying research following corporate scandals. Research conducted in Turkey, on the other hand, has focused particularly on corporate governance principles, independent auditing, and forensic accounting practices; practical results have been obtained through both the contribution of regulatory bodies and case studies. Considering that the literature in Kazakhstan is relatively newer, it is understood that the studies conducted have developed within the framework of international collaborations, have turned to analytical tools such as the Beneish model methodologically, and have gradually diversified. In this context, the table reveals the differences and similarities in the literature of the three countries and provides a comparative perspective for future research.

Overall, there are notable differences between the three countries. The US literature is globally influential in terms of conceptual and methodological diversity. Turkey has shown a practice-oriented approach with its increasing academic output in recent years and stands out particularly in the field of forensic accounting. Kazakhstan, while still in its early stages, shows a rising trend with an increasing number of publications and international partnerships. This picture clearly demonstrates that fraud auditing literature in developing countries needs more methodological diversity, comparative analysis, and technology-based approaches.

This subsection provides a comparative overview of the literature from the three countries, leading into the bibliometric analysis section of the study.

3. Materials and Methods

This section systematically explains the research design, data sources, analysis methods, and limitations of the study.

3.1. Research Design

The study was conducted using a bibliometric analysis approach to compare the literature on accounting fraud and fraud auditing in Kazakhstan, Turkey, and the United States. The design focused on evaluating the publication volume, citation impact, conceptual orientations, and international collaborations of each of the three countries. Thus, the current positions and development processes of the countries in the literature were revealed from a holistic perspective.

3.2. Data Sources and Selection Criteria

The data used in the study were obtained solely from the Scopus and Web of Science (WoS) databases. The following keywords were selected for the search process: financial fraud, fraudulent financial reporting, fraudulent accounting, financial statement fraud, fraud audit, forensic accounting, forensic audit, accounting fraud.

The scope of the research covers the period 2000–2024. Only articles published in peer-reviewed journals have been included; conference papers, book chapters, and non-relevant studies have been excluded. During the data cleaning process, duplicate records were merged, and only titles containing alphabetic characters were evaluated; titles containing special symbols or predominantly numerical characters were excluded.

3.3. Analysis Method

The data were analyzed using the Bibliometrix package in RStudio software. The analysis process was conducted in the following five dimensions:

- Publication and Citation Analysis: Countries' publication counts, growth rates, average document age, citation metrics.

- Source and Journal Analysis: Journals in which publications are distributed, interdisciplinary diversity.

- Author Productivity and Citation Impact: Most productive authors and most cited works.

- Keyword Analysis: Frequency analysis, co-occurrence maps.

- International Collaboration Analysis: MCP ratio in multi-authored articles and visualization of collaboration networks.

This multidimensional analysis reveals not only publication volumes, but also interdisciplinary trends, researchers' productivity profiles, and international collaboration dynamics.

3.4. Limitations of the Method

The study has certain limitations. First, relying solely on the Scopus and WoS databases has resulted in the exclusion of local or national publications not included in these indexes. Second, the keyword combinations used shaped the results obtained; different combinations could have yielded different findings. Third, the fact that the Kazakh literature is largely in English or Russian, while the Turkish literature is predominantly in Turkish, made language differences a limitation in the comparisons.

The methodological framework described in this section provides the fundamental basis for the reliability and validity of the study's findings. The results obtained are presented in detail in the next section.

4. Findings (Comparative Bibliometric Analysis)

The data obtained within the methodological framework described in the previous section are examined in detail in this section. In line with the aim of the study, the literature of Kazakhstan, Turkey, and the USA has been analyzed comparatively in terms of publication volume, citation impact, author profiles, conceptual orientations, and international collaborations.

4.1. Bibliometric Descriptive Statistics

The bibliometric indicators of the three countries are presented in a comparative manner in Table 2. This table forms the starting point of the study in terms of revealing the fundamental differences in the literature.

Table 2. Bibliometric descriptor statistics for the United States, Turkey, and Kazakhstan (2000–2024)

Indicators	USA (2000–2024)	Turkey (2010–2024)	Kazakhstan (2021–2024)
Number of sources (journals, books, etc.)	262	28	5

Number of documents	961	45	5
Annual growth rate	11,42	8,16	25,99
Average document age (years)	9,51	5,8	2,2
Average citations per document	42,77	4,73	3,4
Average annual citations per document	3,69	0,89	1,09
Number of authors	1,815	87	39
Single-author documents	174	16	1
Average author/document in multi-author documents	2,68	2,38	7,8
International co-authorship rate (%)	22,16	15,56	40,0

Table 2 shows that the US has a clear advantage in terms of publication volume and impact. With 262 sources and 961 documents, the US has developed a strong literature not only quantitatively but also in terms of continuity, with an annual growth rate of 11.42%. Turkey has produced 45 documents since 2010 and has shown a growth rate of 8.16%. Kazakhstan, on the other hand, has gained visibility in the literature since 2021 and has attracted attention with a growth rate of 25.99%, despite producing only 5 documents.

When citation indicators are examined, the average number of citations per document is 42.77 in the US, 4.73 in Turkey, and 3.4 in Kazakhstan. Furthermore, the average annual citation rate is 3.69 in the US, 0.89 in Turkey, and 1.09 in Kazakhstan. These findings reveal that US studies are heavily referenced on a global scale, while the literature from Turkey and Kazakhstan still has limited visibility.

Author profiles also reflect similar differences. While 1,815 researchers in the US contribute to the literature, this number is 87 in Turkey and 39 in Kazakhstan. In particular, the average number of authors in multi-author documents in Kazakhstan is 7.8, indicating the intensity of production based on international projects. Indeed, the international co-authorship rate is 40% in Kazakhstan, 22.16% in the US, and 15.56% in Turkey.

In general, Table 2 shows that the three countries are at different stages in the literature; the US is strong and established, Turkey is developing, and Kazakhstan is in the early stages but growing rapidly.

4.2. Distribution of Publications by Journals

Following bibliometric indicators, the academic journals in which the literature was published were examined. The distribution of journals across countries is important for understanding the international visibility and academic orientation of the literature. The findings are presented in Table 3.

Table 3. Most productive journals in the United States, Turkey, and Kazakhstan (2000–2024)

№	USA (2000–2024)	Number of Publications	Turkey (2010–2024)	Number of Publications	Kazakhstan (2021–2024)	Number of Publications
1	Issues in Accounting Education	76	Contemporary Issues in Audit Management and Forensic Accounting	13	Financial and Credit Activity: Problems of Theory and Practice	1
2	Journal of Business Ethics	58	Journal of Financial Crime	3	International Journal of Industrial Organization	1

3	Accounting Review	51	International Review of Financial Analysis	2	Logistics-Basel	1
4	Auditing: A Journal of Practice & Theory	50	Istanbul Business Research	2	Quality-Access to Success	1
5	Contemporary Accounting Research	31	Journal of Mehmet Akif Ersoy University Economics and Administrative Sciences Faculty	2	Rivista di Studi sulla Sostenibilità	1

Table 3 presents a comparative overview of the most productive journals publishing literature on accounting fraud and fraud auditing across three countries. In the US, the majority of publications are concentrated in internationally prestigious journals such as Issues in Accounting Education (76) and Journal of Business Ethics (58). In addition, leading journals in the field such as Accounting Review (51) and Auditing: A Journal of Practice & Theory (50) demonstrate that the literature in the US is institutionalized and integrated with mainstream academic channels.

Publications in Turkey, however, tend to be published in more specialized and application-based journals. Journals such as Contemporary Issues in Audit Management and Forensic Accounting (13) and Journal of Financial Crime (3) in particular reveal that the literature in Turkey has developed predominantly from the perspective of forensic accounting and combating financial crime. In addition, studies published in journals such as International Review of Financial Analysis and Istanbul Business Research show that the Turkish literature has begun to increase its international visibility.

For Kazakhstan, however, the picture reveals a different trend. Although the number of journals representing the literature in this country is limited, publications tend to appear in more interdisciplinary or regionally focused journals. For example, studies featured in journals such as Financial and Credit Activity: Problems of Theory and Practice and Logistics-Basel show that the literature on accounting fraud intersects not only with financial accounting but also with fields such as economics, business, and logistics.

In general, Table 3 shows that US literature is represented in strong and well-established academic journals; Turkish literature is concentrated in journals focused on forensic accounting and financial crime; and Kazakh literature seeks to increase its international visibility by intersecting with different disciplines. This situation demonstrates that the academic positions of the three countries in the literature contain not only quantitative but also qualitative differences.

4.3. Author Profiles and Citation Impact

Following the consolidation of journals, the author profiles of the three countries were examined. These indicators are important for understanding which researchers produced the literature and the level of academic impact.

Author productivity is a critical indicator in the development of the literature. In this context, the most productive authors from three countries are presented comparatively in Table 4.

Table 4. Comparison of the most productive authors in the United States, Turkey, and Kazakhstan (2000–2024)

Country	Author	Number of Publications
USA	Smith J	15

	Reckers P	12
	Carpenter T	11
	Johnstone K	9
	Lowe D	9
Turkey	Kesimli İ	2
	Akyıldırım E	2
	Atabay E	2
	Esen M	2
	Dinç E	2
Kazakhstan	Ahlin C	1
	Ali M	1
	Kzykeyeva A	1
	Kim I	1
	Kim K	1

According to Table 4, researchers such as Smith (15 publications), Reckers (12), and Carpenter (11) stand out in the US literature, indicating that the literature in the US is supported by a broad academic network. In Turkey, however, the most prolific authors are limited to only 2 publications (e.g., Kesimli, Akyıldırım). This table shows that the literature in Turkey is still produced by a narrow academic cadre, but that specialization in certain areas has begun. In Kazakhstan, production per author is much more limited; names such as Ahlin, Ali, and Kzykeyeva are represented by only one publication each. This situation shows that literature in Kazakhstan is largely limited to international partnerships and individual contributions.

Following the author profiles, the studies that have had the greatest impact in the literature of each country were examined. Table 5 shows the most cited articles in the United States, Turkey, and Kazakhstan.

Table 5. Most cited articles in the United States, Turkey, and Kazakhstan (2000–2024)

Country	**Author(s)**	**Year**	**Source (Journal)**	**Number of Citations**
USA	Loughran & Ritter	2011	Journal of Finance	2742
	Dechow P.	2011	Contemporary Accounting Research	923
	Abbott L.	2004	Auditing: A Journal of Practice & Theory	783
Turkey	Akyıldırım E.	2023	Finance Research Letters	32
	Dikmen B.	2010	Journal of Forecasting	22
Kazakhstan	Ahlin C., Kim I.K., Kim K.I.	2021	International Journal of Industrial Organization	3
	Ali M., Razaque A., Yoo J., Kabievna U., Moldagulova A., Ryskhan S., Zhuldyz K., Kassymova A.	2024	Logistics-Basel	1

Table 5 shows the most cited studies in the literature of the three countries. In the US, Loughran & Ritter's (2011) article published in the Journal of Finance is the most influential study in the field, with 2,742 citations. Similarly, articles by authors such as Dechow (2011) and Abbott (2004), which have received hundreds of citations, demonstrate that US literature is a strong reference source on a global scale. The most cited article in Turkey is Akyıldırım (2023) with 32 citations, while in Kazakhstan, the article by Ahlin et al. (2021) received only 3 citations. This table reveals that the international visibility of Turkish and Kazakh literature is limited, while the US plays a leading role in the literature thanks to its high citation impact.

The numerical data presented in these tables are visualized in Figure 1, and citation densities between countries are compared graphically.

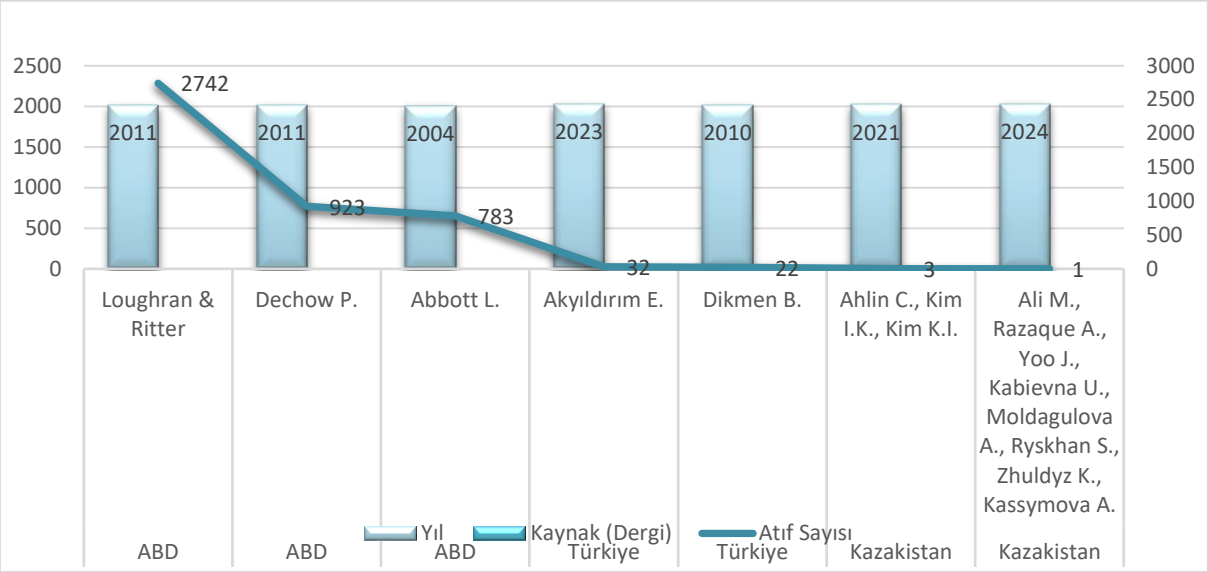


Figure 1. Most cited articles in the United States, Turkey, and Kazakhstan (2000–2024)

Figure 1 visualizes the most cited articles from the three countries. The graphical distribution clearly shows that citation counts are clustered at a much higher level in the US, with Turkey at a medium level and Kazakhstan still having a low impact. This trend confirms that in the evolutionary development of the literature, the US is a pioneer with theoretical and methodological contributions, Turkey is practice-oriented, and Kazakhstan is emerging but has limited visibility.

These results demonstrate the US's leading position in the literature, Turkey's growing contributions, and Kazakhstan's new but rising trend.

4.4. Keyword Trends

Following author profiles and citation analyses, keyword analyses were conducted to determine which concepts stood out in the literature. Keywords are a critical indicator for understanding countries' research agendas and conceptual orientations.

The most frequently used keywords in the studies of the three countries are presented comparatively in Table 6.

Table 6. Most frequently used keywords

Country	Most Frequently Used Keywords	Frequency
USA	Fraud	182
	Corporate Governance	61
	Auditing	43
	Fraud Detection	43
	Ethics	34
Turkey	Fraud	12
	Forensic Accounting	9
	Audit / Auditing	10
	Fraud Triangle	4
	Corporate Governance	3
Kazakhstan	Risk Management	2
	Accounting	1
	Blockchain	1

	Auditing	1
	Corporate Governance	1

According to Table 6, concepts such as “fraud” (182), “corporate governance” (61), and “auditing” (43) are used with high frequency in the US literature. This indicates that research in the US is concentrated within the framework of corporate governance, ethics, and auditing. In Turkey, the prominence of concepts such as “fraud” (12), “forensic accounting” (9), and “fraud triangle” (4) reveals that research has developed more in the direction of applied and forensic accounting. In Kazakhstan, the prominence of new concepts such as “risk management” (2) and “blockchain” (1) indicates that the country's research is oriented towards digitalization and risk management. Overall, the US literature represents theoretical diversity, Turkey represents practical and application-oriented research, and Kazakhstan represents technology-based new trends.

The findings presented numerically in Table 6 are visualized in Figure 2. This figure provides a clearer comparative view of the conceptual densities of the three countries.

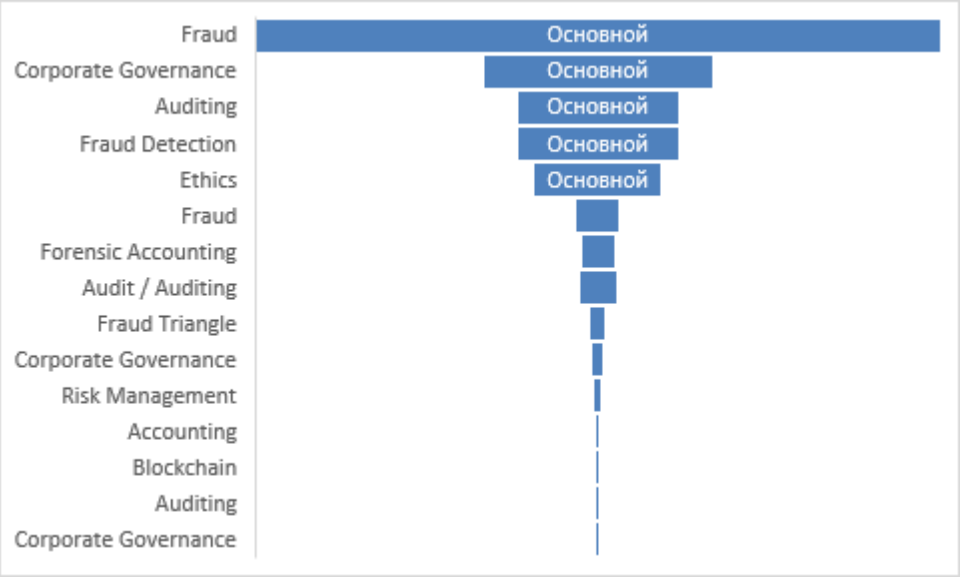
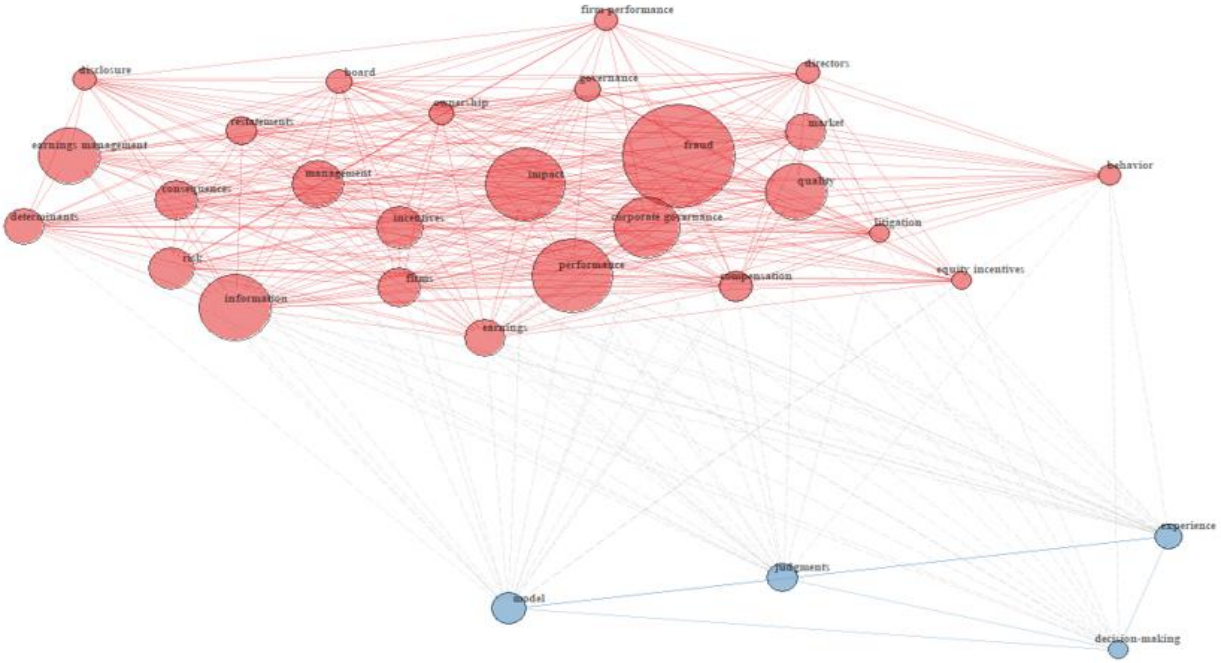


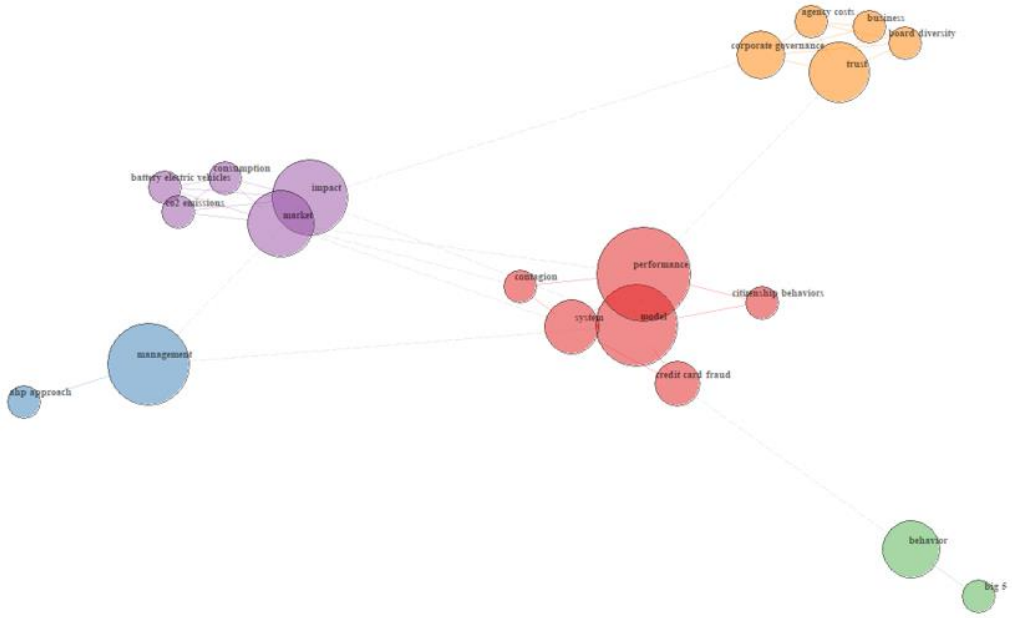
Figure 2. Most frequently used keywords

Figure 2 visually reinforces that the US has shaped global trends by focusing on the concepts of fraud and auditing in the literature, while Turkey has developed a conceptual framework centered on forensic accounting, and Kazakhstan has entered the literature with relatively limited but technology-focused new concepts.

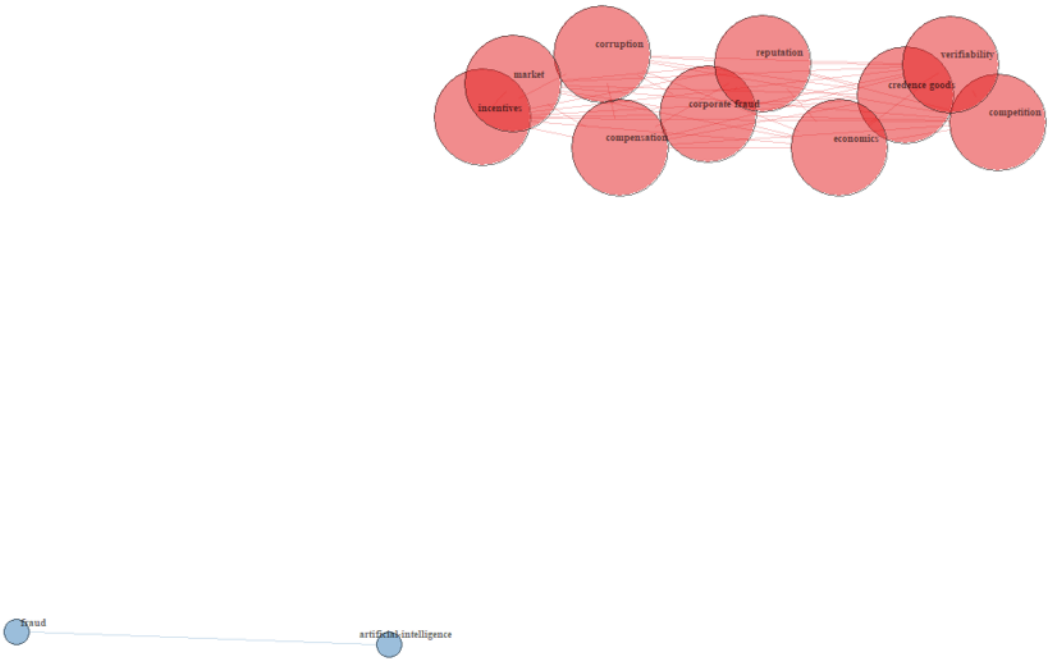
Beyond keyword frequencies, the relationships between concepts are visualized through Figure 3. These maps reveal the conceptual network structure of the literature.


firm performance
disclosure
board
governance
directors
ownership
retirement
earnings management
fraud
market
behavior
management
impact
quality
consequences
determinants
incentives
corporate governance
litigation
risk
performance
compensation
equity incentives
firms
information
earnings
experience
judgments
model
decision-making

USA


agency costs
business
board diversity
corporate governance
trust
consumption
battery electric vehicles
impact
co2 emissions
market
performance
contagion
citizenship behaviors
system
model
management
credit card fraud
ship approach
behavior
big 5

Türkiye



Kazakhstan

Figure 3. Keyword co-occurrence maps for the United States, Turkey, and Kazakhstan

Figure 3 shows that in the US, the concept of "fraud" is closely related to "corporate governance," "auditing," and "ethics." In Turkey, however, the concepts of "forensic accounting" and "fraud triangle" are seen to be at the center of the network. In Kazakhstan, the limited number of keywords used indicates that the conceptual diversity of the literature is still low. However, the emergence of new concepts such as "blockchain" suggests that this country may take a different direction in the literature in the future.

Keyword analyses reveal that the three countries have different research agendas in the literature. Theoretical and institutional approaches are prominent in the US, while practical approaches focused on forensic accounting are prominent in Turkey, and new trends based on technology and digitalization are prominent in Kazakhstan. These findings reveal that the positions of countries in the literature differ not only quantitatively but also conceptually.

4.5. International Collaborations

Conceptual differences observed in keyword trends are also reflected in countries' international collaborations. Co-authorship rates and collaboration networks in the literature are critical in demonstrating the extent to which research is conducted in a global context.

The international co-authorship rates of countries and the countries with which they collaborate most are presented in Table 7.

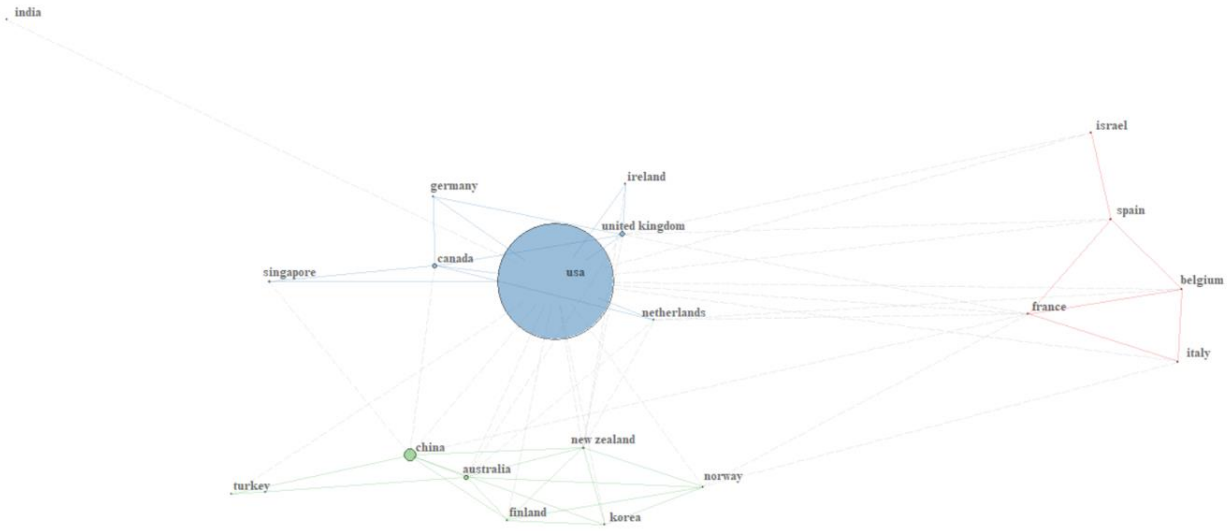
According to Table 7, the United States exhibits a 13.7% rate of international co-authorship across 961 publications. Strong collaborations with countries such as China (31), Canada (12), and the United Kingdom (9) are noteworthy. This table shows that US literature has a broad network structure on a global scale. In Turkey, the international collaboration rate is 15.6%, with partnerships established with a limited number of countries such as China, the United Kingdom, Australia, and Pakistan. In Kazakhstan, despite only 5 publications, a high MCP rate of 40% stands out. This situation reveals that a small number of publications are largely produced

through international projects. Projects centered in Europe and Asia, in particular, are key factors supporting the international visibility of Kazakhstani literature.

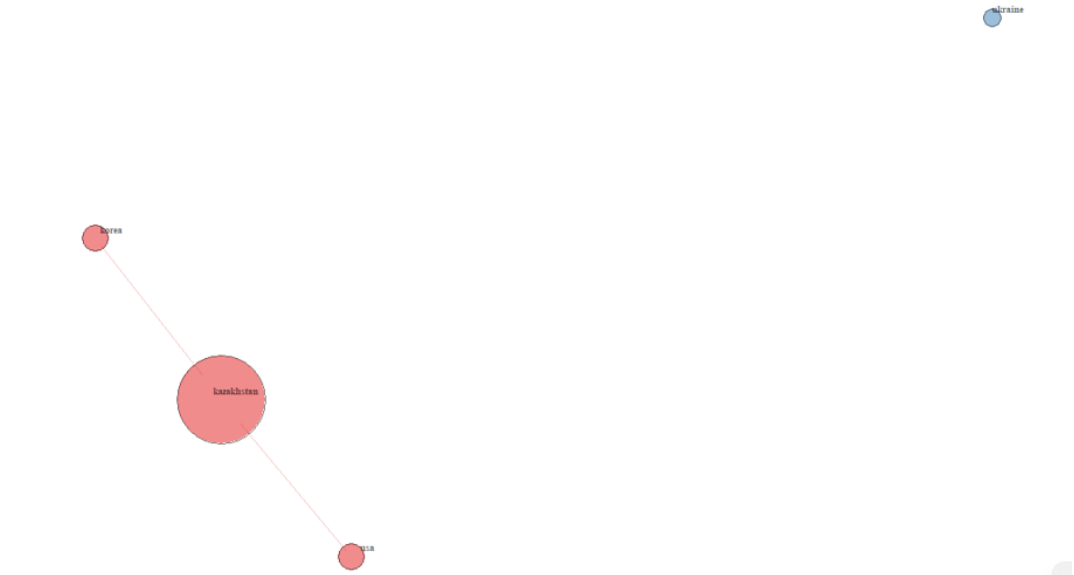
Table 7. Comparison of international cooperation between the United States, Turkey, and Kazakhstan (2000–2024)

Country	Total Publication	MCP Ratio (%)	Countries with the Most Cooperation
USA	961	13,7	China (31), Canada (12), United Kingdom (9), Singapore (7), Germany (4), France (3), Turkey, Korea, Australia, Spain
Turkey	45	15,6	China (2), United Kingdom (1), Australia (1), Pakistan (1)
Kazakhstan	5	40,0	International collaborations are limited; contributions are mostly through European and Asian-centered projects.

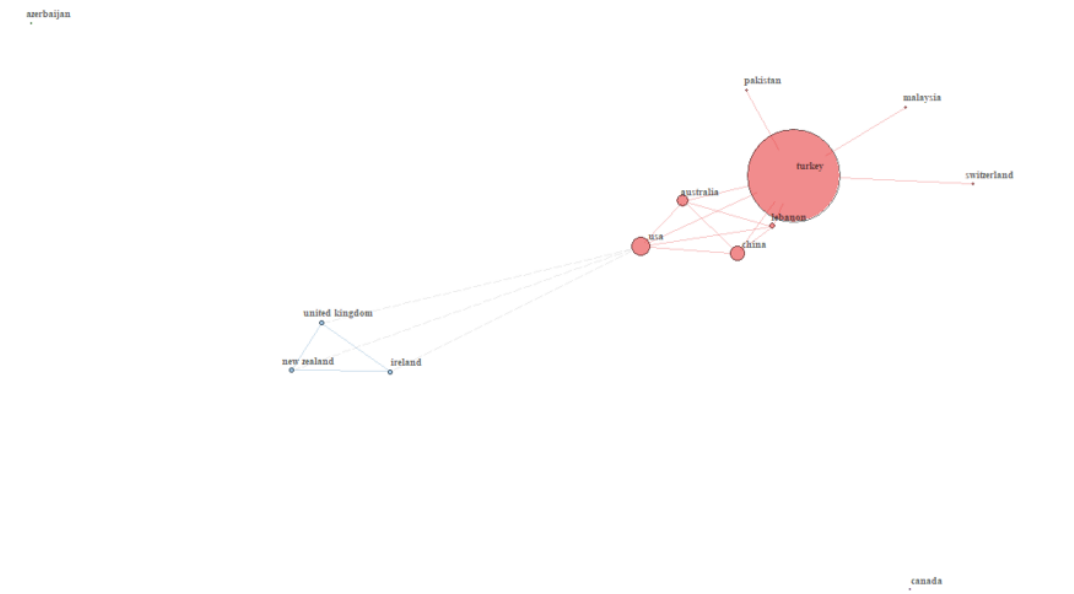
The findings shown numerically in Table 7 are visualized in Figure 4. This figure more clearly illustrates the intensity of cooperation between countries.



USA



Kazakhstan



Türkiye

Figure 4. International cooperation networks of the United States, Turkey, and Kazakhstan (2000–2024)

Figure 4 shows that the US has a multi-centered and strong international cooperation network; Turkey is represented by relatively more limited, one-way cooperation; and Kazakhstan, despite its small number of publications, presents an intensive cooperation-based appearance thanks to its high MCP rate. In particular, the prominence of Kazakhstan's ties with European countries in its network structure makes this country's literature more visible on the international platform.

In terms of international cooperation, it is observed that the US has established a strong and widespread global network, Turkey has remained limited to more narrow-scope relationships,

and Kazakhstan has achieved a high level of international cooperation despite a limited number of publications. These findings reveal that the positions of countries in the literature exhibit differences not only at the national level but also in the international context.

4.6. General Evaluation

Finally, the analysis examined how the publications of the three countries have evolved over the years. The changes in publications over time provide important insights into the countries' institutional structures and academic production capacities.

Publication trends by country over the years are visualized in Figure 5.

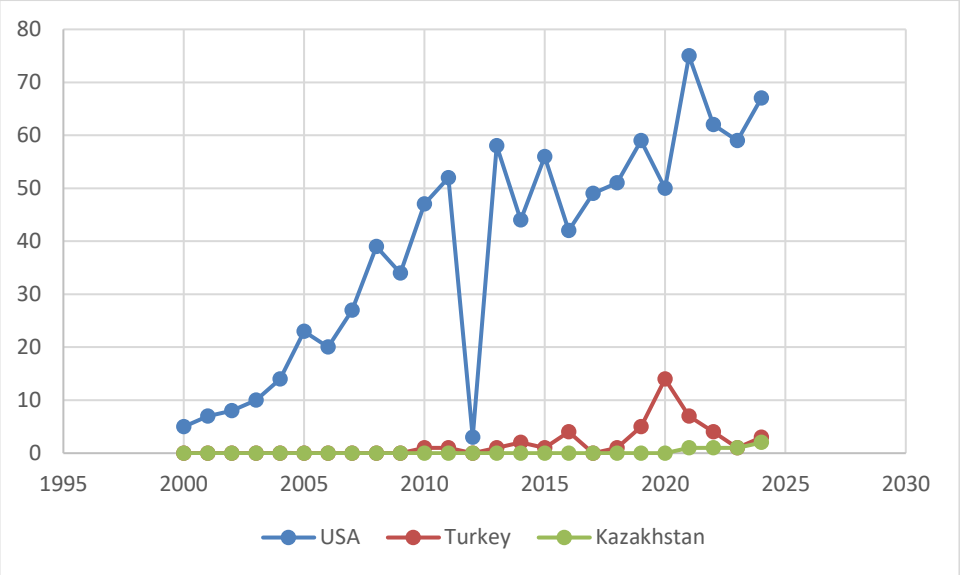


Figure 5. Distribution of publications by year in the United States, Turkey, and Kazakhstan (2000–2024)

Figure 5 shows that the US gained significant momentum during the 2005–2008 period and peaked after 2019, particularly in 2021 (75 publications). This table reveals that the literature in the US followed a continuous growth curve both during crisis periods (e.g., after Sarbanes–Oxley) and in parallel with global developments.

In Turkey, however, a surge coinciding with the pandemic in 2020 is noteworthy (14 publications). In the following years, a relative normalization in production is observed. This situation demonstrates that the Turkish literature is directly affected by external economic and social conditions and exhibits a fluctuating development trajectory.

For Kazakhstan, the first gains in visibility came after 2021. The increase in the number of publications to two in 2024 shows a trend toward growth, even though the literature in the country is still in its early stages. This situation also reflects the impact of international collaborations and state-supported projects.

When the findings obtained in this section are evaluated holistically, it is seen that the three countries are positioned at different stages in the literature. The US is in a leading position on a global scale with its strong academic accumulation over many years, high citation impact, and extensive international cooperation network. Although Turkey has a relatively limited volume of publications, it contributes to practice in the areas of forensic accounting and corporate governance and has attracted attention with its increasing momentum in recent years. Kazakhstan, despite being at an early stage, shows rising potential thanks to its high growth rate and strong level of international cooperation.

When the findings from the tables and figures are considered together, the positions of the three countries in the literature show distinct differences not only in terms of quantitative production levels but also in terms of qualitative and international cooperation dimensions. Detailed interpretations of these differences and policy/academic implications will be addressed in the next section, "Discussion."

5. Discussion, Application, and Management Implications

This section discusses the implications of the findings obtained, presents conclusions for policymakers and academic circles, and develops recommendations for future research.

5.1. Interpretation of Findings

Bibliometric analysis results show significant differences between the three countries. The US occupies a dominant position globally in terms of publication volume, methodological diversity, and citation impact. It is particularly evident that studies produced in the period following the Sarbanes–Oxley Act have shaped both corporate governance and ethics-based auditing approaches. This situation demonstrates that the US possesses not only numerical superiority but also theoretical and methodological leadership.

From Turkey's perspective, although the volume of production is more limited, it is noteworthy that studies focusing on forensic accounting, fraud triangles, and corporate governance are at the forefront. The fact that most studies in Turkey are application-oriented shows that the country contributes to the literature in a more practical and solution-oriented manner. The increasing trend in publications in recent years and the developing international collaborations, albeit limited, indicate that Turkey is becoming increasingly visible in this field.

Looking at Kazakh literature, it is evident that contributions to research are relatively new and limited, but show a rapid growth trend. Topics such as IFRS compliance, internal audit systems, and digitalization are particularly prominent. This indicates that the country has the potential to catch up with global trends despite being in its early stages. Furthermore, the high rate of international co-authorship reveals that production in Kazakhstan relies heavily on external collaborations.

5.2. Political and Academic Implications

The findings reveal important implications for policymakers and academic circles. The US example demonstrates that robust regulatory reforms can not only increase market transparency but also directly stimulate academic output. The intense research activity following the Sarbanes–Oxley Act provides concrete evidence that regulations can accelerate scientific work.

From Turkey's perspective, further development of the standards applied by institutions such as the Capital Markets Board (SPK), the Banking Regulation and Supervision Agency (BDDK), and the Public Oversight Board (KGK) could contribute to both the diversification of practical work and the deepening of academic writing. In particular, regulations on forensic accounting and fraud auditing will both strengthen audit processes in the practical field and open up new areas of research in the academic world.

In the context of Kazakhstan, institutionalizing oversight systems and promoting transparency policies are critical needs. Furthermore, the adoption of digital oversight tools and technology-based solutions will create new opportunities for both practitioners and academics. Such development will also contribute to the country's increased visibility in the international literature.

From an academic perspective, although US literature is rich in theoretical and methodological diversity, the role of new technologies such as artificial intelligence, blockchain, and big data analytics in fraud control has not yet been sufficiently explored. Despite increasing academic output in Turkey, the lack of international comparative studies creates a significant gap. For Kazakhstan, there is a considerable need for data-driven and empirical studies. Broader

international collaborations will both increase the country's academic visibility and provide methodological diversity.

These assessments highlight areas for development at both the policy and academic levels in the context of three countries and provide a solid foundation for new research directions in the literature.

5.3. Recommendations for Future Research

The findings of the study suggest different directions for future research:

- In the US, in addition to traditional topics, the focus could be on digitalization, ethical dilemmas, and AI-supported audit processes.

- In Turkey, hybrid research combining qualitative and quantitative methods should be increased; international comparisons should be expanded.

- In Kazakhstan, the creation of empirical data sets and the support of studies conducted through public-private partnerships will contribute both academically and practically.

These suggestions will contribute to the deeper development of the literature and add new dimensions to the comparative analysis of the three countries.

6. Results, Limitations, and Future Directions

This section summarizes the general findings obtained from the study, draws conclusions regarding policy and practice, and discusses directions for future research.

6.1. General Results

The study compares the academic literature on accounting fraud and fraud auditing in Kazakhstan, Turkey, and the United States using bibliometric methods. The analyses show that the three countries are at different stages in the literature. The United States is a pioneer in the field with its high publication volume, methodological diversity, and global citation impact. Despite its relatively limited production volume, Turkey offers original contributions in the areas of forensic accounting, fraud triangulation, and corporate governance. Kazakhstan, although a relatively new actor, shows a rising trend with its high growth rate and level of international co-authorship.

These findings reveal that the literature has developed at different stages across countries and that each country has made its own unique contributions.

6.2. Policy and Implementation Recommendations

The research findings contain important lessons for regulatory bodies and practitioners. It is recommended that mechanisms to encourage academic production in Turkey be developed, international cooperation be increased, and forensic accounting education be institutionalized. In Kazakhstan, it is critically important to establish state-supported research funds to make audit systems more institutionalized, strengthen transparency, and increase the international visibility of publications. In the US context, the regulatory framework that developed after the Sarbanes–Oxley Act and the academia–practice cooperation model can be considered good practices that can serve as examples for other countries.

These recommendations are aimed at strengthening the development potential of the three countries at both the practical and academic levels.

6.3. Future Research Directions

The study is limited to only three countries; therefore, comparative analyses covering broader geographical areas can be conducted in the future. Supporting bibliometric findings with qualitative research methods (e.g., case studies, interviews) will contribute to a deeper understanding of the results. Furthermore, the development of interdisciplinary approaches—

particularly linking law, information technology, artificial intelligence, and economics with accounting auditing—will add new dimensions to the literature.

Thus, future research can both fill gaps in the existing literature and bring new perspectives to fraud control studies on a global scale.

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Theoretical Foundations of National Image Strategies in the Context of Sustainable Digital Diplomacy and Public Relations: The Case of Azerbaijan

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Abstract

Introduction: This study examines the theoretical foundations of national image strategies within the context of sustainable digital diplomacy and public relations. It focuses on the role of digital diplomacy and public relations practices in shaping the national image in the digital era.
Aim: The aim of the research is to evaluate the long-term effects of communication strategies through the concept of sustainability.
Method: Using a literature review method, academic studies in the fields of digital diplomacy, public relations, and sustainable communication were systematically analyzed. In light of the Azerbaijan case, the contributions of diplomacy and public relations activities conducted on digital platforms to the creation of a sustainable national image were theoretically examined.
Findings: The findings indicate that digital diplomacy and public relations strategies play a critical role in building a sustainable national image. Additionally, continuity, trust, and mutual interaction in strategic communication processes were identified as key factors enhancing sustainability.
Conclusion: The study emphasizes the need to reconsider national image strategies from a sustainability perspective. It provides an original contribution to the literature by integrating digital diplomacy and public relations within a conceptual framework.
Originality and value: The research offers a meaningful theoretical contribution to the field of sustainable digital diplomacy and brings a new perspective on the sustainability of national image strategies.

Key words: sustainability, digital diplomacy, public relations, national image, communication strategies
Jel Codes: F5, Q56

1. Introduction

In an era increasingly defined by digital connectivity, the image a nation projects beyond its borders has become a crucial component of its international identity and influence. No longer shaped solely by traditional diplomatic channels or military and economic power, a country's national image is now significantly influenced by how effectively it communicates in the digital realm (Anholt, 2007; Nye, 2004). Public diplomacy and public relations (PR), once peripheral to statecraft, have emerged as central instruments in building trust, promoting national narratives, and shaping perceptions among global audiences (Cull, 2009).

Digital diplomacy, also referred to as e-diplomacy or cyber diplomacy, involves the use of digital tools-particularly social media platforms and online communication strategies-by state and non-state actors to manage international relations and influence foreign publics (Bjola & Holmes, 2015). These digital platforms provide unprecedented opportunities for real-time interaction, wider outreach, and two-way communication, thereby transforming how countries engage with international audiences. Similarly, public relations has evolved into a strategic mechanism for managing not only domestic but also international perceptions through storytelling, crisis

communication, and strategic messaging (Taylor & Kent, 2010).

Amid growing attention to environmental, social, and political sustainability, the notion of a sustainable national image has gained prominence. This concept moves beyond short-term image campaigns and focuses on consistent, trustworthy, and ethically-grounded communication strategies that can endure over time (Falkheimer & Heide, 2015). Sustainability in this context entails long-term engagement, mutual respect, cultural sensitivity, and the capacity to adapt in a rapidly changing digital environment.

The Republic of Azerbaijan offers a particularly relevant case for studying sustainable digital diplomacy and public relations strategies. Positioned at the intersection of Europe and Asia, and having experienced complex geopolitical tensions, Azerbaijan has increasingly turned to digital platforms to present a modern, culturally rich, and strategically important image to the world. These efforts are not merely reactive but are part of a deliberate strategy to secure soft power, attract international investment, and foster global partnerships.

This study explores the theoretical foundations and strategic dimensions of national image construction within the evolving frameworks of digital diplomacy and public relations. By integrating the concept of sustainability, it aims to critically assess how enduring and ethical communication strategies can be developed in digital contexts. Through a literature-based analysis and a focus on the Azerbaijani experience, the paper contributes to the academic discourse on international communication, offering both theoretical insights and practical implications for policymakers and communication professionals.

2. Literature Review

This study adopts a theoretical and conceptual approach by conducting a structured literature review on national image strategies within the framework of digital diplomacy, public relations, and sustainability. The review focuses on scholarly works from communication studies, international relations, and public diplomacy to trace how national image has been conceptualized, constructed, and communicated across different contexts. Emphasis is placed on identifying key theoretical models, such as nation branding, strategic communication, and soft power frameworks, as well as contemporary discussions on digitalization and the long-term sustainability of communication strategies. The selected literature provides the basis for analyzing how digital tools and public relations practices contribute to shaping a coherent and sustainable national image, with a particular focus on the Azerbaijani context.

2.1. National image and communication strategies

The concept of national image refers to the collective perception and mental representation of a country held by foreign publics. It encompasses a wide range of associations related to a nation’s culture, political system, historical legacy, values, behavior in the international arena, and even its people (Wang, 2006). National image functions as a cognitive shortcut that influences how international actors-states, investors, media, and civil societies-evaluate a country's credibility, legitimacy, and desirability as a political or economic partner. The importance of national image has grown significantly in the context of global interdependence and the rise of soft power as a tool of international influence. Countries increasingly recognize that a favorable image can enhance diplomatic relations, promote tourism, attract foreign direct investment, and provide strategic advantages in multilateral negotiations (Fan, 2008). Conversely, a negative or ambiguous image can hinder a nation’s global standing and undermine its foreign policy objectives. Communication strategies are central to the construction, maintenance, and transformation of national image. These strategies involve the deliberate use of public diplomacy, media relations, branding, and other forms of strategic communication to shape perceptions in a consistent and coherent manner (Szondi, 2008). Unlike propaganda or ad hoc messaging, effective national image strategies rely on dialogue, transparency, and engagement with international audiences over time. This is especially critical in the digital age, where information circulates rapidly and the management of narratives has become a constant and dynamic process.

Moreover, national image is not merely projected-it is co-constructed in interaction with external audiences, media discourses, and geopolitical realities. As such, strategic communication must not only promote positive attributes but also address misinformation, negative stereotypes, and crises that may distort a country's image (Melissen, 2005). The success of these efforts depends on a state's ability to maintain message coherence across platforms, adapt to audience expectations, and demonstrate values aligned with global norms.

2.2. Sustainable Digital Diplomacy

Within The emergence of digital diplomacy as a transformative force in international communication has prompted scholars and practitioners alike to explore its implications through a sustainability lens. Sustainable digital diplomacy refers to the strategic and ethical use of digital tools to foster long-term, trust-based relationships between states and global publics. This approach emphasizes continuity, transparency, mutual engagement, and adaptability, aligning with broader principles of sustainable communication in global governance (Falkheimer & Heide, 2015).

The theoretical underpinnings of digital diplomacy stem from broader paradigms of public diplomacy, soft power, and strategic communication. Nye's (2004) concept of soft power underscores the ability of states to shape preferences through attraction rather than coercion, a notion that finds new resonance in the digital era. Within this context, sustainability in digital diplomacy implies not only the persistent projection of a coherent national narrative but also the capacity to build relationships that endure across political cycles and technological shifts.

From a sustainability perspective, digital diplomacy must go beyond short-term visibility or crisis response and focus instead on fostering ongoing dialogue, cultural understanding, and shared values. Scholars such as Bjola and Holmes (2015) have argued that the effectiveness of digital diplomacy lies in its relational, rather than transactional, nature. This relational approach necessitates sustained engagement strategies that are participatory, inclusive, and context-sensitive-qualities that align closely with the sustainability framework.

The core dynamics that shape sustainable digital diplomacy are trust, continuity, and interactive communication. In digital environments characterized by rapid information flows and algorithmic amplification, maintaining credibility and consistency becomes crucial. Trust, as a foundational element of diplomatic communication, is cultivated through transparency, responsiveness, and the perceived authenticity of messages (Cull, 2013).

Continuity, meanwhile, refers to the strategic and uninterrupted presence of a nation's voice across digital platforms. It requires institutional capacity, long-term planning, and narrative coherence—elements often lacking in sporadic or campaign-driven digital efforts. Sustained digital diplomacy efforts, particularly on platforms such as Twitter, Facebook, or YouTube, have the potential to foster familiarity and reliability among international audiences (Manor, 2019).

Moreover, interactivity is essential for transforming passive audiences into engaged publics. Unlike traditional diplomacy, which operates through closed channels, digital diplomacy thrives on two-way communication, where feedback loops, participatory dialogue, and user-generated content shape bilateral understanding. Interactive practices not only humanize the state but also promote democratic engagement, thereby reinforcing the legitimacy of diplomatic communication (Sandre, 2015).

Several interrelated factors influence the sustainability of strategic communication in digital diplomacy. First, institutional capacity plays a critical role. Ministries of foreign affairs (MFAs) must invest in human resources, digital infrastructure, and training to ensure long-term digital engagement. Without such investments, digital diplomacy risks becoming superficial or inconsistent.

Second, narrative consistency and cultural sensitivity are vital. A sustainable digital diplomacy strategy must avoid over-centralization and instead tailor messages to resonate with diverse

audiences. This includes recognizing regional differences, linguistic nuances, and cultural expectations.

Third, resilience to misinformation and digital disinformation is increasingly central to sustainability. Digital diplomacy efforts must be prepared to counteract misinformation campaigns that can erode trust and damage a nation's image. Building resilience involves proactive crisis communication strategies, fact-checking mechanisms, and collaboration with tech platforms (Chadwick & Dennis, 2019).

Finally, ethical commitment enhances the sustainability of digital diplomacy. Ethical engagement-including respect for privacy, truthful representation, and non-manipulative messaging-not only upholds democratic values but also supports the credibility of diplomatic efforts in the long run.

2.3. The Role of Public Diplomacy and Public Relations in National Image

National image, as a complex and multi-layered construct, is significantly shaped by a country's communicative behavior and engagement with international publics. In this regard, both public diplomacy and public relations (PR) serve as critical instruments for states seeking to influence global perceptions, enhance legitimacy, and cultivate soft power. With the growing prominence of digital communication channels, the roles of these disciplines have expanded beyond traditional media to incorporate real-time, interactive, and participatory dimensions that are central to digital diplomacy and image management.

Public diplomacy, traditionally understood as the process by which governments communicate with foreign publics to inform and influence their perceptions (Cull, 2009), has evolved in tandem with global communication dynamics. It now encompasses a broader set of practices that prioritize dialogue, transparency, and relationship-building over mere persuasion or propaganda. At its core, public diplomacy aims to build long-term trust and mutual understanding between nations and global audiences-foundational elements for a sustainable and credible national image (Melissen, 2005).

Through activities such as cultural diplomacy, educational exchanges, international broadcasting, and digital campaigns, states project their values, policies, and national identity to external audiences. These efforts shape how a country is perceived in terms of political stability, cultural richness, ethical standards, and global responsibility (Zaharna, 2010). A well-crafted public diplomacy strategy reinforces a coherent and appealing national narrative, particularly when aligned with domestic policies and international behavior.

Importantly, digitalization has profoundly transformed the mechanisms of public diplomacy. Social media platforms, government websites, and digital storytelling tools enable states to directly reach foreign publics without the mediation of traditional news outlets. This direct access fosters opportunities for engagement, dialogue, and co-creation of meaning-essential components for maintaining a credible and dynamic national image in the digital age (Bjola & Holmes, 2015).

Public relations, though often associated with corporate communication, plays an equally strategic role in state-level image building. In the context of nation branding and international relations, PR involves the strategic management of communication between a government and its key stakeholders-including media, civil society, diaspora communities, and international organizations (Grunig & Hunt, 1984).

In the digital era, public relations contributes to national image through carefully managed messaging, crisis communication, social listening, and media engagement. Effective PR enables governments to respond promptly to misinformation, shape media narratives, and maintain message consistency across platforms. Furthermore, public relations practices help build emotional connections through storytelling techniques that humanize a country's culture, people, and values (Dinnie, 2016).

Notably, public relations and public diplomacy converge in the digital environment, where the boundaries between domestic and foreign audiences blur. Digital platforms allow for the simultaneous targeting of multiple publics, necessitating integrated communication strategies that balance national interests with global expectations. This convergence calls for ethical sensitivity, transparency, and narrative coherence-factors that significantly influence a country's image sustainability.

The integration of digital tools into public diplomacy and PR has amplified their influence on national image. Real-time communication, multimedia storytelling, and data-driven strategies provide unprecedented means of shaping public perceptions. However, this power also comes with risks. Missteps in digital communication, lack of responsiveness, or inconsistent messaging can quickly damage national credibility and trigger reputational crises (Seib, 2012).

To harness the full potential of digital platforms, states must embrace strategic planning, cultural competence, and continuous engagement. Building a positive and sustainable national image in the digital sphere requires more than sporadic visibility; it demands relational communication, trust-building, and a deep understanding of audience needs and expectations. Public diplomacy and PR professionals must therefore act not just as message transmitters, but as cultural mediators and trust brokers in the international system.

3. Materials and Method

This study adopts a qualitative and theoretical research approach, employing a systematic literature review as its primary method. Academic publications, peer-reviewed journal articles, and scholarly books related to digital diplomacy, public relations, sustainable communication, and national image were analyzed to construct a comprehensive conceptual framework. The selection criteria prioritized sources that focus on both the theoretical evolution and practical application of communication strategies in international relations.

The case of Azerbaijan was used as a contextual reference to examine how sustainable digital diplomacy and public relations practices are integrated into national image-building strategies. Rather than empirical fieldwork, the study relies on secondary sources and comparative theoretical insights to assess the sustainability and strategic coherence of digital communication efforts. This approach enables a critical evaluation of how theoretical models apply to real-world diplomatic and communicative practices.

4. Azerbaijan Case: Analysis of Sustainable Image Strategies

As a post-Soviet republic located at the crossroads of Europe and Asia, the Republic of Azerbaijan offers a compelling case for examining how small and mid-sized states utilize digital diplomacy and public relations to shape a sustainable national image. Azerbaijan's strategic communication practices, particularly over the past decade, reflect an increasingly sophisticated integration of cultural diplomacy, digital platforms, and soft power initiatives aimed at improving international visibility and credibility.

Azerbaijan has strategically leveraged digital tools to project a modern, stable, and culturally rich image. Through active engagement on platforms such as Twitter, Facebook, and YouTube, Azerbaijani institutions-including the Ministry of Foreign Affairs and various diplomatic missions-have disseminated narratives centered on economic development, cultural heritage, and geopolitical relevance. This aligns with Zaharna's (2010) assertion that digital public diplomacy is not merely about broadcasting information but about building relational networks that foster long-term engagement and trust.

One prominent example is Azerbaijan's digital campaign during and after the Second Karabakh War (2020), which combined real-time updates, visual storytelling, and message discipline to influence international public opinion. While the conflict context presented reputational risks, the state's communication strategy emphasized transparency, national sovereignty, and regional peacebuilding-reflecting Melissen's (2005) model of "new public diplomacy," where

governments seek to build legitimacy through dialogue rather than confrontation.

Beyond crisis communication, Azerbaijan has invested in sustainable nation branding through culture and international events. The hosting of mega-events such as the Eurovision Song Contest (2012), the European Games (2015), and the Formula 1 Grand Prix in Baku has been accompanied by global PR campaigns portraying Azerbaijan as a bridge between East and West, modernity and tradition. These efforts echo Anholt's (2007) concept of "competitive identity," where national image is built not only through communications but through policies, behavior, and cultural expression.

The Heydar Aliyev Foundation and other state-backed institutions have played a crucial role in promoting Azerbaijani culture abroad-through exhibitions, concerts, and cultural exchanges-thus supporting the sustainability of the country's soft power initiatives. As Dinnie (2016) notes, long-term brand credibility depends on alignment between image projection and actual national behavior, a principle that underpins Azerbaijan's multi-pronged cultural diplomacy approach.

While Azerbaijan has achieved notable visibility, the sustainability of its image strategies depends on several key factors: message consistency, transparency, engagement with civil society, and alignment with international norms. In this regard, the government's centralization of communication poses both strengths and limitations. On one hand, it allows for coherent narratives and rapid crisis response; on the other, it risks excluding non-state actors and independent voices, which are crucial for enhancing authenticity and pluralism in national image-making (Manor, 2019).

Moreover, the long-term success of Azerbaijan's digital diplomacy hinges on its ability to maintain credibility in the face of geopolitical tensions, regional rivalries, and international scrutiny. Falkheimer and Heide (2015) argue that sustainable strategic communication must prioritize ethical standards, audience dialogue, and adaptability-all of which require ongoing institutional capacity-building and openness to feedback.

Azerbaijan's experience illustrates the complex interplay between digital innovation, strategic communication, and national image construction. Through deliberate efforts in digital diplomacy, public relations, and cultural branding, Azerbaijan has advanced a sustainable image strategy that emphasizes continuity, cultural pride, and geopolitical relevance. However, sustaining this image in a dynamic international environment requires continuous commitment to transparency, ethical engagement, and inclusivity.

5. Results, Limitations, and Future Directions

The findings of this study highlight the critical role of sustainable communication strategies in shaping and maintaining a positive national image in the digital age. Through a theoretical lens, the analysis demonstrates that the intersection of public diplomacy, public relations, and digital platforms provides states with powerful tools to build long-term international reputations based on trust, engagement, and transparency.

Specifically, three core dimensions emerged as essential to sustainable national image-building:

1. Continuity: Consistent and long-term messaging across digital platforms is essential for credibility and recognizability.

2. Trust: Transparent communication and ethical engagement are foundational to building trust with foreign publics.

3. Mutual Interaction: Two-way digital dialogue fosters relational communication and enhances legitimacy.

The case of Azerbaijan illustrated how a mid-sized state can effectively use digital diplomacy and public relations to construct a resilient and culturally grounded national image. Strategic use of social media, investment in international cultural events, and a focus on narrative coherence were identified as key strengths in Azerbaijan's approach. However, these strategies must be

evaluated not only by their visibility but also by their alignment with principles of sustainable communication, such as inclusivity, authenticity, and responsiveness.

As a theory-driven and literature-based study, this research is subject to several limitations:

Lack of empirical data: The study does not include primary data collection (e.g., interviews, surveys, or content analysis), which limits its ability to measure the actual impact of digital diplomacy initiatives on public perceptions.

Single-case focus: While Azerbaijan serves as a relevant and illustrative example, the findings may not be directly generalizable to other national contexts with different political systems, communication infrastructures, or diplomatic priorities.

Dynamic digital environment: The rapid evolution of digital technologies and platforms presents a moving target for analysis. What is effective today may become obsolete tomorrow, raising challenges for assessing sustainability over time.

These limitations suggest the need for complementary empirical research and comparative case studies to deepen our understanding of sustainable digital diplomacy in practice.

Future research should aim to build upon this theoretical foundation through empirical inquiry and comparative analysis. Several avenues for further study are proposed:

Empirical validation: Conducting qualitative or quantitative studies (e.g., audience perception surveys, social media analytics, diplomatic impact assessments) to evaluate the effectiveness of specific strategies used by states like Azerbaijan.

Comparative case studies: Exploring how different countries-particularly in the Global South or post-conflict regions-approach digital diplomacy and public relations for image-building purposes.

Platform-specific dynamics: Investigating how the affordances and limitations of specific digital platforms (e.g., X vs. Instagram vs. TikTok) shape national image strategies and engagement patterns.

Role of non-state actors: Examining how civil society, diasporic communities, influencers, and private entities contribute to or challenge the official image projected by a state.

By integrating theoretical models with data-driven insights, future research can contribute to a more holistic and actionable understanding of how sustainable communication strategies influence national image in a rapidly changing global communication landscape.

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The Role of Women's Enterprise Production and Business Cooperatives in Türkiye: From Gastronomy Perspective

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Abstract

Introduction: Women's cooperatives are no different from other cooperatives in terms of legal regulations, but they are called women's cooperatives because they are established and managed by women. In this regard, women's cooperatives play a significant role in contributing to the empowerment and increased visibility of women in business.
Aim: The aim of the research is to determine which foods specific to Turkish cuisine are produced by women's enterprise production and business cooperatives and what their marketing distribution channels are.
Method: According to the Cooperative Information System (KOOPBİS) database, the total number of Women's Enterprise Production and Business Cooperatives in Türkiye in 2024 is 1211 (the number of active cooperatives is 1,129) and the number of members is 14,874 (Republic of Turkey Ministry of Trade, 2025). The sample for the research was collected from the "İhtiyaçHaritası" website, which lists Women's Enterprise Production and Business Cooperatives (349) on the website were analyzed based on their related to food. Document analysis technique, which is one of the qualitative methods used in the analysis of secondary data, is used in the research.
Findings: One of the important findings of the study is that cooperatives 309 (%88,5) of the Women's Enterprise Production and Business Cooperatives produce and sell food-related products. Other important findings are the main operation of cooperatives is mostly (%87,4) production and dried vegetables and fruits are prioritized in the food products produced by cooperatives (%25, 9). In addition findings indicate that the most frequently used marketing distribution channel is Instagram (%68).
Conclusion: One of the results of the study shows that most of these cooperatives produce and sell foods specific to Turkish cuisine. In particular, the drying and jam production of locally grown vegetables and fruits is noteworthy. Another important result is that these cooperatives use social media (Instagram, Facebook, etc.) more as a marketing channel. It has been revealed that only 23.6% of cooperatives have a website.
Originality and value: With this study, the gastronomy elements in the women's production and business cooperative in Türkiye were determined and a systematic regulation proposal was made. Women's enterprise production and business cooperatives contribute to the preservation and promotion of local products and regional flavors by increasing the visibility of women's entrepreneurship in the gastronomy sector.

Key words: women's enterprise, production and business, cooperative, gastronomy, Türkiye.
Jel Codes : R11, L10.

1. Introduction

Cooperative is an autonomous association of persons who voluntarily come together to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically controlled enterprise.

The United Nations (UN) has declared 2025 as the International Year of Cooperatives, recognizing the vital role cooperatives play in sustainable development. The UN emphasizes the global impact of cooperatives with the slogan "Cooperatives build a better world" and positions them as fundamental solutions to global challenges through a solution-oriented approach. It also highlights the contributions of cooperatives to sustainable development in social, economic, and environmental dimensions.

The Ministry of Family and Social Services of the Republic of Türkiye emphasizes that increasing women's employment and supporting entrepreneurship are important components of sustainable development. The European Union project "Empowering Women through Cooperatives Project (WOMENCOOP)" began in 2021 and lasted for 30 months. Within the scope of the project, 1,190 new women's cooperatives were established.

Turkiye can become a real economic power thanks to the economic strength, wisdom, and entrepreneurship of women. Increasing women's employment and supporting entrepreneurship are important components of sustainable development. The 11th and 12th Development Plans emphasize the importance of women's participation in working life and aim to increase women's labor force participation rate to 40.1% and their employment rate to 36.2% by 2028. In line with this goal, new job opportunities will be provided for women, and women's entrepreneurship will be supported in particular.

In 2024, the most approved cooperative type was Women's Enterprise Production and Business Cooperatives, with 113 applications. Women's Initiative Production and Business Cooperatives accounted for 68% of cooperatives eligible for KOOPDES support in 2024.

Between 2019 and 2022, the most established type of cooperative was the Women's Enterprise Production and Business Cooperatives. According to the Cooperative Information System (KOOPBİS) database, the total number of Women's Enterprise Production and Business Cooperatives in Türkiye in 2024 is 1,211 (with 1,129 active cooperatives).

2. Literature Review

Women's place in society has mostly been the home since the earliest periods of human history. Unlike women, who are concerned with housework and childcare, men are present in the public sphere (Giddens, 2012: 70). Over time, a distinction between home and workplace emerged, and the home was excluded from the economy (Bora, 2005). This situation has led to women being excluded from working life (Yılmaz, 2018: 64). Women who do participate in working life are seen to be able to work only in jobs similar to housework (Durhan, 2022: 82). There are many obstacles to women participating in working life. Foremost among these are the belief that working women will neglect their homes and families and the belief that women who gain economic independence will challenge male authority (Kandiyoti, 2013: 34).

Women have had to fight for their rights since the dawn of history. The right to work is at the forefront of the rights they have fought for. Both globally and in Turkey, women's right to work is the result of long and arduous struggles. After gaining the right to education and other fundamental rights, women also entered the workforce. However, social gender stereotypes based on the idea that "a woman's place is in the home" have hindered women from exercising their right to work (Yılmaz, 2018: 64). Especially after World War II, women began to take their place in the industrial and service sectors, becoming more visible in economic life in addition to their work in agriculture (Toksöz, 2022).

Despite all these developments, women still cannot participate sufficiently in economic life. Consequently, their contribution to the economy lags behind that of men (Duguid et al., 2015: 25). According to 2025 TÜİK data, the employment rate for men is 66.5%, while the employment rate for women is around 32%. Similarly, the rate of men participating in the labor force is 66.2%, while that of women is 31.9% (TÜİK, 2025). These data reveal that women are at a serious disadvantage in working life.

At this point, women's cooperatives emerge as important organizations that aim to increase women's participation in public life and create an environment for their empowerment (Atakan & Çoban, 2022: 9). Although there is no clear definition in the literature, it is generally accepted that cooperatives established and operated by women are referred to as women's cooperatives (Adar et al., 2023: 1173). The SIMURG Women's Cooperatives Union defines women's cooperatives as "structures created by local women's groups to develop services based on their needs and priorities" (Duguid et al., 2015: 38). These structures aim to empower women both economically and socially

and contribute to overcoming gender stereotypes that hinder women's employment (Yıldırım, 2020: 161).

Women's cooperatives are no different from other cooperatives in terms of legal regulations. However, they are called women's cooperatives because they are established and run by women (Karakuş, 2022: 249). Their purpose is to find a solution to the problem of women not being sufficiently visible in working life (Duguid et al., 2015: 44). International platforms also draw attention to this aspect of women's cooperatives. The importance given to women's cooperatives by international organizations can be seen in the ILO's 2002 decision. Recommendation No. 193 emphasizes that special importance should be given to women's cooperatives (Günay & Aksoy, 2018: 84).

Women's cooperatives began operating in Turkey in 1999 (Duguid et al., 2015: 15). In 2012, the Ministry of Trade launched the "Women's Cooperatives Promotion and Capacity Development Project." The aim of this project is to increase women's employment, make women's hidden labor visible, and thereby ensure their participation in the economy. One of its most important objectives is stated as follows: "To reduce social barriers arising from gender-based discrimination and ensure equal opportunities for women in working life." (Republic of Türkiye Ministry of Trade, 2019). It is evident that the project was carried out to prevent women from being excluded from working life and unable to participate in employment due to their gender and to ensure their participation in the economy. Women's cooperatives in Turkey attract more interest from middle-aged women and are established to help women with no work experience continue production activities similar to what they produce at home (Atakan & Çoban, 2022: 39). These cooperatives highlight women's talents, particularly in food and design production (Taş & Kazar, 2019: 1841).

Women's cooperatives are seen as an important tool not only for ensuring women's participation in economic life, generating income, and increasing employment, but also for achieving gender equality goals (Adar et al., 2023: 1179). As is the case worldwide, it is stated that cooperatives are the way to ensure women's participation and greater effectiveness in economic and social life in Turkey (Serinikli, 2019: 48). In this context, cooperatives play a major role in eliminating gender inequalities and achieving equality (Günay & Aksoy, 2018: 83). In other words, women's cooperatives have many social benefits for women beyond economic benefits (Duguid et al., 2015: 39). Women's cooperatives also play a critical role in reducing poverty and ensuring sustainability in rural areas (Yıldırım, 2020: 163). These structures are seen as a solution for development and are therefore rapidly spreading (Günay & Aksoy, 2018: 84). Their support for local development demonstrates the importance of these organizations not only for women but also for the country's economy (Karakuş, 2022: 249).

Cooperatives established and managed by women are places where women can earn money, acquire new skills, and socialize outside the home. In this process, women's self-confidence increases and they become more active members of society. One of the greatest benefits for women is that it gives them freedom (Duguid et al., 2015: 84). The economic freedom women gain provides freedom in other areas of life as well and is a fundamental element in women's empowerment (Karakuş, 2022: 251). The ILO states that there is a link between the empowerment of rural women and women's cooperatives (Sefer, 2024: 97). Women view cooperatives not only as a source of income but also as centers of solidarity and decision-making, and they use these institutions as a structure that can shape their social relationships and positions (Değirmenci, 2023: 222). Research also shows that women are socially empowered in cooperatives beyond economic gain (Karakuş, 2022: 253). This situation increases women's power against the patriarchal order and is an important step towards social transformation (Sefer, 2024: 96).

Aşık Gökdemir (2023), in her doctoral thesis titled "Women's Empowerment in Turkish Women's Cooperatives: An Ethnographic Study" conducted at the Kastamonu Sarı Konak Women's Cooperative, explains the reasons why women join cooperatives as follows. (1) Since the work done in cooperatives is generally similar to work done at home (e.g., making tarhana, cutting noodles), women do not need special skills to be compensated for their labor. (2) Working in a workplace established and operated by women may be more comfortable and easier than working in a male-

dominated environment, and it may be easier to take time off. (3) The availability of flexible working hours and the ability to adapt to daily routines.

In this case, it can be concluded that there is a correlation between women's tendency to form cooperatives in Türkiye and the employment conditions offered to women in the Turkish labor market. Women in Türkiye tend to join women's cooperatives, where access to employment opportunities is relatively high, participation processes are more democratic, and employment conditions are better, due to unequal employment opportunities for women compared to men, high gender-based wage gaps, widespread informal female employment, and discrimination against women in the workplace. Indeed, the rapid increase in the number of women's cooperatives is an indication of this (Adar et al 2023).

3. Materials and Method

According to the Cooperative Information System (KOOPBİS) database, the total number of Women's Enterprise Production and Business Cooperatives in Türkiye in 2024 is 1211 (the number of active cooperatives is 1,129) and the number of members is 14,874 (Republic of Türkiye Ministry of Trade, 2025). Document analysis technique, which is one of the qualitative methods used in the analysis of secondary data, is used in the research.

The sample for the research was analyzed from the "İhtiyaçHaritası" website, which lists Women's Enterprise Production and Business Cooperatives. One reason for this is that the researcher was unable to access KOOPBİS system. In addition, at this stage, various catalogs published by development agencies specifically targeting women's cooperatives were also examined, and the most comprehensive data was accessed from the "İhtiyaçHaritası" website.

Table 1. Types of Women's Cooperatives in "İhtiyaçHaritası" website

Types of Women's Cooperatives in "İhtiyaçHaritası" website	Number
Women's Enterprise Production and Business Cooperatives	**349**
Agricultural Development Cooperative	91
Business Cooperative	21
Women's Environment, Culture, and Business Cooperative	11
Production and Marketing Cooperative	10
Development Cooperative	8
Business and Education Cooperative	6
Scientific Research and Development Cooperative	4
Arts Cooperative	3
Service Cooperative	2
Education Cooperative	1
Real Estate Management Cooperative	1
Forestry Cooperative	1
Agricultural Sales Cooperative	1
Fresh Fruit and Vegetable Marketing Cooperative	1
Total	**510**

This study aims to determine which foods specific to Turkish cuisine are produced by Women's Enterprise Production and Business Cooperatives, which are particularly numerous as a cooperative type, and what their marketing channels are.

4. Data Analysis

Women's Enterprise Production and Business Cooperatives on the website were analyzed based on their related to food, year of establishment, main areas of operation, food products they produce, and marketing distribution channels.

Table 2. Sector of Women's Enterprise Production and Business Cooperatives

Sector of Women's Enterprise Production and Business Cooperatives	Number	Percent
Related to food	***309***	***% 88,5***
Related to textile or inactive	40	% 11,5
Total	**349**	**%100**

309 (%88,5) of the Women's Enterprise Production and Business Cooperatives produce and sell food-related products. 40 (%11,5) of the Women's Enterprise Production and Business Cooperatives produce goods other than food, and a few, having been newly established, do not yet produce or sell any products.

Table 3. Year of establishment of Women's Enterprise Production and Business Cooperatives

Year of establishment of the cooperative	Number
2004	1
2012	1
2014	4
2015	4
2016	3
2017	6
2018	1
2019	28
2020	71
2021	***97***
2022	63
2023	25
2024	5
Total	**309**

When examining the founding years of cooperatives, it is seen that there was an increase after 2019, but the majority were established in 2021 (%31,4). And then followed by 2020 (%23) and 2022 (%20,4).

Table 4. Main area of operation of Women's Enterprise Production and Business Cooperatives

The cooperative's main area of operation	Number
Production	***270***
Service	20
Marketing	13
Others	6
Total	**309**

The main operation of cooperatives is mostly (%87,4) production. Followed by service (%6,5) and marketing (%4,2). Others specified as follows: Business, Production, Marketing; Marketing local products, employment for women and youth; Production, sales, services; Production and sales; Production and marketing.

Table 5. Food products produced by Women's Enterprise Production and Business Cooperatives

Food products produced by cooperative's	Number
Dried vegetables and fruits	***80***
Jam	75
Erişte & Pasta	74
Tarhana	43
Molasses	42
Pickle	37
Tomato or Red Pepper Paste	33
Vinegar	30

Dried vegetables and fruits are prioritized in the food products produced by cooperatives (%25, 9). Following that, jam varieties (%24, 3) and erişte & pasta (%23, 9)production are important. Among the foods produced by cooperatives, various types of molasses (grape, sugar beet, etc.), tarhana, pickles (strawberry, cherry, etc.), tomato paste and vinegar (grape, hawthorn, apple etc.) are also noteworthy. In addition to these, the production of phyllo dough (yufka), manti, borek, stuffed meatballs, pine cone syrup, honey, breakfast spreads, dried fruit leather (pestil), flatbread (gözleme), bread, baklava, cookies, Turkish delight, chocolate, stuffed grape leaves, spices (especially thyme), and various types of flour is carried out.

Table 6. Marketing distribution channels used by Women's Enterprise Production and Business Cooperatives

Marketing distribution channels used by cooperatives	Number
Instagram	***210***
Facebook	117
Web site	73
Twitter	37
Linkedin	16
Youtube	14
Not use any marketing distribution channel	85

The most preferred marketing distribution channel among cooperatives is Instagram (%68), followed by Facebook (%37,9). Only 73 of the cooperatives yöreyehave a website. And 85 of the cooperatives (%27,5) do not use any marketing distribution channels. In addition only 3 cooperatives (Kadama Women's Solidarity Enterprise Production and Management Cooperatıve, Horanta Women's Enterprise Production and Business Cooperatives, Yıldızyolu Women's Women's Enterprise Production and Business Cooperatives) utilize all marketing and distribution channels.

5. Discussion, practical and managerial implications

This study reveals the food production dominance, growth, and establishment trends, their primary activity as production, popular food products, and marketing distribution channels of Women's Enterprise Production and Business Cooperatives in Türkiye.

A significant majority (88.5%) of the cooperatives engage in food-related production, with 309 out of 349 cooperatives involved in the creation and sale of food products. This suggests that food

production is a major area of focus for women's cooperatives in Türkiye, reflecting both market demand and the potential for supporting local economies and agricultural practices. With the highest proportion (31.4%) of cooperatives founded in 2021, followed by 2020 (23%) and 2022 (20.4%). This trend indicates a recent surge in women's entrepreneurial initiatives and a growing interest in cooperative models in Türkiye, likely driven by both socio-economic factors and government or NGO support. Demonstrating that while marketing and service operations are present, production remains the central function. This highlights the critical role of cooperatives in local production, particularly in the context of food processing and manufacturing. Among the food items produced by the cooperatives, dried vegetables and fruits (25.9%), jam varieties (24.3%), and erişte & pasta (23.9%) are the most commonly produced goods. This extensive range of products demonstrates the cooperatives' diverse offerings and their potential to cater to local and regional markets. In terms of marketing and distribution, Instagram is the most preferred platform, used by 68% of the cooperatives, followed by Facebook (37.9%). However, only 73 cooperatives have a dedicated website, highlighting a gap in the digital presence of these enterprises. Notably, 27.5% of the cooperatives do not utilize any marketing distribution channels at all, which could limit their reach and growth potential. Similar results to this study "Women's Cooperatives and Women Entrepreneurs Product Catalog" published by the Ministry of Industry and Technology of the Republic of Turkey, which shows that noodles and jams are mostly produced and that Instagram is used as a marketing and distribution channel (Çukurova Kalkınma Ajansı, 2023).

In conclusion, women's cooperatives in Türkiye, particularly those involved in food production, play an important role in the local economy and in promoting women's entrepreneurship. However, there are areas where further development could enhance their reach and impact, particularly in terms of marketing and digital presence. The high concentration of cooperatives established in the past few years signals a promising trend, but the use of digital marketing tools and broadening distribution channels could be pivotal for increasing visibility and sales.

6. Limitations and Future Directions

The most important limitation of the study there is a lack of access to detailed data on Women's Enterprise Production and Business Cooperatives in Türkiye. So the sample for the research was analyzed from the "İhtiyaçHaritası" website, which lists Women's Enterprise Production and Business Cooperatives. One reason for this is that the researcher was unable to access KOOPBİS system.

Future research could conduct an in-depth study on the strategies women's cooperatives follow in the production, sale, and marketing of food products. In particular, the opportunities or challenges encountered during this process could be examined. As an outcome of projects conducted in recent years to gather information on the use of e-commerce in the marketing and distribution channels of cooperatives in Türkiye, their orientation towards this issue could be evaluated.

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The Role of Decent Work in Mitigating the Negative Effects of Underemployment on Job Satisfaction among Women

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Abstract

Introduction: Pay underemployment and status underemployment are particularly salient for women, who are often placed in lower-paying or less prestigious roles than their credentials warrant. While the Psychology of Working Theory (PWT) and International Labour Organization (ILO) standards suggest that decent work enhances well-being, it remains unclear whether it can buffer the adverse effects of pay-status underemployment on job satisfaction.
Aim: This study investigates the moderation role of decent work on the relation between pay-status underemployment and job satisfaction among working woman in Turkey.
Method: Data were collected from 110 working women in Turkey through online and in-person surveys. Participants completed validated measures of decent work, job satisfaction, and subjective underemployment. Correlation analysis and moderation tests were conducted using the PROCESS Macro (Model 1).
Findings: Results revealed that both pay and status underemployment were significantly and negatively associated with job satisfaction, while decent work had a strong positive effect on job satisfaction. However, decent work did not moderate the relationship between pay and status underemployment and job satisfaction.
Conclusion: These findings suggest that decent work enhances job satisfaction directly but cannot offset the negative consequences of underemployment. A job may meet several decent work standards while still leaving employees underpaid or in lower-status roles, illustrating the complexity of employment quality.
Originality/Value: This study highlights that achieving decent work is necessary but not sufficient to protect women from the adverse effects of underemployment

Key words: pay underemployment, status underemployment, job satisfaction, decent work, working mothers
Jel Codes: D23, J81, J28

1.Introduction

Underemployment relates to how employees perceive their employment status and how they feel about it, and how they assess whether they are working reluctantly outside the field in which they received their formal education or in certain temporary jobs. (Benach et al., 2014; Feldman, 1996). Underemployment has five sub-constructs:

An employee having more education than the job requires,

An employee having more qualifications and work experience than the job requires,

An employee being involuntarily employed in an area outside his/her area of education,

An employee involuntarily working in part-time, temporary, or non-permanent jobs,

An employee receives less pay compared to his/her previous job, or compared to employees with the same education and work experience. Among these, pay underemployment and status underemployment, are especially salient for women. They may be placed in lower-paying or less prestigious roles than their qualifications warrant. These conditions not only affect career trajectories but also undermine overall job satisfaction.

The Psychology of Working Theory (PWT) is based on the experiences of groups that are not considered within traditional career approaches. Drawing on the International Labour Organization's decent work standards, PWT emphasizes that access to safe working conditions, adequate compensation, reasonable hours, supportive organizational values, and healthcare is essential to promoting human dignity and well-being in the workplace (Duffy et al., 2016).

Although decent work and underemployment may appear mutually exclusive, they can coexist in practice. For example, a job may provide safe working conditions, flexible hours, supportive organizational values, and access to healthcare while still offering lower pay or a lower-status role than an individual's qualifications would justify. In such cases, employees may simultaneously perceive their work as "decent" in certain respects yet still experience underemployment in others. Within this framework, decent work may serve as a factor, potentially mitigating the negative consequences of pay-status underemployment on psychological outcomes such as job satisfaction.

Despite a growing body of literature on gender inequality and employment, research examining the moderating role of decent work in the association between pay-status underemployment and job satisfaction among working women remains limited, particularly in non-Western contexts. In Turkey, where cultural expectations around caregiving and household responsibilities continue to shape women's employment decisions, this relationship warrants closer examination.

This study addresses this gap by investigating whether decent work moderates the association between pay and status underemployment and job satisfaction among working women in Turkey. By integrating PWT and underemployment theory, the research aims to contribute to a more nuanced understanding of how structural employment quality interacts with gendered labor market experiences to influence women's job satisfaction.

2. Literature Review

2.1. Pay underemployment

Pay underemployment refers to situations in which individuals earn less than what is considered appropriate based on their qualifications, past employment, or relative to peers with the same qualifications (Feldman, 1996; Allan et al., 2017). This form of underemployment not only reflects an objective wage discrepancy but also relies on subjective perceptions of being underpaid compared to others with similar characteristics. Measurement tools have typically included single-item comparisons of current versus previous income or self-assessments relative to peers (Maynard et al., 2006), yet such methods may limit the validity and reliability of the construct. Beyond measurement concerns, pay underemployment has been associated with decreased job satisfaction across several domains including pay, benefits, promotion, and perceived fairness, and in more severe cases—such as poverty wage employment—may also impede individuals' access to a decent standard of living (Allan et al., 2017; Maynard et al., 2006).

2.2. Status underemployment

Status underemployment refers to a condition in which employee perceives his/her current job position to be of lower status compared to a previous role or relative those of similarly qualified peers. (Feldman, 1996; Allan et al., 2017). This form of underemployment may also manifest when employee holds a status that does not correspond to his/her educational attainment (Friedland & Price, 2003). Measurement approaches include subjective comparisons to past roles or objective discrepancy scores between actual and predicted occupational status. Although research on status underemployment remains limited, existing studies suggest that it is negatively associated with work related attitudes and positively related to negative health outcomes such as chronic illness, reduced physical health condition, and depression (Friedland & Price, 2003). These findings indicate that status underemployment poses significant risks not only to individual well-being but also to organizational effectiveness.

Multinational studies in Europe show that many working mothers are involuntarily pushed into part-time jobs, which leads to decreased motivation and reduced job satisfaction. Numerous studies have demonstrated that underemployment negatively affects work related attitudes such as job

satisfaction, organizational commitment. In Turkey**,** working women experience work-family conflict which weakens their job satisfaction and retention. Alternative working arrangements are more common among women in Turkey; however, these often result in underemployment, result in effects on job satisfaction.

For working women, the negative implications of status and pay underemployment may be further intensified due to the dual burden of professional and caregiving responsibilities. In many cultures, particularly those with traditional gender norms, motherhood is still strongly associated with domestic caregiving, which can constrain women's access to upward mobility and equitable employment. As a result, women—especially after maternity leave—may face occupational downgrading**,** be channeled into lower-paying or less prestigious roles, or encounter subtle forms of discrimination that limit their ability to utilize their full potential. These conditions contribute to a perceived misalignment between their qualifications and job outcomes, exacerbating feelings of underemployment. Furthermore, due to the time and energy demands of caregiving, working mothers may be more likely to accept roles with reduced hours, lower pay, or outside their field, not by choice but by constraint. Therefore, the intersection of gender roles**,** care obligations, and structural inequalities plays a critical role in shaping how underemployment is experienced and how it affects job satisfaction among women with children.

H1: Pay underemployment is negatively associated with job satisfaction among women.

H2: Status underemployment is negatively associated with job satisfaction among women.

2.3. The moderation role of decent work

The Psychology of Working Theory (PWT) suggest that traditional vocational research

doesn’t represent diverse populations. The theory focus on individual-level economic constraints and experiences of marginalization. Given these features, PWT offers a suitable framework for examining decent work among woman workers who encounter some barriers within labor market.

In shaping their concept of decent work, the PWT authors drew from the International Labour Organization’s (ILO) decent work standards. These standards encompass: (a) safe physical and interpersonal working conditions free from physical, mental, or emotional abuse; (b) working hours that provide adequate rest and leisure time; (c) organizational values that align with family and social values; (d) fair and sufficient compensation; and (e) access to adequate healthcare (Duffy et al., 2016, p. 130). The traditional family structure—centered on a male breadwinner and a female caregiver—remained largely unchallenged until the mid-twentieth century. The growing presence of women in the labor force from the 1950s onward began to destabilize this model, exposing deep-seated tensions between evolving gender roles and rigid workplace expectations. This paradox placed working mothers in a precarious position, simultaneously valorized in the private sphere and devalued in the public one (Sterling & Allan, 2022, 2020). The dominance of male-centered working conditions placed women—especially pregnant employees and working mothers—at a disadvantage, and numerous studies have documented the discrimination they face (Cakmak-Otluoglu, 2015; Sterling & Allan, 2022, 2020). The PWT suggests that when all these elements are present, human dignity can be achieved. Job satisfaction is the result of individuals' evaluation of working conditions (Judge et al., 2017) and is a concept positively associated with decent work (Işık et al., 2019; Inegbedion, 2014). Nevertheless, if working women have decent work, their job satisfaction may increase even if they have pay and status underemployment.

H3: Decent work moderates the relationship between pay underemployment and job satisfaction, such that this association is weaker at higher levels of decent work.
H4: Decent work moderates the relationship between status underemployment and job satisfaction, such that this association is weaker at higher levels of decent work.

3. Methods

3.1 Participants and procedure

The data was collected from 150 working woman in Turkey. The respondents participated in the survey either via the Internet or in person. It was emphasized that the data collected would only be used for scientific purposes. The Likert-type scale ranged from 1 (strongly disagree) to 7 (strongly agree). The average age of participants was 40 years (SD=4.61) and ages ranged from 28 to 59. 52.7% of participants had bachelor degrees, 43.7% had post-graduate degrees, 3.6% had high school graduates.

3.2 Scales

Decent Work Scale

We measured the perceptions of the participants with decent work scale, which was first developed by (Duffy, Allan, England, Blustein, Autin, Douglass...et al., 2017). The validity and reliability studies in the Turkish cultural context were conducted by Buyukgoze Kavas and Autin (2019). There are five sub-dimensions. The scale's internal consistency reliability was reported as 0.80. A high score in the sub-dimensions of the scale indicates a high level of decent work.

Job Satisfaction Scale

The shortened 5-item Job Satisfaction Scale developed by Judge et al., 1998 was used. Example items include "I feel fairly well satisfied with my present job". Validity and reliability studies were performed by Keser & Bilir (2019). They identified the scale's reliability as α= 0.78. The reliability of the job satisfaction scale in this study was pointed out as α=0.96.

Pay and Status Underemployment Scale

Working women's perceptions of whether they are underpaid or have a lesser hierarchical status compared to other employees with similar qualifications were assessed the pay and status underemployment subscales of the subjective underemployment scale (Allan et al., 2017). Example items include "I am underpaid compared to those with my level of knowledge." and "I deserve a higher position in my company.". The estimated internal consistency of the pay underemployment scale was α=97 and the estimated internal consistency for the status underemployment scale was a α= .96. Validity and reliability studies were performed by Büyükgöze-Kavas et al. (2020). They reported the scale's reliability was α= 0.78. In the present study, the internal consistency reliability was α= .96.

3.3 Data Analysis

The correlational analysis was tested by SPSS (Version 24.0). The effects of moderation were tested through the PROCESS Macro Model 1 (Hayes, 2022). Since the data in this study relied on self-reports from working women, it may exhibit common method bias. Thus, Harman's single factor test was applied. The variance explained by the first factor was 22.27%, indicating that this study was free of serious methodology bias. (Podsakoff & Organ, 1986).

There is a high level of correlation between pay underemployment and status underemployment (.708; p<.001). There is a strong negative correlation between pay underdevelopment and job satisfaction and decent work (-.479, p< .001; -.253, p< .001). Significant negative relationship between status underemployment and job satisfaction and decent work (-.491, p< .001; -.241, p< .001) exist. There is a strong positive significant relationship between decent work and job satisfaction (.541; p< .001). All is shown in Table 1.

Table 1: Correlations between Study Variables

Variables	PU	SU	DW	JS
PU		.708**	-.253**	-.479**
SU	.708**		-.241	-.491**
DW	-.253**	-.241**		.541**
JS	-.479**	-.491**	.541**	

**. Correlation is significant at the 0.01 level (2-tailed)

Pay underemployment significantly and negatively affects job satisfaction (b=-.2614, se=0.0565 p<0.05). Decent work significantly and positively affects job satisfaction (b=0.629, SE=0.0565 p<0.05). H1 is supported. The PROCESS Macro Model 1 was used to test the moderator effect (Hayes, 2022). According to the findings from Model 1, the effect of low pay on job satisfaction is not moderated by decent work (b = 0.0472, SE = 0.053, p > 0.05). Hypothesis H3 is rejected.
Status deficiency significantly and negatively affects job satisfaction (b = -0.2806, SE = 0.0555, p < 0.05). Hypothesis H2 is supported. Decent work significantly and positively affects job satisfaction (b = 0.6385, SE = 0.1064, p < 0.05). The PROCESS Macro Model 1 was used to test the moderator effect (Hayes, 2022). According to the findings from Model 1, the effect of status deficiency on job satisfaction is not moderated by decent work (b = 0.0434, SE = 0.0491, p > 0.05). Hypothesis H4 is rejected.

Table 2. The Moderating Effect of Decent Work

	B	**t**
PU	-.2614	-4,6247*
DW	,6299	5,9579*
PU*DW	,0472	,9375
SU	-,2806	5,0555*
DW	,6385	6,0023*
SU*DW	,0434	,8841

4. Discussion, theoretical and practical implications

This study examines how decent work moderates the link between pay-status underemployment and job satisfaction among working women in Turkey. The findings confirmed that both pay and status underemployment were significantly and negatively associated with job satisfaction, consistent with prior research highlighting the detrimental effect of underemployment on well-being (Feldman, 1996; Allan et al., 2017). In contrast, decent work was strongly and positively related to job satisfaction, underscoring its central role in fostering dignity and positive evaluations of work (Duffy et al., 2016). However contrary to the hypothesis, decent work did not moderate the negative effects of pay and status underemployment on job satisfaction.

4.1Theoretical Implications

The results provide several theoretical insights. First, they reaffirm that underemployment. This issue undermines women's job satisfaction by devaluing their skills, limiting upward mobility, and intensifying work–family conflict. Second, the main effect of decent work on job satisfaction suggests that its contribution may be more direct**.** This aligns with the notion that while decent work enhances dignity and satisfaction, it cannot necessarily "buffer" the psychological harm caused by being underpaid or underemployed in status terms. One reason is the conceptual overlap: adequate compensation is itself a criterion of decent work, thereby complicating the construct's ability to offset pay underemployment specifically. In practice, a job can be considered decent in some respects (e.g., safe environment, flexible hours, access to healthcare) while still leaving employees underemployed in terms of pay or status. This paradox highlights the complexity of employment quality and suggests that decent work and underemployment may represent complementary but non-substitutable dimensions of working life.

4.2 Practical Implications

For policymakers and organizations, these findings point to a dual responsibility. Enhancing decent work standards—such as ensuring safety, promoting work–life balance, and respecting family values—is essential to raising women's job satisfaction. Yet such improvements alone may not protect against the dissatisfaction stemming from underemployment. Employers must also confront structural inequities by ensuring fair pay, equitable promotions, and career pathways that match women's qualifications. In Turkey, where traditional gender norms and caregiving expectations remain strong, supporting women's

reintegration into the labor force through transparent pay practices, childcare support, and fair promotion systems is particularly crucial.

5. Limitations and Future Directions

Several limitations are noticeable. The cross-sectional design limits causal inference, and future research should employ longitudinal or experimental designs to capture the dynamics between underemployment, decent work, and job satisfaction over time. Additionally, the study's data came from Turkish working women restricts generalizability; comparative studies across genders and cultural contexts would enrich understanding. Future work could also examine other potential moderators—such as supervisor support, organizational justice, or resilience—that may more effectively buffer the negative effects of underemployment.

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Deposit Refund Systems as Effective Tools for the Circular Economy Transition: Evidence from the Republic of Moldova

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Abstract

Introduction: In the context of Moldova's EU accession process, aligning with European environmental policies has become a priority. One of the most effective instruments for advancing the circular economy is the Deposit Refund System (DRS), which encourages the collection and reuse of packaging. Despite its proven efficiency in EU Member States, Moldova is still in the preparatory phase of implementing such a system. Understanding consumer perceptions is essential, since public acceptance and participation determine the system's overall effectiveness.
Aim: The study aims to analyze consumer awareness, attitudes, and readiness regarding the implementation of the Deposit Refund System in the Republic of Moldova, with a particular focus on knowledge levels, willingness to pay the deposit fee, refund preferences, and the perceived financial impact on household budgets.
Method: The research was based on a questionnaire survey applied to 608 respondents, representing different age groups, education levels, and socio-economic categories. The survey explored knowledge about the DRS mechanism, consumer preferences concerning the deposit amount and method of refund, as well as perceptions of financial implications for households. The collected data were processed, analyzed, and compared with international experiences to highlight similarities and differences.
Findings: The analysis revealed that consumer knowledge about DRS is predominantly moderate or limited, with significant gaps regarding accepted packaging types and system functioning. The majority of respondents (over 70%) considered a deposit fee of 2 lei (0,10 Eurocent) per package acceptable and reasonable. Preferences for refund methods varied, but most consumers favoured direct discounts on future purchases or cash refunds. Perceptions of financial impact were mixed: while many respondents viewed the system as manageable, lower- and middle-income groups considered the refundable fee a meaningful incentive to participate actively.
Originality and value: This research represents one of the first systematic analyses of consumer perceptions regarding the Deposit Refund System in Moldova. By focusing on both knowledge levels and behavioral intentions, it provides practical insights for policymakers, industry stakeholders, and civil society. The study's value lies in its contribution to the debate on circular economy implementation in candidate countries, offering evidence-based recommendations that can support Moldova's alignment with EU environmental acquis and strengthen its pathway toward sustainable development.

Key words: Deposit Refund System (DRS), Circular economy, Sustainable consumption, Waste management, Extended producer responsibility (EPR), Green transition, Environmental governance.
Jel Codes: Q53, Q58

1.Introduction

In 2022, the Republic of Moldova became a candidate country for accession to the European Union (European Council, 2022). In this context, the Republic of Moldova must align itself with a series of policies and standards essential for full integration into the European Union, including the Environment, Circular Economy and Sustainable Development policies. Thus, the subject of the circular economy has become an important theme for the reforms currently being implemented in the Republic of Moldova. The circular economy is an emerging economic model that aims to reduce

resource waste and environmental impact by maintaining the value of materials and products in the economy for as long as possible (Perciun et al., 2022).

An essential element in the transition to a circular economy is the extended producer responsibility (EPR), as well as the deposit refund systems (DRS), which contribute to the efficient collection of packaging and its re-introduction into the supply chain. (Sterev, 2019).

Although the circular economy is now a widely accepted concept, the term "circular economy" remains open to interpretation, but in general it should include at least the notions of input reduction, reuse and recycling of waste; this naturally creates the need for optimized networks between companies and eco-industrial parks (Arruda et al., 2021). In turn, concepts from industrial ecology (F. den Hond, 2001; Lowe and Evans, 1995), such as "cradle-to-cradle" (Mohajan, 2022), can be considered basic principles of eco-innovation, in which waste is used as raw materials for new products and applications, known as the "zero-waste economy" (Awasthi et al., 2021). Thus, to ensure the transition to a circular economy, we need more effective tools.

Extended producer responsibility and return-guarantee schemes are key operational tools of the circular economy (Laubinger et al., 2022). EPR is a legislative approach whereby producers are held accountable for the entire life cycle of products, including the management of the resulting waste. This responsibility can be manifested through financial or organizational contributions to the collection, recycling or recovery systems of products at the end of their life (OECD, 2024). EPR creates incentives for the eco-design of products and for reducing their environmental impact. EPR incentivizes manufacturers to design more durable and recyclable products, while SGR provides an efficient infrastructure for the collection and re-introduction of materials into the economy. SGR are an effective mechanism for implementing EPR principles, especially in the case of beverage packaging. These schemes involve the payment of a guarantee upon purchase of the product, which is returned to the consumer when the packaging is returned. DRS contributes to increasing collection rates, reducing waste and creating valuable secondary raw materials for industry.

According to the European Commission (2021), DRSs are among the most effective tools for collecting beverage packaging, with some countries achieving collection rates of over 90%. DRSs are often implemented as an integral part of EPR schemes. They help close the material loop and encourage the design of more sustainable and reusable packaging (OECD, 2024). For example, Germany has introduced SGR since 2003 and has a return rate of over 98% for the targeted packaging (TOMRA, 2025 a). Latvia's deposit return system (DRS) was launched on 1st February 2022. Since then, the country's collection rate for PET containers has apparently increased from 45% before the system to 83% two years later. (Packaging Europe, 2024). Finland, Estonia and Norway are other successful examples, where collaboration between authorities and industry has led to effective implementation (Tomra, 2025 b).

Starting with 2027, the Republic of Moldova is to implement the DRS. In this context, according to Picuno et al. (2025), the success of a DRS depends on:

- transparency and independence of the system administrator;
- involvement of all actors in the chain (retailers, producers, consumers);
- collection infrastructure (including automatic machines of the "reverse vending" type);
- adequate level of guarantee, sufficiently motivating for the consumer.

Based on the above, the authors of this study aimed to outline a picture of consumer perception, which is a key player in the success of the SGR operation.

Thus, **the objectives of this study are:**

1. ***Identifying the degree of knowledge of the DRS mechanism by consumers in the Republic of Moldova***
2. ***Analyzing their degree of openness to paying the deposit fee and their preferences regarding the size of the fee and the method of returning the deposit***
3. ***Analyzing consumer perception regarding the financial impact on the family budget with the implementation of the DRS in the Republic of Moldova.***

Relevance of the study:

This study is particularly relevant in the context of Moldova's EU accession process, as the implementation of return-guarantee systems/deposit refund systems (DRS) represents both a legal requirement and a practical necessity for harmonizing with European environmental standards. By analyzing consumer knowledge, openness, and financial perceptions, this research provides insights into the social acceptability of DRS in a country where awareness of circular economy mechanisms is still emerging.

Moreover, while numerous studies have examined deposit return systems in EU Member States, evidence from candidate countries in Eastern Europe remains scarce. Moldova's case offers a unique opportunity to explore how institutional readiness, consumer behavior, and cultural attitudes interact in shaping the success of circular economy tools.

The findings are therefore relevant not only for policymakers and industry stakeholders in Moldova, but also for international organizations and other countries in the enlargement process. Understanding consumer perception can guide the design of more effective awareness campaigns, ensure higher return rates, and minimize resistance to change. At the same time, the study contributes to the broader literature by highlighting the role of public acceptance in bridging the gap between policy formulation and practical implementation of circular economy instruments.

2. Literature review

The literature review is structured in two main sections. The first section focuses on the analysis of the fundamental concepts: circular economy, extended producer responsibility (EPR) and deposit refund system (DRS), highlighting both the definitions and basic principles, as well as the interaction between them. The analysis aims to clarify how REP functions as a key tool for implementing the circular economy and how DRS represents an effective practical application of this principle, contributing to waste reduction and resource recovery.

The second section focuses on the analysis of the legislative framework and public policies in the Republic of Moldova related to the circular economy, with a focus on existing measures in the field of waste management, EPR implementation and DRS development.

This two-fold approach was chosen in order to connect the theoretical foundations of the circular economy with the specific legislative and policy context of the Republic of Moldova, thus ensuring both conceptual clarity and practical relevance of the study.

2.1. Studies in the Field of Circular Economy, EPR and DRS

The growing interest in the topic of circular economy has intensified since 2015. Thus, *the definition and content of the concept of circular economy is continuously developing.* For example, Andrews, D, (2015) integrates the concept of biomimetics – "an approach to innovation that seeks sustainable solutions to human challenges, imitating the time-tested models and strategies of nature" into the circular economy, through a parallel with bio-geochemical cycles. (Andrews, 2015). CE as an umbrella concept, which encompasses other concepts based on resource life-extension strategies. (Blomsma and Brennan, 2017).

Another study presents the circular economy, green economy and bioeconomy as concepts derived from the principles of sustainability; EC is highlighted by its focus on urban development and intergovernmental relations in supply chains (D. D'Amato et al., 2017). This requires the reconsideration of current consumption and production models, especially to achieve Sustainable Development Goal 12 and ensure the well-being of the population and long-term planetary security. To promptly respond to these challenges and changes, joint and synergistic efforts are needed from all parties involved (authorities, economic agents, consumers, and society as a whole). Governments, businesses, and all citizens should work together to increase resource efficiency, reduce waste and pollution, and shape a new circular economy. (Șavga, L., 2024).
Michael Lieder and Amir Rashid (2006) divides academic works on CE into three different perspectives according to the motivation of the publication: scarcity of resources (energy and material consumption); environmental impact (solid waste, landfills, emissions or pollution); and economic benefits (financial aspects, such as cost reduction, increased revenue or gross domestic

product. So, different actors have unique experiences and knowledge that can contribute to the development and implementation of circular economy practices (Perciun et al., 2023).
In the process of introducing a circular economy as the main model of national production, the risk management system from the position of the state is one of the key indicators of the effectiveness of such a transformation (Sosnovska and Shtepa, 2020). CE aims to preserve raw materials and keep them at its highest value, minimizing pollution; to mention a few gas emissions, energy leakage and water pollution. (Kruja and Bedo 2022).
Thus, the circular economy can be ensured through instruments that would ensure these transformations. Extended Producer Responsibility (EPR) is such a public policy instrument that operationalizes the principles of the circular economy by transferring responsibility for the entire life cycle of products to producers, including in the post-consumer stage. (OECD, 2024). There are various Extended Producer Responsibility policy instruments that aim to transfer the financial and sometimes physical responsibility for waste management from the public sector to producers (Laubinger et al., 2022). Mandatory EPR instruments commonly used to finance or organize kerbside collection typically include 3 elements (Laubinger et al., 2022) (Figure 1):

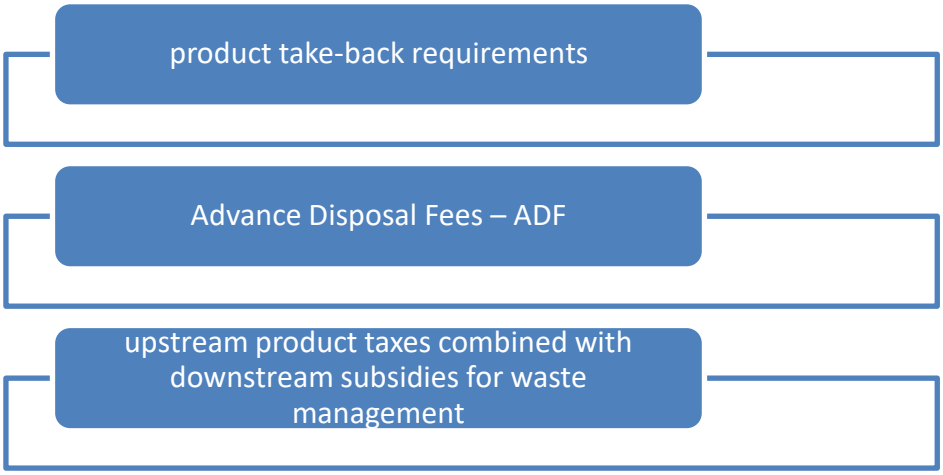


Figure 1. The Basic Elements of an EPR System
Source: adapted by the authors from Laubinger et al., 2022.

A Deposit-Return System is considered an Extended Producer Responsibility policy instrument when producers are responsible for financing and operating the scheme. In such a scheme, consumers pay a deposit when they purchase a product, which is returned when the packaging is returned to a collection point. (TOMRA, 2025 c). This instrument has proven effective in increasing collection rates and reducing the phenomenon of uncontrolled dumping of products, such as beverage packaging. Assigning a value to returned products helps operators collect more and higher quality materials, which can be reused, recycled or disposed of in an environmentally friendly way.

Examples of separate collection points include Extended Producer Responsibility (EPR) schemes and Deposit Return Systems (DRS), *provided that these are fully financed by producers* (Calabrese et al., 2021). In such cases, it is important to emphasize that progress along this path requires *Circular Supply Chain Management* (CSCM). CSCM enables the development of innovative business models aligned with the principles of the circular economy (Bocken et al., 2014), by effectively closing, narrowing, and slowing down material loops (Bocken et al., 2016).

Integrating life-cycle thinking from the earliest stages of product design is fundamental to creating favorable conditions for disassembly and adaptation for reuse. It can be said that the terminology related to the circular economy has become more divergent than convergent, and the term “closed loop” is often used in parallel (Bocken et al., 2016). This approach is also reflected in a new way of economic thinking, based on reconditioning, remanufacturing and recycling (Gregson et al., 2015). Thus, SGR does not only depend on high return rates, but also on achieving efficiency in economic,

environmental and social areas, while ensuring a level playing field for all actors involved in the returnable packaging value chain. The more transparent the scheme and the closer the coordination, the better the performance of the GRS. (Picuno et al., 2025).

Malindzakova et al. (2022) suggest that the GRS can fulfill several functions within the waste management system. Specifically, they can:

1. Increase the quantity and quality of collected materials and reduce the phenomenon of littering;
2. Contribute to high collection rates of valuable and recyclable materials;
3. Transfer the costs and responsibilities associated with the end-of-life phase of the product from local authorities to producers, highlighting the importance of Extended Producer Responsibility regulations.

However, the models of Guarantee-Return System for single-use packaging in Europe use a number of basic elements, namely: the actors involved in the process – the GRS operator, producers, retailers and consumers, the flows of money and materials between them (the mode of operation) and the costs and revenues of each (the cost burden). (Calabrese et. al., 2021). And most of the problems the system will face, even if they are based on cultural factors, can be solved at the organizational level. Thus, the anticipated reluctance towards the system can be overcome by relevant solutions that make it transparent and simple. (Krzywda, 2022).

2.2. Public policies of the Republic of Moldova regarding the circular economy

Countries may pursue different objectives when deciding to increase resource efficiency and promote the transition to a circular economy. Thus, the scope and content of circular economy policies differ from one country to another. These policies generally focus on environmental aspects and related areas of intervention, and are often seen as tools to respond to global challenges such as climate change, to improve energy and raw material security, and to boost resource efficiency in production and consumption processes. Although environmental objectives are the most common, more and more policies also integrate social and economic components, recognizing them as essential elements of a circular economy. In this context, the transition to a circular economy is increasingly perceived as an opportunity to transform the economy into a more sustainable, competitive and resilient one in the face of future challenges.

Thus, the type and extent of information needed to support circular economy policies depends on how CE is defined and the purpose for which this information is needed – such as policy development, monitoring and evaluation, awareness-raising, communication and public participation. This information also varies depending on whether it is used in an international context or to support national or regional policies and initiatives. Circular economy policies can cover a wide range of topics and mechanisms. It is therefore important to clarify the scope of monitoring and statistical boundaries, as well as to reach consensus on a common language and a clear definition to guide the monitoring of progress at the international level and the development of a harmonised indicator framework that interested countries can adapt to their own context (OECD, 2024, Laubinger, et al., 2022.). For example, Governments around the world have taken decisive measures to reduce, reuse and recycle waste (TOMRA, 2025). In the Republic of Moldova, the situation in the field of waste management is similar to countries with an emerging economy because waste generation is influenced by numerous factors, such as: types of economic activity, difficult macro-financial situation, low incomes, consumer behavior, degree of responsibility, level of awareness of the problem of all actors involved in this process. To date, the Republic of Moldova has approved a series of legislative and normative acts (Table 1), which allow us to conclude that the legislative foundations for the implementation of the circular economy and the SGR have been laid.

Table 1. The legislative framework of the Republic of Moldova on circular economy, waste management, and sustainable development

Nr.	Normative acts	Essential content
	LAW NO. 209 ON WASTE, APPROVED ON 29.07.201	➢ Outlines the general legislative and institutional framework regarding waste management, establishes the legal bases, state policy and measures necessary for the protection of the environment and public health by preventing or reducing adverse effects caused by the generation and management of waste and by reducing the general effects of resource use and increasing the efficiency of their use. ➢ Establishes the concept of extended producer responsibility (EPR). As a priority, the products subject to extended responsibility are listed: a) batteries and accumulators; b) electrical and electronic equipment; c) vehicles; d) oils; e) packaging.
	REGULATION ON PACKAGING AND PACKAGING WASTE (GD. 561 OF 31-07-2020)	➢ establishes priority measures aimed at preventing the production of packaging waste and the principles regarding the reduction of the final disposal of packaging waste through reuse, recycling and recovery.
	Government Decision on the establishment of the Packaging Deposit System (GD, 2024)	➢ At present, the packaging deposit system in the Republic of Moldova is still at the stage of a draft Government Decision, subject to public consultations. It provides for the mechanisms for the creation and operation of the Packaging Deposit System (SDA), but has not yet been finally approved, which means that the regulations may undergo changes before entering into force. Therefore, our analysis is based on the provisions of the current draft, and the interpretation of the results should be understood in this context.
1	**NATIONAL DEVELOPMENT STRATEGY "EUROPEAN MOLDOVA 2030" (Law no. 315/2022)**	➢ Long-term development vision (until 2030), with objectives in social cohesion, economic competitiveness and European integration the emphasis will be on the active application of the "polluter pays" principle. This objective will be supported by a fair system of taxes and duties and by financial support for ecological initiatives. In addition, the integration of the principles of the circular economy into the national economy will be supported and encouraged.
2	**GOVERNMENT ACTIVITY PROGRAM "PROSPEROUS, SECURE, EUROPEAN MOLDOVA" (GD no. 28/16.02.2023)**	➢ The program focuses on environmental priorities, such as: accelerating the implementation of European standards, in accordance with the European Green Deal; integrating sustainable development principles into all economic sectors, including public procurement and subsidy policies; creating an integrated management system for water, soil and air quality; reducing pollutant and greenhouse gas emissions compared to 1990 base year levels; applying extended producer responsibility; implementing an integrated waste management system to reduce landfilled waste and increase the recycling rate, etc.
3	**ENVIRONMENTAL STRATEGY FOR THE YEARS 2024–2030 (GD No. 409, 2024)**	➢ Environmental protection policies: reducing pollution, preserving biodiversity, aligning with the EU environmental acquis. The focus is on the 8th European Environment Action Programme. The 8th EAP aims to accelerate the green transition in a fair and inclusive way, the long-term objective for 2050 "A good life, within the limits of the planet".
4	**WASTE MANAGEMENT PROGRAM FOR THE YEARS 2023–2027 (GD no. 972/2023)**	➢ Plan for prevention, selective collection, recycling and controlled disposal of waste, in accordance with the EU Waste Directive. The stipulated program involves concrete actions regarding the transition to a circular economy.
5	**PROGRAM FOR PROMOTING THE GREEN AND CIRCULAR ECONOMY FOR THE PERIOD 2024–2028**	➢ Measures for the transition to circular models: eco-design, tax incentives, support for pilot projects in industry, agriculture and services. ➢ The objective of this Program "is to create an environment conducive to sustainable development in harmony with economic development and social well-being, generating economic prosperity, improving the quality of life of citizens and ensuring the preservation of the environment for future generations, by promoting and implementing the principles of the green economy and adopting the concepts of the circular economy in the Republic of Moldova".

Source: elaborated by authors

In conclusion, the Republic of Moldova has a comprehensive legislative and strategic framework that supports the transition to a circular economy and the implementation of extended producer

responsibility and the DRS scheme. Overall, these normative acts and strategies reflect an integrated approach, aimed at aligning the Republic of Moldova with European standards on the circular economy, waste reduction and producer responsibility.

3. Materials and Method

The selected methodology directly targets the main objectives of this study. To achieve the proposed objectives, general scientific methods were applied: analysis, synthesis, history and logic, critical analysis of materials, clustering, as well as analysis methods, such as survey, interview, statistical processing of empirical data, method of graphs, indicators, comparison, grouping, etc.

The information support of the research consists of: legislation, international and European policies and strategies in the field of plastic waste management, national policies and strategies, as well as empirical data collected based on a questionnaire.

The data presented in this study were collected on the Google forms platform, but also through the method of telephone interviews based on the aforementioned questionnaire, and the responses were processed and systematized in Excel.

4. Results, Limitations and Future Directions

General characteristics of the sample and its limitations

The survey was completed by a total of 608 respondents, of which 48.7% were women, 42.4% were non-respondents, and 8.9% did not respond. Of the total, 48% of respondents were from urban areas and 52% were from rural areas. The sample structure used in the study presents certain deviations from the demographic structure of the general population, which may influence the external validity and interpretation of the research results. In particular, the distributions by age and level of education are essential aspects in the analysis of perceptions and behaviours related to the DRS.

Distribution by age group

The sample is overrepresented in the age groups 18–25 years (19.1% in the sample vs. 8.1% nationally) and 36–50 years (24.3% in the sample vs. 13.7% nationally), while other groups are underrepresented or close to the national average. This distribution may affect the results in two ways (Table 2):

Table 2. Sample characteristics, by age and education level.

Age group, in years	Sample weight, in %	National weight, in %	Observations
18–25	19,1	8,1	Significant overweight – young people are over-represented.
26–35	19,	21,2	Almost similar to the national structure.
36–50	24,3	13,7	Clear overweight – active adults are more present.
51–65	21,7	21,1	Very close to the national average.
Over 65	15,6	15,8	Correct representation

Source: authors' survey data and data from the National Bureau of Statistics

Distinct attitudes and behaviours are observed. Young people (18–25 years) are generally more open to environmental practices and receptive to ecological initiatives such as DRS, while active adults (36–50 years) may show greater concern for the efficiency and costs of a newly implemented system. The predominance of these categories could lead to an artificially amplified perception of support for DRS (Lee & Kim, 2024; Piscitelli & D'Uggento, 2022).

Underrepresentation of other categories (e.g., 26–35 years or over 50 years) may miss important perceptions associated with life experience, economic stability, or resistance to change – factors relevant to the acceptance or rejection of a new system. Studies in the literature indicate that working

adults, while they may be receptive to change, are often more concerned with the pragmatic aspects of new policies, such as cost-effectiveness and lifestyle impacts (Barr et al., 2011). This distribution may lead to an overestimation of support for SGR among the general population, by missing important perceptions associated with older ages, who may exhibit greater resistance to change, different economic stability, and attitudes formed in distinct socio-economic contexts.

Distribution by education level

The sample includes a significantly higher proportion of people with secondary education (44.2% vs. 32.3% nationally) and a lower proportion of people with higher education (35.5% vs. 54.2%). In contrast, those with primary or secondary education are slightly overweighted (19.2% vs. 13.4%) (Table 3).

Table 3. Distribution by education level

Education level	Sample weight, in %	National weight, in %	Observations
Primary/secondary school studies	19,2	13,4	Slightly over-represented.
Secondary education (high school/vocational)	44,2%	32,3%	Significant overweight.
Higher education	35,5%	54,2%	Significant underrepresentation.

Source: authors' survey data and data from the National Bureau of Statistics

This factor may affect the results on environmental engagement, as the literature suggests that the level of education shapes both understanding and involvement in pro-environmental behaviors. The underrepresentation of individuals with higher education could therefore lead to a slight underestimation of awareness regarding the functioning and benefits of DRS (Ardoin et al., 2019).

Limitations

The sample presents a selection bias, as the distribution of age groups and education levels does not perfectly reflect the real structure of the population of the Republic of Moldova. The overrepresentation of people with higher education may lead to a positive bias, i.e. the results show a higher level of interest and support for the DRS, because people with higher education tend to be more informed and more receptive to environmental issues. The overrepresentation of the 36-50 age group, which is more concerned with efficiency and costs, may influence the general perception of the DRS, possibly in the sense of more critical or pragmatic expectations. At the same time, the underrepresentation of other groups (e.g., young people 18-25 or people with primary/secondary education) may omit important perceptions, such as enthusiasm for innovations among young people or resistance to change among people with lower education.

Identifying the level of consumer awareness of the DRS mechanism in the Republic of Moldova

The study, based on a sample of 608 respondents, analysed the level of awareness of the DRS for plastic packaging. The distribution of responses to the question "Do you know the Guarantee-Return System for packaging?" is presented according to Figure 3:

- 20.2% of respondents indicated a thorough knowledge of the system, answering "Yes, well".
- 59.2% reported a partial understanding, selecting the option "Yes, partially".
- 20.6% declared a total lack of knowledge of the system, choosing the option "I don't know".

The results demonstrate a more or less complete familiarity of the population with the DRS. A cumulative percentage of 79.4% of the sample (composed of those with partial knowledge and those with good knowledge) have a complete or partially complete understanding of this recovery tool.

Analysing the responses to the question "*Do you know how the deposit return system works?*" reveals a predominantly moderate level of awareness among consumers regarding the functioning of the DRS. The largest share of respondents, 253 individuals (41.6%), indicated a "Moderate" level of knowledge. Together with the 142 respondents (23.4%) who selected "A little," this suggests that most of the population has only a partial, rather than a comprehensive, understanding of the mechanism. A considerable number, 108 people (17.8%), reported that they do not know the system at all, highlighting a significant information gap. Only a minority—72 respondents (11.8%) and 33 respondents (5.4%)—stated that they understand the system "Well" or "Very well." Combined, this represents just 17.2% of the sample, indicating that solid and detailed knowledge is limited to a small segment of the population.

Overall, these results point to the urgent need for more effective information and education campaigns, given that approximately 82.8% of respondents (categories 1, 2, and 3) lack a strong understanding of the system—a factor that could negatively affect both participation and the optimal functioning of the DRS.

The analysis of responses from 608 individuals to the question "*Do you know which types of packaging are accepted in this system*?" (measured on a scale from 1 – "Not at all" to 5 – "Very well") reveals several key findings. A predominant share of respondents (57.9%) reported a "Moderate" level of knowledge. Alarmingly, 17.6% indicated no knowledge at all, while another 6.6% demonstrated a low level of understanding. Only a small proportion of the sample showed solid knowledge: the combined percentage of those who answered "Well" (12.5%) and "Very well" (5.4%) amounts to just 17.9%. This confirms that a complete and detailed understanding of the acceptance criteria is limited to a narrow segment of the population.

In conclusion, the majority of respondents—over 75%—do not possess strong knowledge of this crucial aspect, which could lead to confusion and, ultimately, lower-than-expected return rates.

The analysis of the survey questions regarding knowledge of the functioning of the deposit return system and the types of packaging accepted revealed that the population demonstrates predominantly limited or incomplete familiarity with the mechanism. This lack of awareness is directly reflected in the main difficulties anticipated by respondents. The most frequently mentioned difficulty, indicated by 49.3% of respondents, is the lack of information. This result confirms and explains the earlier findings, where the majority reported only "moderate," "little," or "no" knowledge of the system. Thus, a clear correlation emerges between the low level of awareness and the concerns expressed about the system's effective operation.

The anticipated difficulties related to the complexity of the process (36.5%) and to additional expenses (71.4%) are also logical consequences of the lack of knowledge. An incomplete understanding of the return rules and acceptance criteria generates fears that the process will be difficult to follow and that packaging may not be accepted, which would cancel the effort made and lead to financial losses. Thus, the two data sets not only complement each other but also demonstrate a causal relationship: the low level of awareness is the main cause of the fears and anticipated difficulties (as shown in the Figure 2).

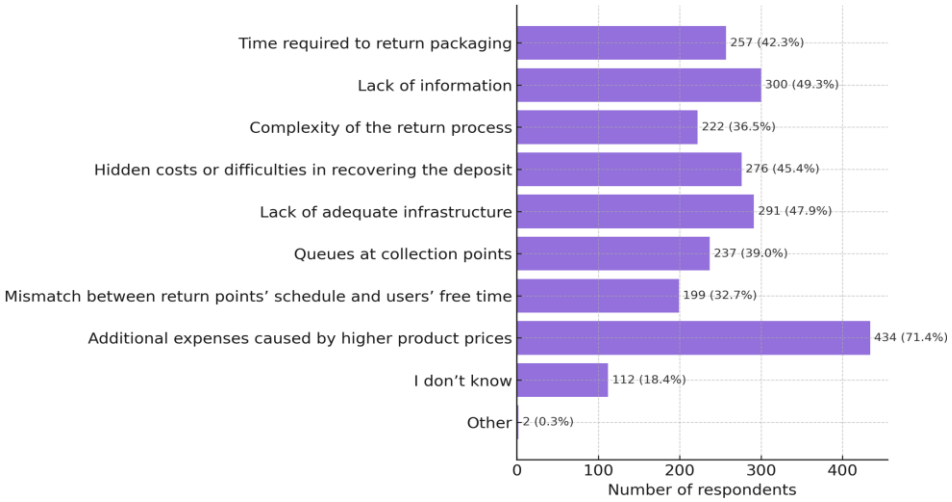


Figure 2. Anticipated difficulties in implementing the Deposit Return System
Source: elaborated by the authors based on questionnaire survey data.

Willingness to pay and preferred return options in the DRS

The analysis of the questionnaire responses demonstrates a surprisingly high acceptability of the deposit fee, which is the basis of the Guarantee-Return System (GRS). The fact that 55.7% of respondents indicated a high acceptability ("Good" and "Very good") for paying this fee is a key indicator of the potential success of the system in the Republic of Moldova in terms of its acceptance by the end consumer.

This conclusion is essential because:

- It validates the operating principle of the GRS: The GRS operates on the principle that the deposit fee acts as a financial incentive. People pay a small amount upon purchase, and this is returned to them upon handing over the empty packaging. The fact that the majority of the population accepts this financial mechanism indicates an implicit understanding of this principle and a willingness to participate.
- Contradicts previous fears: The results partially contrast with the fears of "additional costs" anticipated in the Figure (71.4% of respondents), which were interpreted as a potential financial barrier. The Figure clarifies this contradiction, showing that although there are fears related to the risk of losing the guarantee (due to packaging damage), the basic principle of the fee is perceived as fair and acceptable.
- Highlights the role of information: The 25.5% of undecided respondents ("Moderate") also confirms the conclusions of the previous answers (Figures) regarding the lack of information. This category of the public could be convinced to fully accept the system by clear communication, explaining the benefits of returning packaging and providing guarantees that the loss of the fee will be avoided as much as possible.

In conclusion, we observe that the financial element of the SGR (deposit fee) does not represent a major barrier for the majority of the population, but is accepted as part of the system. This acceptability is a solid basis for implementation and demonstrates that the main challenge remains in informing the public and ensuring an efficient feedback process, in order to transform this latent acceptability into active participation.

The respondents' answers to the question "*What amount do you consider reasonable for the refundable fee per package?"* reveal an absolute majority that considers 2 lei (approx. 10 eurocents) a reasonable amount: an overwhelming proportion of 79.7% of respondents indicated that 2 lei represents an acceptable refundable fee. The answers demonstrate a strong consensus among the population regarding the value that the guarantee should have. A percentage of 9.7% of the sample answered "*It is difficult for me to answer*", which suggests uncertainty regarding the appropriate

amount of the fee or a lack of familiarity with the concept. The percentages for amounts higher than 2 lei are significantly lower.

Likewise, a small percentage indicated that they are willing to pay any fee, provided that the guarantee is returned. This reinforces the idea that the principle of returning the money is more important than the amount itself for a small part of the public.

Based on the analysis responses indicating that an overwhelming majority of 79.7% of respondents consider a fee of 2 lei to be reasonable (see Figure 3), we can make a direct connection with the practices in other countries that operate deposit-return systems (SGR). In many European countries with functional SGRs, the amount of the deposit fee varies, but is generally set to be sufficiently motivating for returns, without representing an excessive financial burden.

For example:

- Germany: The deposit fee is 0.25 € per package, equivalent to approximately 1.25 lei.
- Lithuania: The fee is 0.10 €, i.e. approximately 0.50 lei.
- Finland: The fees vary, being 0.10 €, 0.20 € and 0.40 €, i.e. between 0.50 lei and 2 lei. (TOMRA, 2025 b)

Comparing these values with the survey result, it is observed that the 2 lei fee is in line with European practices, being even at the upper limit of the range of values accepted in other countries. This suggests that the proposal of a 2 lei fee would be realistic and aligned with international standards, while having a solid basis of acceptance among the population, according to the data collected. In conclusion, the strong consensus in the survey for a 2 lei fee is not just a local preference, but reflects a value that has been successfully tested and validated in other mature SGR systems. This provides a solid argument for establishing a 2 lei guarantee fee, demonstrating that the amount is perceived as reasonable and aligned with good European practices.

The answers to the question "*How would you prefer to have your refundable tax refunded?*" indicate a polarization of preferences, with a majority preferring a discount on their next purchase and a significant minority opting for a cash refund. The DRS should consider both options to maximize participation, adapting to the diverse preferences of consumers.

In principle, the survey results, which show that a majority of respondents prefer either a discount on their next purchase (54.9%) or cash (38.7%) for the return of the deposit fee, align closely with international practices of successful Return-Guarantee Systems (RGS) (see Figure 3).

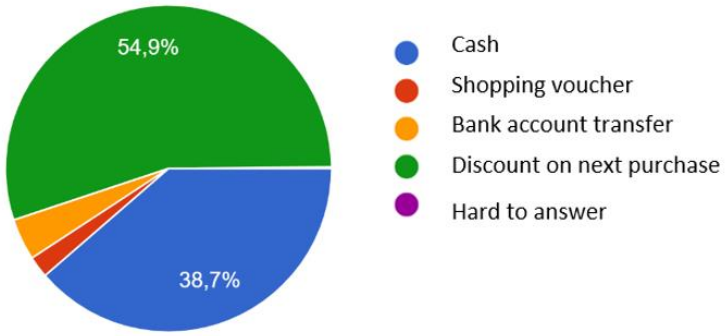


Figure 3. Consumer preferences for receiving the refundable deposit
Source: elaborated by the authors based on questionnaire survey data.

Standard practice in most countries with well-established DRS is to offer multiple refund options to maximize participation and cater to diverse consumer preferences. For example:

- Reverse Vending Machines (RVMs): These are automated machines that scan packaging and, in return, issue a voucher. This voucher can either be used for a discount on the next

purchase (the preferred option by most respondents) or exchanged for cash at the checkout (the second most popular option). This method is widespread in countries such as Germany, Norway, Finland and Lithuania. (TOMRA, 2025b)

- Manual return: In smaller stores, where RVMs are not available, returns are made manually at the checkout and consumers receive their money back directly in cash. (Perciun, R et al., 2024)

Consumer perceptions of the financial impact of DRS implementation on household budgets in the Rep. Moldova

It should be noted that the implementation of the SGR may generate an increase in shelf prices, but this increase is of a different nature. The total price of the product will be higher by the amount of the deposit fee (for example, 2 lei), but this is not a permanent increase, but an amount that is returned to the consumer.

Moreover, the initial costs of implementing the system, such as the purchase of collection equipment and logistical changes, can be partially transferred to the base price of the products. These costs, although they may contribute to a small increase in prices, are considered essential to support an efficient and sustainable recycling system, and they are usually minimal.

In conclusion, statistical data on average income and salary in the Republic of Moldova provide a solid explanation for the financial perception of the SGR. The deposit fee is an extremely effective financial instrument in the local socio-economic context, acting as a strong incentive for an overwhelming majority of the population and thus guaranteeing a high participation rate, despite the fact that it may generate an increase in the total price displayed on the shelf.

According to the National Bureau of Statistics, the average monthly income in the Republic of Moldova was 268.66 Euros per person in 2024, and the average gross monthly salary in the economy in 2024 was approx. 730 Euros. In light of these figures, we can interpret the following results from the graph:

- A “Very significant” impact for 20.9% of respondents: This category, which represents approximately one fifth of respondents, perceives the deposit fee as having a real weight on the personal budget. Given the average monthly income per person, even a small amount, such as a fee of 2 lei for each package, can quickly accumulate and become a significant amount at the end of the month. For these individuals, recovering the deposit is not only an ecological action, but also one of financial necessity.
- A “Moderate” impact for 67.3% of respondents: This majority, probably around the average wage, considers the deposit tax not to be a major burden, but it is significant enough to motivate them to participate in the system. This shows that the SGR works as an effective financial incentive for this category of the population as well, ensuring a high return rate.
- The perceived impact is, overall, significant: The sum of the percentages of those who perceive the impact as “Moderate” and “Very significant” reaches 88.2%. This means that the vast majority of the population considers the deposit tax to have a real influence on their budget, which is essential for the success of the SGR. In a country with much higher incomes, a similar tax would probably be perceived as “insignificant” by a much larger proportion of the population, thus reducing the motivation to return packaging.

Based on the analysis of Figure 4 which indicates that 20.9% of respondents perceive the financial impact of the refundable tax as "Very significant" and a majority of 67.3% as "Moderate", we can establish a direct correlation with socio-economic data in the Republic of Moldova, such as per capita income and average salaries.

According to statistical data, the per capita income and average salaries in the Republic of Moldova are significantly lower than in the European Union member countries. In this context, a deposit tax, even a modest one, can have a different impact on individual budgets.

- The impact perceived as "very significant" (20.9%) is most likely felt by low-income segments of the population, for whom every lei counts. For these individuals, the deposit tax is not just a simple incentive, but an essential amount of money that they are motivated to recover. This group represents a key driver for the success of the system, as it will ensure a high rate of return out of financial necessity.
- The impact perceived as "moderate" (67.3%) most likely refers to middle-income segments of the population. For them, the tax is not an unbearable burden, but it is important enough to motivate them to return the packaging, unlike in a very high-income country, where a similar tax could be considered negligible. In conclusion, the data in the graph, interpreted in the light of the level of per capita income and average wages in the Republic of Moldova, suggest that the financial model of the SGR is perfectly adapted to the local socio-economic context. The deposit tax, perceived as having a financial impact, whether moderate or significant, acts as a strong incentive for an overwhelming majority of the population. This is essential to ensure a high collection rate and the long-term success of the system.

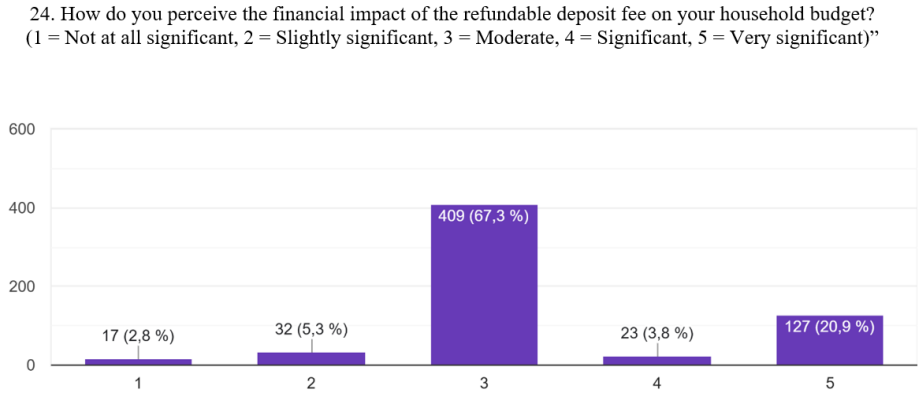


Figure 4. Consumer perceptions of the financial burden of the deposit fee
Source: elaborated by the authors based on questionnaire survey data.

Future research directions

This article analysed the opinion of end consumers, considered the main actors of the success of the implementation of the DRS. The study aimed to:

- Identify the level of awareness of the GRS mechanism by consumers in the Republic of Moldova;
- Assess their degree of openness to paying the guarantee fee and preferences regarding its level, as well as the optimal ways to return the deposit;
- Analyse consumer perceptions of the financial impact that the implementation of the GRS could have on the family budget.

The results obtained provide a relevant perspective on consumer behaviour and can support the adaptation of GRS policies and mechanisms to the socio-economic context of the Republic of Moldova. In the future, we intend to investigate an analysis of the costs and benefits of implementing the GRS for different economic actors in the Republic of Moldova or their level of preparation. The implementation of the GRS involves a complex set of costs and benefits, which vary depending on the category of economic actor involved. The main groups targeted in the research will include manufacturers and importers, traders, collection and recycling operators.

5.Conclusions

The results of this study highlight that the implementation of a Deposit Refund System (DRS) in the Republic of Moldova is both necessary and feasible, provided that several challenges are adequately addressed. Although consumer awareness of the mechanism is still limited, the research shows a strong foundation of acceptability: the majority of respondents expressed willingness to pay a deposit

fee and confirmed that a modest level—2 lei per package—is perceived as reasonable and aligned with European practice.

At the same time, the analysis reveals significant knowledge gaps and information asymmetries. Most consumers report only partial or moderate understanding of how the system works and which packaging types are accepted, which directly explains the main difficulties anticipated by respondents—especially lack of information, perceived complexity, and fears of additional costs. These findings demonstrate that targeted awareness and education campaigns will be decisive for ensuring smooth implementation and avoiding resistance.

Equally important, the results show that the financial dimension of the DRS can function as an effective incentive in Moldova's socio-economic context. For many respondents, the refundable fee is not seen as a burden, but rather as a motivating factor to return packaging. This is particularly relevant for lower- and middle-income groups, who perceive the financial impact as moderate or significant and thus have strong motivation to participate.

International comparisons confirm that Moldova's proposed deposit level is in line with successful European schemes and can generate return rates comparable to those of EU countries, provided that adequate infrastructure, transparent system administration, and multiple refund options (cash or discount) are ensured.

In conclusion, the study demonstrates that consumer acceptance is not a barrier but a supportive element for DRS implementation in Moldova. The real challenge lies in closing the information gap and building trust through transparency and inclusiveness. Policymakers and system operators must prioritize communication, infrastructure, and stakeholder engagement to ensure that the DRS not only meets legal requirements for EU integration, but also delivers tangible environmental and social benefits.

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Cybersecurity Education for Tourism Professionals: Building Digital Resilience

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Abstract

Introduction: The rapid digitalization of the tourism sector has improved efficiency in bookings, payments, and customer services, but it has also increased exposure to cyber threats. Phishing, data breaches, and ransomware represent growing risks, yet many tourism professionals lack sufficient awareness and preparedness.
Aim: This study investigates cybersecurity knowledge and practices among tourism workers in Albania, with the aim of developing a practical education framework that enhances digital resilience in the sector.
Method: A mixed-methods approach was applied, combining a literature review with surveys and semi-structured interviews conducted among hotels, travel agencies, and tour operators. The survey assessed baseline knowledge of common threats, digital practices, and organizational policies, while interviews provided deeper insights into challenges and training needs.
Findings: The results revealed significant knowledge gaps, particularly in recognizing phishing attempts and safeguarding customer data. Smaller enterprises were especially vulnerable, often operating without formal security protocols and relying on outdated tools. Staff benefited most from interactive, hands-on training such as scenario-based learning and real-life simulations, which improved their ability to recognize threats, secure online transactions, and manage data responsibly.
Conclusion: The study concludes that a tailored cybersecurity education program can strengthen the tourism sector's resilience, reduce vulnerabilities, and protect both businesses and customers.
Originality and Value: The originality of this work lies in its sector-specific focus, offering practical strategies for building a culture of digital responsibility within tourism. By integrating technical, educational, and managerial approaches, it provides a framework that can be adapted to similar contexts beyond Albania.

Keywords: cybersecurity education, digital resilience, tourism professionals, risk awareness
Jel Codes: L83, L86, M15

1. Introduction

The tourism sector has undergone a rapid digital transformation in the last decade. Online booking systems, mobile applications, and cloud-based management tools have become integral to daily operations. These technologies improve efficiency, enhance customer experience, and open new business opportunities. However, this increased reliance on digital platforms has also exposed tourism professionals to significant cybersecurity risks. Cyberattacks, data breaches, phishing scams, ransomware, and identity theft have become increasingly common. Such incidents can lead to financial losses, operational disruption, reputational damage, and reduced trust among tourists. Despite these risks, many tourism organizations still lack structured cybersecurity education and awareness programs. Employees often represent the weakest link, with mistakes like weak passwords, falling for phishing emails, or misconfiguring systems contributing to vulnerabilities. Cybersecurity is no longer just a technical issue—it is a business-critical concern. Protecting sensitive customer data, ensuring operational continuity, and maintaining trust require a holistic approach that combines technology, policies, and human awareness. Educating tourism professionals on cybersecurity best practices, risk assessment, and incident response is therefore essential. Moreover, cultivating a culture of digital resilience strengthens organizations' ability to prevent, detect, and respond to cyber threats effectively. This paper addresses the growing need for cybersecurity education in the tourism industry, highlighting strategies to enhance digital resilience, safeguard sensitive information, and support

sustainable and secure tourism operations in an increasingly connected world.

This paper aims to explore how cybersecurity education can empower tourism professionals to build digital resilience. It seeks to identify the main cyber threats in the tourism sector and examine how training programs, awareness campaigns, and practical guidelines can reduce vulnerabilities. The study also aims to evaluate the effectiveness of cybersecurity interventions in improving employee behavior, organizational preparedness, and overall risk management. By understanding the critical factors that contribute to cyber resilience, the research intends to offer actionable recommendations for organizations to strengthen their defenses and protect sensitive customer and operational data.

2. Literature Review

In recent years, the tourism and hospitality industry has increasingly become a target for cyber threats due to the vast amount of sensitive customer data it manages, including personal identification, financial information, and travel preferences (Florido-Benítez, 2024). Cyberattacks in this sector can lead not only to financial losses but also to significant reputational damage (Alonso-Almeida & Giglio, 2024). According to studies conducted between 2022 and 2025, the frequency and sophistication of these attacks have been steadily increasing, highlighting the urgent need for enhanced cybersecurity measures (Giglio & Alonso-Almeida, 2025). The rise of digital platforms for booking, customer service, and payment processing has created multiple entry points for attackers, making the industry particularly vulnerable (Florido-Benítez, 2025).

Recent literature emphasizes the role of human factors in cybersecurity within tourism. While technical solutions such as firewalls, encryption, and intrusion detection systems are critical, many studies point out that human error remains one of the primary causes of data breaches (Uchendu et al., 2021). Employees who are unaware of phishing tactics, weak password practices, or unsafe network usage can inadvertently create security vulnerabilities (Florido-Benítez, 2024). Training and continuous education are repeatedly highlighted as essential strategies to mitigate these risks. Research from 2023 and 2024 indicates that organizations that invest in structured cybersecurity awareness programs experience fewer successful attacks and report higher resilience against cyber threats (Alonso-Almeida & Giglio, 2024).

Another focus of recent research is the integration of cybersecurity education into professional training for tourism and hospitality professionals. Universities and training centers are increasingly recognizing the need to equip future tourism managers with basic cybersecurity knowledge (Florido-Benítez, 2025). Studies from 2022 to 2025 demonstrate that curricula that incorporate practical cybersecurity exercises, case studies, and risk management simulations improve students' preparedness for real-world challenges (Giglio & Alonso-Almeida, 2025). By combining theoretical knowledge with hands-on practice, these programs aim to create a workforce capable of identifying, responding to, and mitigating cyber risks (Florido-Benítez, 2024).

Emerging technologies and digital transformation trends also play a significant role in shaping the cybersecurity landscape for tourism. The adoption of cloud-based systems, mobile applications, and Internet-of-Things (IoT) devices in hotels and travel services has introduced new vulnerabilities, requiring more specialized knowledge and proactive security strategies (Giglio & Alonso-Almeida, 2025). Literature from the last three years highlights the importance of adaptive cybersecurity frameworks, which combine technical controls, employee training, and continuous monitoring to address evolving threats (Uchendu et al., 2021). Researchers argue that without comprehensive education and awareness, even advanced technological defenses may fail to protect sensitive data (Florido-Benítez, 2025).

Finally, recent studies emphasize a proactive approach to cybersecurity, rather than reactive measures alone. Organizations that foster a culture of security, encourage reporting of potential threats, and regularly update policies are better positioned to prevent incidents (Alonso-Almeida & Giglio, 2024). In tourism, where customer trust is paramount, the integration of cybersecurity awareness into daily operations has become not just a technical requirement but a strategic necessity (Giglio & Alonso-Almeida, 2025). The literature clearly shows that a combination of technological, educational, and managerial approaches is essential to building resilient tourism organizations capable of withstanding modern cyber threats (Florido-Benítez, 2024; Uchendu et al., 2021).

3. Materials and Method

This study adopts a mixed-methods approach to explore the effectiveness of cybersecurity education for tourism professionals. By combining quantitative and qualitative data collection, the research aims to provide a comprehensive understanding of current knowledge gaps, training needs, and the impact of educational interventions.

3.1. Participants

The study involved a total of 150 tourism professionals, including hotel managers, travel agents, tour guides, and frontline staff from a variety of organizations, ranging from small boutique hotels to large travel agencies. Participants were selected using purposive sampling to ensure a representative mix of roles, experience levels, and organizational sizes.

The age of participants ranged from 22 to 55 years, with a mean age of 34.5 years. Approximately 60% of participants were female, and 40% male. Professional experience in the tourism sector varied from 6 months to over 20 years, with the majority having between 2 and 10 years of experience.

Inclusion criteria required participants to have basic digital literacy and regular engagement with online platforms in their professional roles. Exclusion criteria included participants with prior formal cybersecurity training within the last 12 months, in order to accurately measure the impact of the educational intervention provided in this study.

All participants were fully informed about the study's objectives, procedures, and ethical considerations, including voluntary participation, the right to withdraw at any time, and the confidentiality of their responses. Written informed consent was obtained from all participants before the start of the study.

3.2. Materials

The primary materials used in this research were designed to evaluate the cybersecurity awareness of tourism professionals.

Survey Questionnaire: A comprehensive questionnaire was developed to assess participants' baseline knowledge of essential cybersecurity concepts, practical skills, and awareness of common threats. Topics included phishing attacks, password management, safe use of digital platforms, and organizational data protection policies. Additionally, the survey captured participants' self-perceived confidence, attitudes toward cybersecurity, and prior experiences with cyber incidents. The questionnaire was structured to be clear and concise, allowing participants to complete it efficiently while providing meaningful insights into their current level of cybersecurity awareness.

Interview Guide: A semi-structured interview guide was prepared to collect qualitative insights into participants' experiences, challenges, and perspectives on cybersecurity practices within their organizations. Questions encouraged participants to reflect on their daily interactions with digital systems, share real-life incidents, and suggest improvements for workplace cybersecurity. This allowed the study to capture nuanced information beyond the quantitative survey data, providing a richer understanding of cybersecurity practices in tourism organizations.

3.3 Procedure

The study was conducted in several stages to systematically gather both quantitative and qualitative data.

Recruitment: Participants were recruited from various tourism organizations, including hotels, travel agencies, and tour operators. Invitations were sent via email and professional networks, highlighting the purpose of the study and ensuring voluntary participation. All participants provided informed consent prior to taking part in the research.

Survey Administration: The online questionnaire was distributed to participants using a secure platform. Participants were asked to complete the survey at their convenience within a two-week period. The questionnaire took approximately 15–20 minutes to complete. Data collected from the survey provided an overview of participants' cybersecurity awareness, knowledge, and self-perceived

confidence.

Interviews: Following the survey, a subset of participants was invited for semi-structured interviews to explore their experiences and perspectives in greater depth. Interviews were conducted virtually and lasted approximately 30–45 minutes each. During the interviews, participants were encouraged to share real-life examples of cybersecurity challenges, describe their current practices, and suggest potential improvements.

Data Management: All survey responses and interview recordings were securely stored and anonymized to protect participant confidentiality. Survey data were later coded and analyzed quantitatively, while interview transcripts were examined using thematic analysis to identify recurring patterns and insights.

Timeline: The entire data collection process took place over a period of six weeks, ensuring enough time for participant engagement and thorough analysis of the collected data.

3.4 Data Analysis

The data collected from the survey and interviews were analyzed using a mixed-methods approach to provide both quantitative and qualitative insights into cybersecurity awareness among tourism professionals.

Quantitative Analysis: Survey responses were exported to statistical software for analysis. Descriptive statistics, including means, standard deviations, and frequency distributions, were calculated to summarize participants' knowledge, confidence, and attitudes toward cybersecurity practices. Comparative analyses, such as t-tests and ANOVAs, were conducted to explore differences across demographic variables, such as age, role, and years of experience in the tourism sector.

Qualitative Analysis: Interview transcripts were analyzed using thematic analysis. This involved coding participants' responses to identify recurring patterns, themes, and sub-themes related to cybersecurity challenges, practices, and perceptions. Codes were iteratively refined and grouped into broader categories, allowing for a detailed understanding of participants' experiences and organizational contexts.

Integration of Findings: Quantitative and qualitative findings were triangulated to generate a comprehensive view of the current state of cybersecurity awareness and practices in the tourism industry. This approach helped to validate results, highlight discrepancies, and provide actionable recommendations for improving cybersecurity readiness among professionals.

Reliability and Validity: Measures were taken to ensure the reliability and validity of the analysis. Survey items were pilot-tested for clarity and consistency, and coding of interview data was cross-checked by multiple researchers to minimize bias. Anonymity and confidentiality of participant responses were maintained throughout the analysis.

3.5 Ethical Considerations

This study adhered to strict ethical standards to ensure the protection and respect of all participants. Before participation, all individuals were provided with a clear explanation of the study's purpose, procedures, and potential risks, and informed consent was obtained. Participants were assured that their involvement was entirely voluntary, and they could withdraw from the study at any time without any negative consequences.

Confidentiality and anonymity were strictly maintained. Survey responses and interview transcripts were coded to remove personally identifiable information, and all data were stored securely on password-protected devices accessible only to the research team.

The study also ensured that no harm came to participants. Sensitive topics, such as experiences with cyberattacks or organizational cybersecurity weaknesses, were handled with care, and participants were encouraged to share only what they were comfortable disclosing.

4. Case Study

This research includes a case study focused on tourism professionals operating in Albania. The study

aimed to explore real-world cybersecurity challenges and practices within small- and medium-sized tourism enterprises across the country.

Participants included managers, IT staff, and frontline employees from hotels, travel agencies, and tour operators in major tourist destinations, including Tirana, Durrës, and the Albanian Riviera. Data were collected through surveys and semi-structured interviews, capturing insights into daily cybersecurity practices, awareness levels, and vulnerabilities faced by these organizations.

Preliminary findings revealed several key themes. First, while many professionals acknowledged the importance of cybersecurity, most lacked formal training or access to resources to implement best practices. Second, common threats included phishing emails, weak passwords, and unsecured digital transactions. Third, organizational policies varied widely, with some firms implementing robust protocols, while others relied on informal or ad-hoc measures.

The case study highlights the critical need for targeted educational initiatives and practical tools to enhance cybersecurity awareness and resilience among tourism professionals in Albania. By focusing on the real experiences of these participants, the study provides actionable insights for both policy makers and industry practitioners.

5. Discussion, practical and managerial implications

Cybersecurity has emerged as a critical concern across all sectors, and the tourism industry is no exception. In Albania, where tourism is a rapidly growing economic sector, digitalization has transformed how businesses operate, from online bookings and digital payments to the storage and management of sensitive customer data. While technology adoption brings efficiency and convenience, it also introduces new vulnerabilities that can be exploited by cybercriminals. The Albanian case study highlights that despite awareness of these risks, many tourism professionals lack comprehensive knowledge of cybersecurity practices, leaving their organizations exposed to potential attacks.

The study further indicates that the challenges are multifaceted. They are not limited to technical shortcomings, such as outdated software or insufficient network security, but extend to human and organizational factors. Employees often serve as the first line of defense, yet without proper training, their actions can inadvertently create security gaps. This emphasizes that cybersecurity is not solely an IT responsibility but a collective organizational obligation that requires coordination, awareness, and continuous engagement at all levels.

Moreover, the Albanian tourism sector exhibits disparities in preparedness based on organizational size and resources. Small and medium-sized enterprises (SMEs), which constitute a significant portion of the industry, face unique challenges due to limited budgets, fewer IT personnel, and absence of formal cybersecurity policies. In contrast, larger enterprises may have access to advanced technologies and dedicated IT teams, yet they still struggle with consistent staff training and the maintenance of robust security protocols. This imbalance suggests the need for targeted strategies that address the specific constraints and capacities of different organizations.

The findings also shed light on the human dimension of cybersecurity risks. Social engineering attacks, particularly phishing, remain highly effective because they exploit human psychology rather than technical vulnerabilities. Employees may unintentionally compromise sensitive information due to lack of awareness, complacency, or overconfidence in existing security measures. Addressing these human factors through education, scenario-based exercises, and continuous awareness campaigns is therefore essential to complement technological safeguards.

Finally, the study emphasizes the broader context of policy and regulatory frameworks in Albania. Although national guidelines for data protection and IT security exist, enforcement is limited and awareness among tourism operators remains low. Strengthening collaboration between government bodies, industry associations, and educational institutions could provide structured support, including training programs, practical resources, and clear operational protocols. Such efforts are crucial for fostering a culture of cybersecurity that is proactive rather than reactive.

5.1 Key Findings

The Albanian case study provides several critical insights into the current state of cybersecurity awareness in the tourism industry. First, it becomes evident that most tourism professionals understand that digital security is important, yet their actual knowledge remains limited. Many participants reported minimal formal training, relying instead on informal guidance or self-taught practices. This gap between awareness and actionable knowledge creates vulnerabilities that can be easily exploited by cybercriminals, particularly in high-stakes areas such as online bookings, digital payments, and personal data management.

Second, the study highlights organizational disparities. Smaller enterprises, which make up a large portion of the tourism sector, face significant challenges due to limited resources. They often lack formal cybersecurity policies, do not regularly update security measures, and rely heavily on individual employees' awareness. Larger firms, although better equipped technologically, still face difficulties in consistently implementing training programs and ensuring that all employees adhere to established protocols.

Another notable finding is the prevalence of social engineering attacks. Phishing and similar tactics exploit human behavior rather than technical weaknesses, demonstrating that technology alone cannot fully protect organizations. Employees' actions, confidence, and decision-making play a crucial role in cybersecurity outcomes. This underlines the importance of integrating human-centric approaches, including awareness campaigns, scenario-based exercises, and ongoing education, alongside technical solutions.

Finally, the research reveals gaps in policy implementation and enforcement. While Albania has guidelines for data protection and IT security, many tourism businesses are unaware of them or do not actively apply them. Collaboration among government agencies, industry associations, and educational institutions is limited but essential to provide structured support and establish clear protocols. Addressing these gaps could significantly improve the overall resilience of the tourism sector.

5.2 Implications for Practice

The findings of this study carry important implications for the practical management of cybersecurity in the Albanian tourism sector. First and foremost, organizations must recognize that investment in human capital is as crucial as technical safeguards. Training programs should be designed to accommodate employees with varying levels of prior knowledge, focusing not only on procedures and policies but also on behavioral awareness. For example, staff should learn how to identify phishing attempts, handle suspicious emails, and respond appropriately to data breaches. Interactive exercises, real-world case studies, and scenario simulations could significantly enhance retention and practical application.

For smaller enterprises, which often lack formal IT departments, practical strategies could include developing simple yet effective cybersecurity protocols that are easy for all staff to follow. Creating clear step-by-step guidelines for handling sensitive data, implementing strong password policies, and scheduling periodic refreshers can strengthen security without requiring extensive resources. Additionally, appointing a cybersecurity "champion" within the organization—someone responsible for monitoring and guiding best practices—can make a tangible difference.

Larger firms, while better resourced, must focus on consistency and reinforcement. Regular audits of staff practices, mandatory refresher courses, and internal awareness campaigns can help ensure that policies are not only in place but actively followed. Leadership commitment is key: when managers prioritize cybersecurity, employees are more likely to adopt secure behaviors.

At the sectoral level, collaboration between businesses, industry associations, and governmental bodies is essential. Public-private partnerships could facilitate access to training materials, expert consultations, and awareness campaigns tailored for tourism professionals. Moreover, sharing lessons learned from cyber incidents across the industry can help prevent similar threats and foster a culture of collective resilience.

Overall, practical interventions should integrate technological solutions, behavioral training, and organizational policies. A comprehensive approach that combines these elements can empower

professionals to act confidently, reduce vulnerabilities, and ultimately protect the sector's economic and reputational interests.

5.3 Recommendations for Policy

The results of this study highlight several areas where policy interventions can strengthen cybersecurity within Albania's tourism sector. First, national authorities should consider developing sector-specific guidelines that go beyond general data protection rules. These guidelines could provide clear, actionable steps for tourism businesses of all sizes, addressing common threats such as phishing, ransomware, and data breaches, and outlining best practices for both technical safeguards and staff training.

Regulatory frameworks should also encourage proactive rather than reactive measures. For example, offering incentives for businesses that implement robust cybersecurity protocols, conduct regular employee training, or participate in information-sharing initiatives could drive higher compliance and foster a culture of digital responsibility. Policies could also include mandatory reporting of cyber incidents, helping authorities understand emerging threats and respond more effectively.

Educational institutions and vocational training programs should be integrated into policy planning. Collaboration between government bodies and universities or professional schools could provide accessible training modules, certification programs, and workshops tailored to tourism professionals. Embedding cybersecurity awareness into the professional development of employees can ensure long-term resilience, particularly in small- and medium-sized enterprises that may not have dedicated IT teams.

Finally, policy initiatives should focus on awareness campaigns at both organizational and public levels. By increasing general understanding of cybersecurity risks and promoting safe online behaviors, these campaigns can complement technical measures and strengthen societal resilience. Clear communication, practical guidance, and easy access to resources will empower tourism professionals to adopt best practices confidently.

In conclusion, effective policy should combine guidance, incentives, education, and public outreach. Such a multi-faceted approach can help close existing knowledge gaps, improve sector-wide cybersecurity readiness, and protect Albania's growing tourism industry from evolving digital threats.

5.4 Limitations and Future Research

While this study provides valuable insights into the state of cybersecurity awareness among tourism professionals in Albania, several limitations should be considered when interpreting the findings. First, the sample size, although sufficient to identify general trends, may not fully represent the entire sector, especially given the diversity of tourism enterprises ranging from small guesthouses to large hotel chains. Future studies could expand the sample to include more regions and a wider variety of business types to improve generalizability.

Second, data collection relied primarily on self-reported surveys and interviews. While these methods provide rich qualitative and quantitative information, they are subject to potential biases, including overestimation or underestimation of participants' actual knowledge and practices. Complementing self-reports with observational studies, penetration testing, or simulated cyberattack exercises could offer a more comprehensive picture of real-world vulnerabilities.

Another limitation concerns the dynamic nature of cybersecurity threats. The rapid evolution of cyberattacks, malware, and phishing techniques means that findings may become outdated quickly. Future research should consider longitudinal designs to monitor changes over time, assess the impact of training programs, and track improvements in organizational resilience.

Finally, this study focused exclusively on Albania, which limits the ability to generalize findings to other countries or regions. Comparative studies involving multiple countries in the Balkans or the wider European tourism sector could help identify shared challenges, best practices, and region-specific policy recommendations.

Despite these limitations, the research lays a strong foundation for further investigation. Future studies

could explore the effectiveness of different training approaches, the role of government-industry partnerships, and the behavioral aspects of cybersecurity compliance. By addressing these gaps, researchers and policymakers can better support the tourism sector in building robust, sustainable digital security practices.

6. Results, Limitations, and Future Directions

6.1 Results

Our study clearly shows that many tourism professionals in Albania understand that cybersecurity matters, but when it comes to specifics, their knowledge is limited. Many struggle to recognize threats such as phishing, malware, or unsafe handling of customer data. Smaller businesses are particularly at risk—they often lack formal security policies and rely on simple tools or just the awareness of individual employees. Even larger organizations, despite having better infrastructure, face difficulties in keeping all staff consistently trained and informed. One striking finding is the role of human behavior: awareness, attitudes, and everyday practices often determine security more than technical systems alone.

6.2.Limitations

There are some important limitations to keep in mind. Our sample was relatively small and focused on certain regions, which means we can't claim the results represent every tourism professional in Albania. We relied on self-reported information, so some participants may have overestimated their skills or given socially desirable answers. We also didn't track real cybersecurity incidents, which makes it harder to directly link knowledge gaps to actual risks. Lastly, since this study didn't include active training programs, we couldn't test which educational methods would be most effective.

6.3.Future Directions

Looking ahead, there's a lot of potential to build on this work. Future studies should involve a larger and more diverse group of professionals, including those in rural areas and smaller tourism ventures. Long-term studies could track how awareness changes over time and measure the impact of hands-on training programs. Practical experiments, like scenario-based exercises or simulated cyberattacks, could reveal what methods actually improve security behavior. Collaboration with government bodies and industry associations could help create clear guidelines, training resources, and policies that smaller businesses can realistically implement. Most importantly, future efforts should combine technical solutions with human-centered strategies, focusing on building a culture where everyone in the tourism sector feels responsible for digital safety. Comparative studies with other Balkan or European countries could also highlight regional patterns and best practices, helping Albania strengthen its position in the broader cybersecurity landscape.

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Evaluation of Indicators of Achievement of Gender Equality as Sustainable Development Goals

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Abstract

Introduction: The concept of sustainable development, whose fundamental principles were shaped by the Bruntland Report titled "Our Common Future," published by the World Commission on Environment and Development (WCED) in 1987, continues with the goal of a livable and better world, the "Millennium Development Goals" and "Agenda 2030: UN Sustainability Goals." All countries that aim to achieve these goals are working towards this goal. One of the 17 goals is to achieve "Gender Equality." Deeply rooted gender inequality is crucial because it not only paves the way for violence and discrimination, but also for other sustainability goals such as ending poverty, access to education, health, and decent work. While sustainability and gender equality have held a prominent place on the development agenda since the 1980s, achieving the desired goals has not been achieved globally. Beyond legislation and policies, gender equality also requires a level of social and cultural awareness, and requires a holistic perspective.
Aim: As we approach 2030, the year in which we aim to achieve sustainability goals, some sub-goals, including those related to gender equality, have been achieved. Unfortunately, there are still sub-goals globally that have not been achieved. This study aims to assess Turkey's level of achievement of sustainability goals in the context of gender equality among OECD countries, using OECD data. It aims to determine Turkey's position relative to OECD countries, evaluate the targets that have not been achieved using TÜİK data, and offer recommendations for achieving these goals.
Method: In this study, TOPSIS (Technique for Order Preference by Similarity to Ideal Solution), which is one of the multiple decision-making methods, was used based on the data set on the attainment levels of OECD's sustainability goals within the scope of sustainable development goals.
Findings: An evaluation of the results of a study aimed at determining Turkey's position among OECD countries in achieving the sustainable development goals related to gender equality reveals that Turkey is halfway toward achieving the sub-goals of preventing discrimination against women and access to reproductive health, but remains significantly further behind when it comes to other sub-goals. While data from TurkStat (Turkish Statistical Institute) was used to determine Turkey's position on the sustainability goal of gender equality, some data were not accessible through TurkStat. At this point, the recommendations were based on assessments based on public and NGO reports.
Conclusion: For the effectiveness and sustainability of the sustainable development goals, which operate under the motto of "leaving no one behind," it is essential and crucial that they consider the needs of all people. Therefore, gender equality, like all other goals, is critical to achieving sustainable development. However, it is clearly evident that Turkey's level of achievement of other goals is far superior to the goal of achieving gender equality. It is crucial that policies and legislation related to gender equality and women's empowerment be central, and that all goals, beyond simply achieving the indicators included in "Goal 5," be addressed from a gender perspective. Given that Turkey is far from achieving this goal among OECD countries, it is essential and crucial that gender impact analysis be considered in the planning of existing and planned legislation, policies, and strategies.
Originality and value: This study contributes to the literature and future studies by comparing the level of target achievement of Turkey with OECD countries, as well as creating a perspective on gender inequality and determining the situation in the context of sub-targets.
Key words : Gender Equality, Multi-Criteria Decision Making, Sustainable Development Goals
Jel Codes : Q01, B54

1.Introduction

The purpose of this study is to compare the level of gender equality achieved by Sustainable Development Goal 5 across OECD countries. This study uses OECD sustainability access data and evaluates this data using TOPSIS analysis to identify the countries closest and furthest from the target. The 2030 Agenda and the 17 Sustainable Development Goals, which are complementary to this process, are increasingly being included in the emphasis placed on a multitude of policy approaches at various levels (Widegren&Sand, 2020). There is a link between gender equality and sustainability. The Sustainable Development Goals (SDGs), consist of17 integrated and interconnected targets to ensure that humanity enjoys peace and prosperity by 2030. Among the 17 Sustainable Development Goals, Goal 5: Gender Equality plays a criticalrole. The UN has defined 9 targets and 14 indicators for SDG 5. Expanding the Sustainable Development and Gender Equality package can be addressed under four fundamental pillars. These can be listed as follows:

- UN Goal 5
- Half the Population
- A Fundamental Human Right
- The Equal Opportunity Perspective

In a holistic assessment of the UN Sustainable Development Goals, which include targets to be achieved by 2030, achieving equality for women, who constitute half of the population, is both a human right and linked to the necessity of ensuring equal opportunities. Therefore, sustainable development is more than an economic and environmental conceptualization based on efficiency. Gender equality is a crucial component of the goals, which strive to create a framework for sustainability that prioritizes human dignity and social justice, both today and in the future. OECD countries still have a long way to go to achieve more than a trio of the 169 Sustainable Development Goals. Across OECD countries, at least 25% of the target has been achieved or is close to being achieved on average for 12 of the 17 Goals. Despite progress in deploying clean water and sanitation, climate change, life below water, and affordable and clean energy systems, the Gender Equality, Climate Change, and Reduced Inequalities targets are not close to being achieved. (OECDdata, 2025)

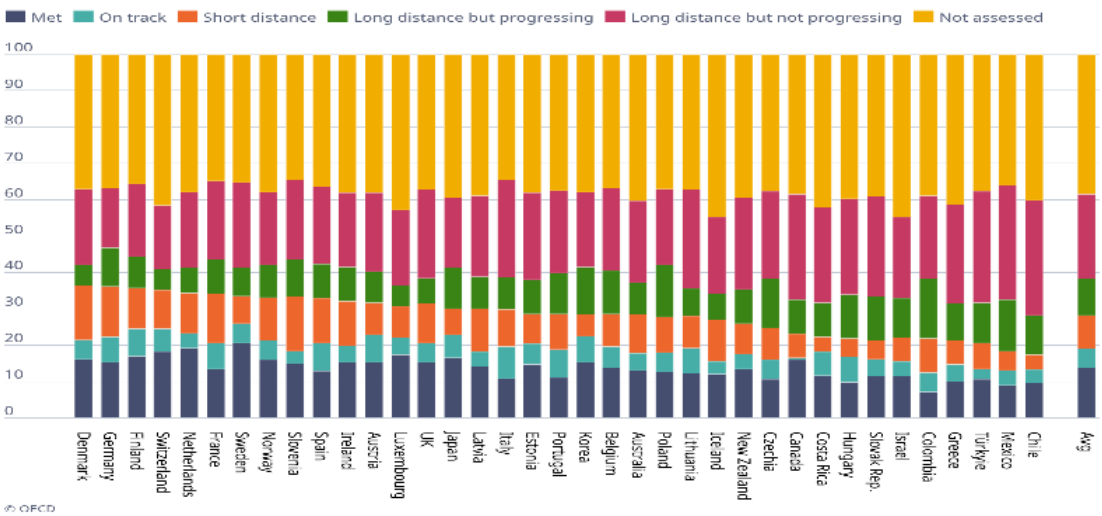


Figure:1: Distance to SDG targets and trends over time in OECD countries

The purpose of this process is to compare Türkiye's progress towards gender equality with other OECD countries to determine which sub-targets have been achieved and which have fallen behind. The OECD's sustainable access data can be used for data storage. This will be determined by TOPSIS,

a multi-decision-making method, to determine the closest and furthest countries to sustainable development in terms of gender equality among OECD countries, and to determine Türkiye's position vis-à-vis these countries. The data of the study was accessed and used as secondary data via the OECD's web page "Measuring the distance to the Sustainable Development Goals ***"https://www.oecd.org/en/topics/measuring-distance-to-sdgs.html"***. The OECD's Measuring Distance to Sustainable Development Goals study supports the determination of Sustainable Development Goals in countries by evaluating their national performance.

The OECD countries' data for four of the six targets identified as target attainment were not included in the study due to the lack of data for targets 3 and 4. Among the sub-targets of achieving goal number 5, there are targets used in the analysis regarding sustainability, numbered 3 and 4, among goals numbered 1-2-5 and 6.

5.1. Discrimination against women

5.2. Violence against women

5.3. Harmful practices

5.4. Unpaid care and domestic work

5.5. Women's participation

5.6. Access to reproductive healing

Therefore, the other columns were not considered. In the TOPSIS analysis, the four existing data types are ignored and the weight is distributed equally at 0.25.

2.Method

The TOPSIS method, one of the multi-criteria decision-making methods required in many fields, was first developed by Hwang Yoon in 1981. The basic logic of the method is structured to evaluate the closest distance to the positive ideal solution and the furthest distance from the negative ideal solution within multi-criteria decisions. (Soba & Eren, 2011) The TOPSIS method is a frequently preferred method that enables the determination of the most suitable option for each criterion through simple mathematical calculations, produces a highly reliable preference ranking, includes priority values in comparison operations, and allows working with different scales and different types of information.

The method is implemented through a process consisting of six stages, as follows:

1) Creation of the decision matrix

2) Creation of the standard decision matrix

3) Creation of the weighted standard decision matrix

4) Creation of ideal and negative ideal solutions

5) Calculation of discrimination measures

6) Calculation of relative proximity to the ideal solution

3.Data Analysis

In this study, the steps of TOPSIS used to determine the distance values from the sustainability goals of OECD countries to the gender equality goal are as follows: (Torağay& Arıkan, 2015).

Step 1: Vector normalization was applied to calculate the normalization ratios (rij) for rij.

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}}$$

Table 1: Normalized Decision Matrix

	Goal 5,1	Goal 5,2	Goal 5,5	Goal 5,6
	Discrimination against women	Violence against women	Women's participation	Access to reproductive healing
Australia	0,199626051	0,219001	0,165025	0
Austria	0,149719539	0,197101	0,13202	0
Belgium	0	0,153301	0,19803	0
Canada	0,124766282	0,219001	0,13202	0
Chile	0,099813026	0,131401	0,13202	0
Colombia	0,149719539	0	0,13202	0,276289
Costa Rica	0,174672795	0,087601	0,297044	0,193403
Czechia	0,124766282	0,175201	0,033005	0,165774
Denmark	0,199626051	0,219001	0,165025	0,221032
Estonia	0,124766282	0,175201	0,13202	0,276289
Finland	0,124766282	0,0657	0,231034	0,276289
France	0,174672795	0,153301	0,19803	0
Germany	0,199626051	0	0,099015	0,221032
Greece	0,099813026	0,153301	0,06601	0,110516
Hungary	0,074859769	0,131401	0,06601	0,248661
Iceland	0,149719539	0,219001	0,264039	0
Ireland	0,174672795	0,219001	0,06601	0
Israel	0,074859769	0,131401	0,06601	0
Italy	0,149719539	0,197101	0,06601	0
Japan	0,074859769	0,197101	0	0,193403
Korea	0,149719539	0,0657	0	0
Latvia	0,124766282	0,109501	0,165025	0
Lithuania	0,149719539	0,153301	0,13202	0,221032
Luxembourg	0,124766282	0,153301	0,06601	0
Mexico	0,199626051	0	0,297044	0,193403
Netherlands	0,249532564	0,153301	0,13202	0,276289
New Zealand	0,174672795	0,175201	0,264039	0
Norway	0,149719539	0,175201	0,19803	0,276289
Poland	0,224579308	0,219001	0,13202	0,221032
Portugal	0,224579308	0,175201	0,165025	0,276289
Slovak Rep.	0,124766282	0,131401	0,099015	0,193403
Slovenia	0,174672795	0,197101	0,165025	0
Spain	0,224579308	0,219001	0,19803	0
Sweden	0,199626051	0,109501	0,264039	0
Switzerland	0,174672795	0,219001	0,165025	0
Turkey	0,124766282	0	0	0,138145
United Kingdom	0,174672795	0,175201	0,165025	0,276289
United States	0,124766282	0,131401	0,165025	0

Step 2: The values of the normalized decision matrix were multiplied by the weight coefficients (W) to calculate the weighted decision matrix for each criterion.

$$v_{ij} = w_j r_{ij}$$

The standard matrix criteria are multiplied by the weight coefficients (W) determined by the decision maker to obtain the weighted decision matrix for each criterion. Since the importance level of the objectives was considered equal in this study and data was available for four of the six sub-objectives, the weight coefficient was set at 0.25.

Table 2: Weighted Normalized Decision Matrix

	Goal 5,1	Goal 5,2	Goal 5,5	Goal 5,6
	Discrimination against women	Violence against women	Women's participation	Access to reproductive healing
Australia	0,049907	0,05475	0,041256	0
Austria	0,03743	0,049275	0,033005	0
Belgium	0	0,038325	0,049507	0
Canada	0,031192	0,05475	0,033005	0
Chile	0,024953	0,03285	0,033005	0
Colombia	0,03743	0	0,033005	0,069072
Costa Rica	0,043668	0,0219	0,074261	0,048351
Czechia	0,031192	0,0438	0,008251	0,041443
Denmark	0,049907	0,05475	0,041256	0,055258
Estonia	0,031192	0,0438	0,033005	0,069072
Finland	0,031192	0,016425	0,057759	0,069072
France	0,043668	0,038325	0,049507	0
Germany	0,049907	0	0,024754	0,055258
Greece	0,024953	0,038325	0,016502	0,027629
Hungary	0,018715	0,03285	0,016502	0,062165
Iceland	0,03743	0,05475	0,06601	0
Ireland	0,043668	0,05475	0,016502	0
Israel	0,018715	0,03285	0,016502	0
Italy	0,03743	0,049275	0,016502	0
Japan	0,018715	0,049275	0	0,048351
Korea	0,03743	0,016425	0	0
Latvia	0,031192	0,027375	0,041256	0
Lithuania	0,03743	0,038325	0,033005	0,055258
Luxembourg	0,031192	0,038325	0,016502	0
Mexico	0,049907	0	0,074261	0,048351
Netherlands	0,062383	0,038325	0,033005	0,069072
New Zealand	0,043668	0,0438	0,06601	0
Norway	0,03743	0,0438	0,049507	0,069072
Poland	0,056145	0	0,033005	0,055258
Portugal	0,056145	0,0438	0,041256	0,069072
Slovak Rep.	0,031192	0,03285	0,024754	0,048351
Slovenia	0,043668	0,049275	0,041256	0
Spain	0,056145	0,05475	0,049507	0
Sweden	0,049907	0,027375	0,06601	0
Switzerland	0,043668	0,05475	0,041256	0
Turkey	0,031192	0	0	0,034536
United Kingdom	0,043668	0,0438	0,041256	0,069072
United States	0,031192	0,03285	0,041256	0

Step 3: Identification of positive–ideal (A*) and negative–ideal (A-) solutions

$$A^* = \{ v_1^*, v_2^*, \ldots, v_j^*, \ldots, v_n^* \} = \{(max\ v_{ij} / j \in j_1) , (min\ v_{ij} / j \in j_2) / i=1, \ldots,m \}$$

$$A^- = \{ v_1^-, v_2^-, \ldots, v_j^-, \ldots, v_n^- \} = \{(min\ v_{ij} / j \in j_1) , (max\ v_{ij} / j \in j_2) / i=1, \ldots,m \}$$

In order to create the ideal solution set, the highest and lowest values were determined as follows, based on the weighted evaluation factors of the weighted decision matrix.

Table 3. Determination of positive and negative ideal solution values

	Goal 5,1	Goal 5,2	Goal 5,4	Goal 5,6
	Discrimination against women	Violence against women	Women's participation	Access to reproductive healing
A+	0,031192	0,05475	0,041256	0
A-	0	0	0	0

Step 4: Calculation of separation measures (S* i and S¯ i)

$$S_i^* = \sqrt{\sum_{j=1}^{n}\left(v_{ij} - v_j^*\right)^2}, \qquad i=1,2,\ldots,m$$

$$S_i^- = \sqrt{\sum_{j=1}^{n}\left(v_{ij} - v_j^-\right)^2}, \qquad i=1,2,\ldots,m$$

Step 5: Calculation of similarity to the positive-ideal solution (C* i)

$$C_i^* = \frac{S_i^-}{(S_i^* + S_i^-)}, \qquad i=1,2,\ldots,m$$

Step 6: Selection: The maximum C* value is selected.

Steps and formulations related to steps 4, 5, and 6 were applied in sequence, and the following table was obtained as a result.

Tablo 4. Calculation of ranking with Si*/Si-/Ci* values

	si+	si-	ci*	Ranking
Australia	0,562093	0,084796	-0,17766	24
Austria	0,467231	0,378969	-4,2937	38
Belgium	0,586232	0,062608	-0,11957	10
Canada	0,579653	0,071133	-0,13988	15
Chile	0,583779	0,052831	-0,0995	6
Colombia	0,574441	0,085213	-0,17418	23
Costa Rica	0,536569	0,101188	-0,23241	34
Czechia	0,596321	0,068388	-0,12954	12
Denmark	0,558004	0,101212	-0,22157	33
Estonia	0,575628	0,09355	-0,19406	27
Finland	0,557165	0,096694	-0,20999	31
France	0,559361	0,076332	-0,15803	18
Germany	0,574122	0,078466	-0,15831	19
Greece	0,594187	0,055921	-0,10389	7
Hungary	0,596653	0,074607	-0,14291	17
Iceland	0,549859	0,093573	-0,20508	30
Ireland	0,585761	0,07195	-0,14003	16
Israel	0,600599	0,041252	-0,07375	3
Italy	0,58933	0,064042	-0,12192	11
Japan	0,609913	0,071527	-0,13285	13
Korea	0,605117	0,037466	-0,066	2
Latvia	0,573751	0,058518	-0,11358	8
Lithuania	0,572229	0,083741	-0,17143	22
Luxembourg	0,59312	0,052097	-0,09629	5
Mexico	0,534545	0,101702	-0,23496	36
Netherlands	0,557733	0,105928	-0,23445	35
New Zealand	0,546169	0,090458	-0,1985	28
Norway	**0,337048**	**0,503175**	**3,028861**	**1**
Poland	0,56384	0,085411	-0,17852	25
Portugal	0,554337	0,107442	-0,24042	37
Slovak Rep.	0,582949	0,070729	-0,13808	14
Slovenia	0,565743	0,077698	-0,1592	20
Spain	0,551833	0,09274	-0,20201	29
Sweden	0,542995	0,087163	-0,19122	26
Switzerland	0,565717	0,08128	-0,16778	21
Turkey	0,605812	0,046537	-0,08321	4
United Kingdom	0,561591	0,101481	-0,22056	32
United States	0,582949	0,061271	-0,11745	9

As a result, the proximity value (Ci) and the ranking of countries were obtained from the positive ideal solutions consisting of the best performance values and the negative ideal solutions consisting of the worst performance values using the TOPSIS method. The highest value of Ci indicates the country closest to the target within the scope of the specified criteria, while the lowest value indicates the country furthest from the target.

4.Results

The purpose of this study is to identify the countries closest to positive and negative ideal values, reveal the countries closest to and furthest from the target, and evaluate these countries' gender equality policies in comparison with Turkey. As a result of the TOPSIS analysis, which provides a rational and systematic ranking in decision-making processes where multiple criteria are considered, the country's ranking among OECD countries in terms of achieving the 5th sustainability goal has been obtained. Table 4 shows that Norway is the country closest to the target, while Austria is the furthest. Turkey ranks 4th among 38 OECD countries, placing it quite close to the target. **Figure 1** centers the targets and visualizes the positions of countries according to their degree of proximity to the center.

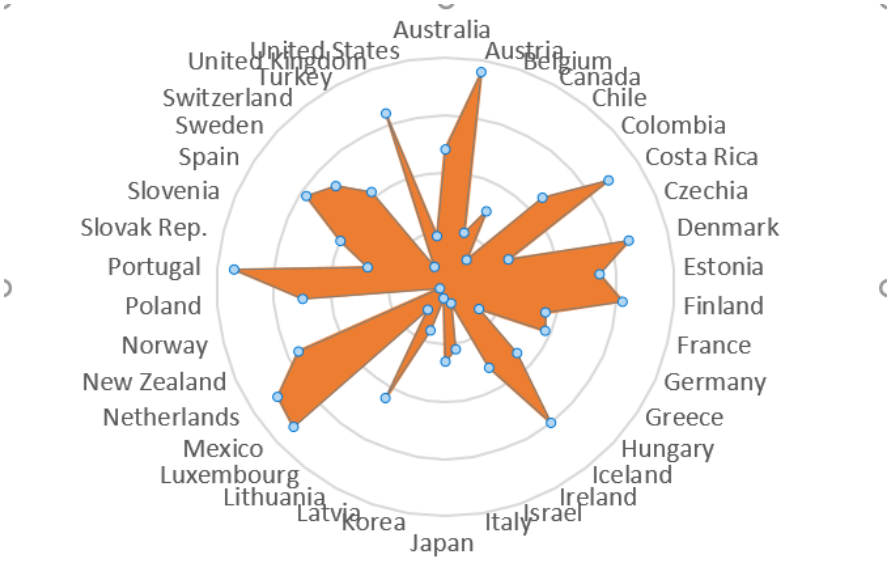


Figure:2: SDG- Goal 5: OECD Country Ranking for Access to Gender Equality

This study, which provides a quantitative ranking, determines Turkey's position among countries. Turkey ranks 4th among 38 OECD countries and can be considered quite close to the target. However, as with other sustainability goals, compliance with the target for access to gender equality is shaped by countries' legal, political, and cultural structures. Therefore, it is not possible to clarify the positions of countries based on the results of this analysis conducted using the OECD dataset. This research constitutes a preliminary study evaluating the socio-cultural and economic structures, legislation, and social policies of the countries that are the furthest and closest to the planned target.

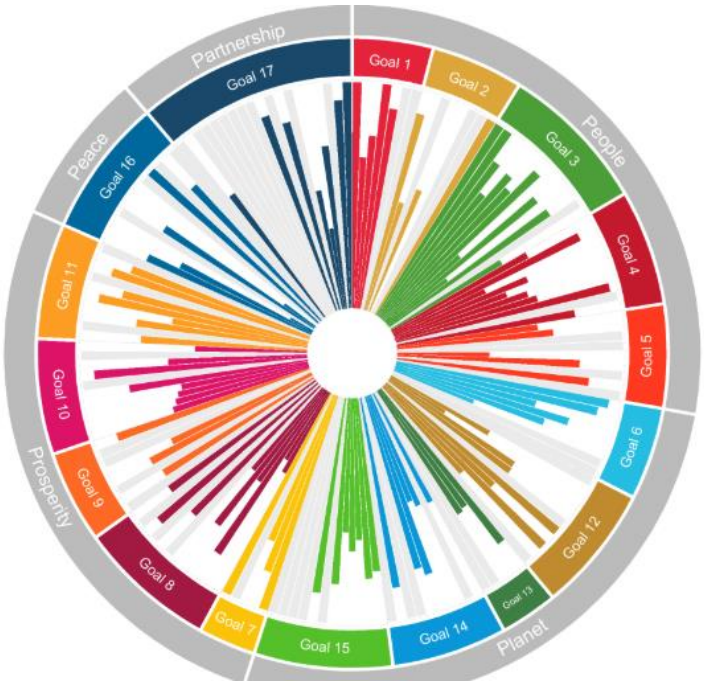


Figure:3: Achieve Sustainable Development Goals

As is well known, the sustainability of the systems shown in Figure 3 has not been achieved. OECD countries have achieved or are close to achieving only 34% of the 114 measurable Sustainable Development Goals. Overall, when evaluating all goals and perspectives based on the timeline indicator, some goals are on track, while others show limited progress or even regression. Overall, 35% of the People Goal, 26% of the Planet Goal, 20% of the Prosperity Goal, and 33% of the Peace Goal demonstrate positive performance. Progress is particularly evident on goals such as Zero Poverty (SDG 1), Affordable and Clean Energy (SDG 7), and Climate Action (SDG 13). However, gender equality is the most slowly progressing goal among these goals.

Between 2019 and 2024, 99 positive legal reforms were implemented globally, demonstrating progress in strengthening individual and gender equality frameworks. Most of the reforms focused on areas such as employment, equal pay, maternity leave, and protection against domestic violence. However, according to 131 reports for 2024, a significant amount of data remains incomplete. Countries' assessments can also be misled by the issue of incomplete data transfer. In this context, it is crucial to amend and share missing data. According to this data, no country achieved a perfect score in all four key areas. 51% of countries show deficiencies in all details. In 61 countries (47%), women work in the same jobs as men, and legal oversight is quite low. 38 countries (29%) have met the 18-year age limit for marriage without exception. 63 countries (48%) define rape based on the principle of lack of consent. (OECD data, 2025)

As a result, countries have improved their ability to achieve sustainable development. According to this study's assessment of gender equality across OECD countries, Norway is the closest country to the target, while Austria is the furthest.

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Sustainable Development Goals in Albania's Migration Policy: Analysis of the National Migration Strategy' Action Plan

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Abstract

Introduction: The Albanian government is committed to integrate the Sustainable Development Goals (SDG) of the 2030 Agenda into its migration management policies. The strategic documents that reflect this engagement are the National Migration Strategy and its Action Plan.
Aim: This paper aims to highlight and analyze the inclusion of the SDGs in the National Strategy on Migration 2024–2030 and its Action Plan 2024–2026, with particular focus on Indicator 10.7.2 of Target 10.7 under SDG 10.
Method: To conduct this analysis, the qualitative methods of content and thematic analysis were used. The documents reviewed include official reports and studies by various authors on the Sustainable Development Goals and migration in Albania.
Findings: The National Migration Strategy' Action Plan aims to reach several SDG' targets linked to migration, especially targets 17.18 and target 10.7. Indicator 10.7.2 included in the Migration Action Plan 2024–2026 is supported by concrete measures aimed at its development.
Conclusion: Specific SDG targets linked to international migration are included in the migration management strategic documents in Albania supported by concrete measures.
Originality and value: This paper for the first time provides an analyze on the SDGs in the context of National Migration Strategy' Action Plan. It is useful for supporting the reporting process on the implementation of the SDGs in the field of migration by Albania, within the framework of its international commitments.

Keywords: sustainable development goals, national migration strategy, action plan, SDG 10.7, indicator 10.7.2, albania.
Jel Codes : F22, J18, J68, Z18

1. Introduction

International migration represents a phenomenon of particular importance for Albania, which since the early 1990s has significantly influenced many dimensions of social life. This process has had pronounced impacts in the economic, social, and demographic spheres (Institute of Statistics, 2023). Albanian international migration after the 1990s has been characterized by features over the years. At first it was massive, irregular and often chaotic, while later was followed by regular migration and family reunification. Return to the country, asylum seeking, and readmission have also been features of Albanian international migration in certain periods of time. The categories and profiles of migrants have changed significantly over the years, including economic migrants, individuals migrating for family reunification, asylum seekers, students, skilled professionals, returnees, and readmitted persons. Data from the last two censuses, in 2011 and 2023, indicate that Albania continues to be a country with a high level of emigration. A considerable number of Albanian citizens continue to choose to live and work abroad, with EU member states being the primary destination (Institute of Statistics, 2023; Council of Ministers, 2024).

On the other hand, as a member of the United Nations since December 1955, the sustainable development objectives of the 2030 Agenda constitute a real commitment for Albania. (McCluney, 2020). The United Nations 2030 Agenda, adopted in 2015, contains 17 sustainable development goals that express a global commitment to achieve concrete results by 2030 in areas essential to the survival and well-being of humanity, such as poverty eradication, quality education, gender equality, environmental protection, and the establishment of strong and inclusive institutions. (United Nations,

2015).

Since 2004, the Albanian government has aimed to manage Albanian international migration by using national migration strategies as a tool. The strategic documents contain the policies and strategic objectives for the future in the field of migration management in Albania. In May 2024, the Albanian government approved the National Migration Strategy 2024-2030 and its Action Plan 2024-2026. The National Migration Strategy 2024-2030 contains the vision, priorities and strategic objectives until 2030. Its Action Plan, which initially covers the period 2024-2026, contains concrete measures and interventions until 2026. It will be followed by the next Action Plan that will cover the period 2027-2030 (Council of Ministers, 2024). Given that the National Strategy on Migration 2024–2030 and its Action Plan 2024–2026 are documents covering a medium- and long-term period up to the year 2030, it is important to assess the extent to which the Sustainable Development Goals (SDGs) are reflected in their content. This analysis is useful not only for understanding alignment with the 2030 Agenda, but also for supporting the reporting process on the implementation of the SDGs in the field of migration by Albania, within the framework of its international commitments.

The objective of this research is to identify the extent to which the Sustainable Development Goals (SDGs) are integrated into the two strategic documents aimed at managing migration in Albania: The National Strategy on Migration 2024–2030 and its accompanying Action Plan. The central research question is: How are the Sustainable Development Goals reflected in the National Strategy on Migration' Action Plan 2024–2026?

2. Literature Review

The Sustainable Development Goals are global objectives and a universal call to action aimed at eradicating poverty, protecting the environment, and ensuring peace and well-being for all people by the year 2030 (United Nations, 2015). From a migration perspective, the Sustainable Development Goals (SDGs), as a comprehensive and universal approach, also encompass and impact international migrants. While migration issues are not always explicitly addressed, they are specifically reflected in certain individual SDGs. Each SDG is accompanied by a set of targets and indicators that guide its achievement and measurement. In terms of the inclusion of international migration, the SDGs can be divided into two groups. The first group consists of goals that do not directly refer to international migration but, due to their inclusive nature, also cover migrant populations. The second group includes SDGs that, along with their specific targets, directly address international migration and/or migrant categories (see section 7. Table 1).

The Sustainable Development Goals in the areas of poverty eradication, elimination of hunger, well-being and healthy living, quality education, sustainable management of water, energy, infrastructure and innovation, inclusive human settlements, consumption and production, oceans, seas and marine resources, terrestrial ecosystems, and their respective targets—although they do not specifically mention international migrants—refer to all members of society, including those in developing countries. Since international migrants are a significant group within both host and origin societies, these interventions also affect and include them (see section 7. Table 1).

The Sustainable Development Goals that include targets and indicators directly related to international migrants are SDG 4, SDG 5, SDG 8, SDG 10, SDG 16 and SDG 17 (see section 7. Table 1). In the field of international migration, the Sustainable Development Goals (SDGs) of the 2030 Agenda include targets such as: eliminating the trafficking of women and girls, ending modern slavery, protecting labor rights and promoting safe working conditions for migrant workers, ensuring social, economic, and political inclusion of all individuals regardless of age, race, ethnicity, or origin, eliminating discriminatory laws, policies, and practices, and facilitating orderly, safe, responsible, and well-managed migration and mobility of people. Additionally, they aim to reduce transaction costs for migrant remittances, prevent child trafficking, ensure equal access to justice for all, and improve the availability of quality data on migrants (see section 7. Table 1).

In a 2023 publication on the Sustainable Development Goals in Albania, Sinanaj and Krypa present the SDGs, their targets and indicators, along with data on their implementation in Albania. They investigated the funds allocated by the United Nations for monitoring and implementing the Sustainable Development Goals and highlighted that certain SDGs have received more attention in this regard than others. SDG 10 were among the goals that needed to have more attention (Sinanaj & Krypa, 2023).

According to the United Nations and the International Organization for Migration (IOM), Sustainable Development Goal 10 is the most clearly and directly linked to international migration among all the objectives of the 2030 Agenda for Sustainable Goals. SDG 10 aims to reduce inequalities within and among countries through several targets. One of these targets is Target 10.7 that has four indicators. Its Indicator 10.7.2, is defined as "*The percentage of countries with migration policies that facilitate orderly, safe, regular, and responsible migration and mobility of people*." This indicator focuses on country's national policies on migration and tracks their progress over the years, contributing this way to the pursuit of target 10.7 of SDG 10. (UNDESA, 2021). In their publication on the development and testing of a methodology to measure indicator 10.7.2, were presented the difficulties encountered in designing such a methodology. They also gave the conceptual framework to be used to assess this indicator as well as the method of collecting and generating data for it (UNDESA & IOM, 2023).

The conceptual framework for Indicator 10.7.2 is the International Organization for Migration's Migration Governance Framework. It consists of three principles and three objectives, that represent the tools through which a state can ensure good migration governance. Indicator 10.7.2 includes a total of 30 subcategories across six thematic areas (United Nations General Assembly, 2017). Data for Indicator 10.7.2 is collected through the international migration module of the United Nations Questionnaire on Population and Development addressed to governments. The six thematic areas of Indicator 10.7.2 for which information is gathered through the questionnaire are: Migrants' Rights, Whole-of-Government/Data-Based Policy, Cooperation and Partnerships, Socioeconomic Well-being, Crisis Mobility Dimensions, and Safe and Regular Migration. Each of these areas contains its own set of categories (UNDESA, 2021). Based on the data collected through the Questionnaire, UNDESA publishes assessments of various countries regarding their level of achievement for Indicator 10.7.2. According to UNDESA's latest update in 2021, Albania received a positive evaluation for Indicator 10.7.2. Five of the indicator's thematic areas were assessed as fully met, meanwhile the first area — related to migrants' rights—was evaluated as partially met. The categories within each thematic area received favorable ratings, confirming the existence of instruments or policies in Albania corresponding to each category (UNDESA & IOM, 2021. SDG Indicator 10.7.2: Number of countries with migration policies to facilitate orderly, safe, regular and responsible migration and mobility of people: Country data).

International Organization for Migration in its publications on migration governance indicators of 2018 and 2023 for each field of policy of indicator 10.7.2 of SDG 10.7, gives an overview of good examples of policies in Albania and of the fields that have potential to develop further. In all six fields/areas of policy of Indicator 10.7.2. such as Migrants rights, Data – based governance and policy, Cooperation and Partnership, Socioeconomic well-being, Crisis – related mobility dimensions, orderly and safe migration is given information on the strategies, legislation and other instruments that were developed in Albania for the reporting period and for each of them, besides of the good example was also given information on the fields with the potential to develop further in the future (International Organization for Migration, 2023).

The global approach and inclusive dimension of the 2030 Agenda are reflected in the Albanian Government's vision for migration. The vision for migration, stated in the text of National Migration Strategy is: "*By 2030, in the spirit of global migration processes and Albania's integration into the EU, to provide a comprehensive response to the challenges and opportunities of migration within the Albanian context*" (Council of Ministers, 2024). The implementation of the National Strategy on Migration is closely linked to the fulfillment of the Albanian Government's commitments to international initiatives and partnerships with countries in the region and around the world. According to the text of the National Strategy on Migration, this document has been developed in full alignment with the Sustainable Development Goals. Specifically, it is fully aligned with Goal 10.7, which focuses on the development of well-managed migration policies (Council of Ministers, 2024).

The National Migration Strategy states the commitment to achieve the Sustainable Development Goals in relation to promoting gender equality (Council of Ministers, 2024). However, these goals are complemented by those of other strategic documents such as the National Strategy for Gender Equality 2021-2030, which also contains measures aimed at achieving these SDGs. These measures aim at empowering migrant women, protecting their social and economic rights, increasing their access to services and products and other important interventions in this regard (Council of Ministers, 2024).

Sustainable development goals have also been taken into account when designing interventions for remittances. The aim of policies and interventions in strategic migration documents is to reduce the costs in line with the 2030 Agenda. The institution responsible for these interventions is the Bank of Albania. Additional measures include providing online information about these costs, protection against abusive or discriminatory practices and developing partnerships with the banking sector to create accessible financial instruments dedicated to low-income households and female-headed families (Council of Ministers, 2024).

The upcoming sections will examine the Action Plan, which further concretizes this statement by the Albanian Government. Promoting a positive relationship between migration and sustainable development, and achieving the initiatives of the 2030 Agenda, is a key objective of the Albanian Government within its policy framework for managing migration. To support this goal, the strategic policy document has also been aligned with the Global Compact for Migration (GCM) (Council of Ministers, 2024).

3. Methodology

This is analytical research rather than an empirical one. The data used were secondary data from the existing literature. To answer the question of this research was used the qualitative method of content and thematic analysis. To identify and better understand the inclusion of the Sustainable Development Goals (SDGs) in the Migration Action Plan 2024–2026, "*Annex 3: Indicator Passport Formats of the Action Plan"* was reviewed using the keywords "*Sustainable Development Goals*" and "*2030 Agenda*".

It was observed that many objectives or indicators within the plan correspond to more than one SDG (Council of Ministers, 2024). Since one of the most frequently referenced SDGs in this plan was Sustainable Development Goal 10—and specifically its Target 10.7—further inquiry was made into its inclusion in the Action Plan.

Since Target 10.7 has a strong connection and relevance to migration and given that the most recent evaluations for Target 10.7, and its Indicator 10.7.2., refer to the years 2021 and 2023, it was of particular interest to examine how the policies and measures in the Migration Action Plan 2024–2026 are aligned with the areas of Indicator 10.7.2. Identifying the connection between the measures in this Action Plan and the thematic areas of Indicator 10.7.2 provides clearer insight into the relationship between these strategic documents and the SDG of the 2030 Agenda—specifically SDG 10.7 and its indicators—as well as it can help in the future into the structured monitoring of their implementation. We searched more on target 10.7 and Indicator 10.7.2. As outlined in the literature review section, the methodology for collecting data on Indicator 10.7.2 consisted of dividing it into six thematic areas, each with its own set of categories.

After identifying and selecting the measures from the Migration Action Plan 2024–2026 that are linked to Target 10.7 of SDG 10, the aim was to further isolate those measures that specifically fall under Indicator 10.7.2. To achieve this, the measures of the Action Plan were analyzed with attention to keywords or themes such as the exact names of the indicator's domains, and the titles of the categories within each domain.

4. Findings

The Action Plan 2024–2026 of the National Migration Strategy 2024-2030 is structured into several sections that provide information on strategic goals, strategic objectives, priority measures and corresponding indicators. In the final column, the intersection and alignment of these elements with regional and global processes are also presented (Annex 3 of the Action Plan 2024-2026).

The Action Plan places special emphasis on the Sustainable Development Goals. It consists of many measures/interventions and for the 46 interventions (4 Strategic Goals, 11 Strategic Objectives and 31 Priority Measures) in the "Anex 3: Performance Indicator Table" of the Action Plan presents the indicators, targets and values to be reached until 2026 and for some until 2030. It also shows the alignment of each measure with the objectives of the Sustainable Development Goals (Council of Ministers, 2024, Action Plan, Annex 3: Indicator Passport Formats, pp. 61–66).

The Sustainable Development Goals (SDGs) identified in this plan include:

- SDG 3: Target 3.C
- SDG 4: Targets 4.4, 4.B, and 4.5
- SDG 8: Targets 8.5, 8.6, and 8.10
- SDG 10: Targets 10.7, 10.2, and 10.C
- SDG 11: Target 11.8
- SDG 16: Targets 16.6, 16.3, 16.7, 16.8, and 16.9
- SDG 17: Targets 17.3, 17.17, and 17.18

The measures outlined in the Action Plan focus on selected SDG targets rather than encompassing all of them. Two Sustainable Development Goals that appear most frequently and are directly linked to international migration are SDG 17, specifically Target 17.18, and SDG 10, specifically Target 10.7. Some interventions or measures in the plan refer to all Sustainable Development Goals without specifying which goal or target they relate to (see Section 7. Table 2).

Target 17.18 that covers high-quality, reliable and disaggregated data—has the highest frequency and is referenced in 28 interventions/measures of the Action Plan 2024–2026. Meanwhile, SDG 10.7 that focus on facilitating orderly, safe, regular and responsible migration is reflected in approximately 20 interventions/measures of the Action Plan. Other goals and targets are mentioned but with significantly lower frequency than these two.

Given that Target 10.7 of Sustainable Development Goal 10 appears frequently among the measures of the Migration Action Plan, and considering that, according to IOM, the primary reference to migration within the SDGs is found in Target 10.7 further investigation was conducted to better understand its inclusion in the interventions/measures of the Migration Action Plan 2024–2026.

Regarding the inclusion of the domains of Indicator 10.7.2 and their respective categories in the interventions/measures of the Migration Action Plan 2024–2026, the findings are as follows.

1. *Migrants' rights* are addressed under the strategic objective that focuses on the protection of migrants' rights and their integration into Albanian society. Its priority measures focus on informing migrants, protecting them from discrimination, and facilitating access to public services guaranteed by law.
2. *The entire domain of data-based governance and policy*—identified as the second domain of Indicator 10.7.2—is one of the most prominently represented areas in the Migration Action Plan 2024–2026. Both strategic documents, the National Strategy on Migration and its Action Plan, express a clear commitment to establishing a national policy framework that manages regular migration. Their strategic goals and objectives aim to ensure strategic governance of migration in Albania, manage migration through improvements to the legal and institutional framework, develop and revise migration policies based on accurate and coordinated data, and create legal and institutional opportunities for labor migration to and from Albania, along with their corresponding priority measures.
3. *Cooperation and Partnership*, the third domain of Indicator 10.7.2, is reflected in several strategic objectives and their corresponding priority measures within the Migration Action Plan 2024–2026. These specific strategic objectives aim to strengthen international cooperation and partnerships for safe and orderly migration, as well as to prevent irregular migration to and from Albania. The related priority measures focus on improving coordination mechanisms for migration governance, engaging in regional and international processes, and establishing new partnerships for labor migration.
4. *Socioeconomic well-being*, the fourth domain of Indicator 10.7.2, is reflected in several strategic objectives and their corresponding priority measures within the Migration Action

Plan 2024–2026. These strategic objectives focus on creating legal and institutional opportunities for labor migration to and from Albania, establishing incentives and opportunities for emigrants to contribute to sustainable development, and ensuring the sustainable reintegration of Albanian nationals returning from migration. The related priority measures within this domain and its categories include: improving the operations of private employment agencies, promoting faster, safer, and more affordable remittance transfers, encouraging financial inclusion of migrants, fostering investment, implementing reintegration activities for returnees, facilitating the transfer, development, and recognition of skills, qualifications, and competencies and creating mechanisms for the portability of social security rights and acquired benefits.

5. *Crisis-related mobility dimensions*, the fifth domain of Indicator 10.7.2, are not extensively covered in the Migration Action Plan 2024–2026, although some overlap may exist. This limited inclusion is likely because such issues are addressed in more specialized strategic documents, such as contingency plans, trafficking frameworks, or integrated border management strategies.
6. *Orderly and safe migration*, the sixth domain, is reflected in several measures of the 2024–2026 Action Plan under the National Strategy on Migration 2024–2030. These measures focus on raising awareness and providing information about regular migration and the risks associated with irregular migration, informing migrants about opportunities and procedures for labor migration to and from Albania and educating them about their rights and protection from discrimination within the country (see Table 3. Domains and categories of indicator 10.7.2 and interventions/measures of the Migration Action Plan 2024–2026).

5. Discussion

National Migration Strategy' Action Plan 2024–2026 places special emphasis on the SDG. There are several SDG targets that are mentioned in the measures of this plan. The majority of them are specific migration related SDG-s, that refer directly to international migrants or different categories of migrants, such as SDG 4, SDG 8, SDG 10, SDG 16 and SDG 17. The measures in the Action Plan focus on selected SDG targets which is understandable because not all the targets of an SDG are related directly to migration, rather are specific targets. For exemple in the Action Plan 2024-2026, we found the targets SDG 17.18, SDG 10.7, SDG 16.6, SDG 10.2, SDG 11.8, SDG 16.7, SDG 16.8, SDG 3.C, SDG 4.4, SDG 4.B, SDG 8.5 and SDG 8.6.

Targets 17.18 and 10.7 that were the most frequently referenced in the action plan, represent two SDG targets that explicitly and directly address migration management. This shows a prioritization of migration-specific and data-driven objectives. Some measures of the Action Plan refer to SDGs generally, without specifying which goal or objective they support. This suggests room for improvement in clarity and traceability in future reviewing of this plan. Regarding Indicator 10.7.2 it is covered by the action plan in all its six areas but limited in area 5 *"Crisis-related mobility"*, which is an area that is covered by other strategic documents. On the other hand, its other areas are represented with concrete actions in the National Migration Strategy' Action Plan 2024-2026.

6. Conclusions, limitations and future research

In the sections above, was provided an overview of the inclusion of the Sustainable Development Goals in strategic documents aimed at managing migration, especially in the National Migration Strategy 2024-2030'Action Plan. It seems that the Albanian government has a special attention to the Sustainable Development Goals of the 2030 Agenda. This is evidenced in the text of the National Migration Strategy and is also reflected in the measures of the Migration Action Plan 2024–2026 under this strategy. These goals are addressed not entirely but through selected specific targets that are most closely linked to migration-related issues. Indicator 10.7.2 of Target 10.7 under SDG 10 is included in the Migration Action Plan 2024–2026 and is supported by concrete measures aimed at its development.

The limitations associated with these findings stem from the fact that the research was based solely on the measures of the Migration Action Plan 2024–2026 that are included in "Annex 3: Indicator Passport Formats of the Action Plan", that may not include all measures of the Migration Action Plan 2024–2026. Despite that, the findings are important because "Annex 3: Indicator Passport Formats of the Action Plan", shows the performance and the values to be reached for each intervention until 2026 and 2030, and can show the progress related to the measures linked to the SDGs identified in the action plan, for future research. The focus of this research was primarily on the existence of these policies within the National Strategy on Migration 2024–2030 and its Action Plan, rather than on their implementation or effectiveness.

Sustainable Development Goals related to migration are also addressed in other strategic documents, such as the National Strategy for Gender Equality 2021–2030, indicating that the analysis is not complete when based solely on the National Migration Strategy' Action Plan. To have a clearer picture of the pursuit of the SDGs in Albania, in the field of migration, it is not enough to analyze only the migration strategy but also other sectoral strategies that intersect with migration, such as the strategy for employment and vocational education, the strategy for gender equality, as well as other strategic documents. This could be the focus of further research in the future.

7.Appendix

Table 1. Sustainable Development Goals and the objectives and indicators related to international migration

Sustainable Development Goals (SDGs)	Objectives & Indicators Related to International Migration
QZHQ 1 - Goal 1. End poverty in all its forms everywhere	
QZHQ 2 - Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture	
QZHQ 3 - Goal 3. Ensure healthy lives and promote well-being for all at all ages	
QZHQ 4 - Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Objektivi 4.7 & Indikatori 4.7.1 4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development 4.7.1 Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment
QZHQ 5 - Goal 5. Achieve gender equality and empower all women and girls	Objektivi 5.2 & Indikatori 5.2.1; Indikatori 5.2.2 5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation 5.2.1 Proportion of ever-partnered women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner in the previous 12 months, by form of violence and by age. 5.2.2 Proportion of women and girls aged 15 years and older subjected to sexual violence by persons other than an intimate partner in the previous 12 months, by age and place of occurrence
QZHQ 6 - Goal 6. Ensure availability and sustainable management of water and sanitation for all	
QZHQ 7 - Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all	
QZHQ 8 - Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Objektivi 8.7 & Indiktori 8.7.1 8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms

	Objektivi 8.8 & Indikator 8.8.1; Indikatori 8.8.2. 8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment 8.8.1 Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status. 8.8.2 Level of national compliance with labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status
QZHQ 9 - Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	
QZHQ 10 - Goal 10. Reduce inequality within and among countries	Objektivi 10.2 & Indikatori 10.2.1 10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status 10.2.1 Proportion of people living below 50 per cent of median income, by sex, age and persons with disabilities Objektivi 10.3 & Indikatori 10.3.1 10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard 10.3.1 Proportion of population reporting having personally felt discriminated against or harassed in the previous 12 months on the basis of a ground of discrimination prohibited under international human rights law Objektivi 10.7 & Indikatori 10.7.1; Indikatori 10.7.2; Indikatori 10.7.3; Indikatori 10.7.4 10.7 Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies 10.7.1 Recruitment cost borne by employee as a proportion of monthly income earned in country of destination. 10.7.2 Proportion of countries with migration policies that facilitate orderly, safe, regular and responsible migration and mobility of people 10.7.3 Number of people who died or disappeared in the process of migration towards an international destination. 10.7.4 Proportion of the population who are refugees, by country of origin. Objektivi 10.C.1. 10.c By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent. 10.c.1 Remittance costs as a proportion of the amount remitted.
QZHQ 11 - Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable	
QZHQ 12 - Goal 12. Ensure sustainable consumption and production patterns	
QZHQ 13 - Goal 13. Take urgent action to combat climate change and its impacts	
QZHQ 14 - Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	
QZHQ 15 - Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	
QZHQ 16 - Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all	Objektivi 16.2 & Indikatori 16.2.1; Indikatori 16.2.2; Indikatori 16.2.3; 16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children

and build effective, accountable and inclusive institutions at all levels	16.2.1 Proportion of children aged 1–17 years who experienced any physical punishment and/or psychological aggression by caregivers in the past month 16.2.2 Number of victims of human trafficking per 100,000 population, by sex, age and form of exploitation 16.2.3 Proportion of young women and men aged 18–29 years who experienced sexual violence by age 18. Objektivi 16.9 & Indikatori 16.9.1; 16.9 By 2030, provide legal identity for all, including birth registration 16.9.1 Proportion of children under 5 years of age whose births have been registered with a civil authority, by age. Objektivi 16.b & Indikatori 16.b.1 16.b Promote and enforce non-discriminatory laws and policies for sustainable development. 16.b.1 Proportion of population reporting having personally felt discriminated against or harassed in the previous 12 months on the basis of a ground of discrimination prohibited under international human rights law.
QZHQ 17 - Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development	Objektivi 17.3 & Indikatori 17.3.2. 17.3 Mobilize additional financial resources for developing countries from multiple sources 17.3.2 Volume of remittances (in United States dollars) as a proportion of total GDP Objektivi 17.18 & Indikatori 17.18.1; Indikatori 17.18.2; Indikatori 17.18.3 17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts. 17.18.1 Statistical capacity indicators 17.18.2 Number of countries that have national statistical legislation that complies with the Fundamental Principles of Official Statistics 17.18.3 Number of countries with a national statistical plan that is fully funded and under implementation, by source of funding.

Note:

1. *The information has been adapted from the document Global Indicator Framework for the Sustainable Development Goals and Targets of the 2030 Agenda (United Nations General Assembly, 2017; 2025).*

2. *The adaptation was carried out through content and thematic analysis of this publication, aiming to identify intersections between the goals and their targets with international migration. For this purpose, key terms such as "migration," "migrant," and "trafficking" related to international migration were used. Additionally, considering that migration is a cross-sectoral issue/phenomenon, Sustainable Development Goals and their targets that include the terms "inclusive" and "all" were also identified.*

Table 2. Sustainable Development Goals in the Migration Action Plan 2024–2026

SDG -të	**Frequency refers to how many times an SDG is mentioned in the Migration Action Plan (MAP). (Ordered by highest frequency)**
SDG 17.18	28 interventions/measures
SDG 10.7	20 interventions/measures
SDG 16.6	5 interventions/measures
SDG 10.2	4 interventions/measures
SDG 11.8	4 interventions/measures
SDG 16.7	4 interventions/measures
SDG 16.8	4 interventions/measures

SDG 3.C	2 interventions/measures
SDG 4.4	2 interventions/measures
SDG 4.B	2 interventions/measures
SDG 8.5	2 interventions/measures
SDG 8.6	2 interventions/measures
SDG 16.3	2 interventions/measures
SDG 4.5	1 intervention/measure
SDG 10.C	1 intervention/measure
SDG 8.10	1 intervention/measure
SDG 17.3	1 intervention/measure
SDG 17.17	1 intervention/measure
SDG 16.9	1 intervention/measure
All SDG	7 interventions/measures

Note:

1. *Adapted from Annex 3: Indicator Passport Formats, Migration Action Plan 2024–2026.*
2. *The inclusion of the Sustainable Development Goals in the National Strategy on Migration 2024–2030 was examined through a review of the text of this strategic document. The key terms used during this review were "Sustainable Development Goals" and "2030 Agenda." These guided our search, though with a limitation, as the terms were not further broken down into codes for a more detailed analysis. Nevertheless, they successfully highlight this inclusion and fulfill the purpose of the research.*

Table 3. Areas/categories of Indicator 10.7.2 and the interventions of the Action Plan for Migration 2024–2026

Indicator 10.7.2 **Area / category**	**Measures / indicators**
Field 1 – *Migrants' Rights*, the categories are: - basic/emergency healthcare, public education, - equal pay for equal work, - social security, and - access to justice.	Objective – 3.1: Protection of migrants' rights and their integration into Albanian society. Indicator – Number of public services from which migrants' benefit Priority Measures – 3.1.1: Information and protection of immigrants from discrimination. Indicator – Number of cases addressed regarding discrimination against foreigners in the Republic of Albania Priority Measures – 3.1.2: Facilitation of access to public services guaranteed by law. Indicator – Migrants access all online services
Field 2 – *Whole-of-government/data-based policy,* the categories are: - a dedicated agency to implement the national migration policy, - a national policy or strategy for regular migration including labour migration, - a national policy or strategy to promote the inclusion or integration of immigrants, - formal mechanisms to ensure that migration policy is gender-responsive, and - a mechanism to ensure that migration policy is informed by aggregated data.	Policy Goal 1: Ensuring strategic governance of migration in Albania. Specific/Strategic Objective – 1.1: Migration management through improvement of the legal and institutional framework. Specific/Strategic Objective – 1.2: Drafting and reviewing migration policies based on accurate and coordinated data. Indicator – Availability of migration data disaggregated by income, gender, age, race, ethnicity, migration status, disability, country of origin, etc. Priority Measures – 1.1.2: Strengthening institutional capacities and reviewing structures in central and local institutions for effective migration governance Indicator – Number of civil servants trained on migration issues; Number of migration offices at the local level. Priority Measures – 1.2.1: Creation of a coordinated methodology for data collection (according to the statistics plan). Indicator – Unified practice for collecting and analyzing migration data Priority Measures – 1.2.2: Effective exchange and interaction for migration data. Indicator – Number of periodic exchanges of migration data

	Priority Measures – 1.2.3: Study and evaluation of migration data to draft policies/documents. Indicator – Number of studies drafted and validated by institutions Objective – 2.1: Creation of legal and institutional opportunities for labour migration to and from Albania. Indicator – Number of foreign nationals employed and self-employed in Albania Priority Measures – 2.2.4: Promotion of investments Indicator – Number of investments made by emigrants at national and local level Priority Measures – 2.3.1: Implementation of activities for the reintegration of returnees from migration Indicator – Number of individuals who have attended reintegration programs, disaggregated by gender Objectives – 3.1: Protection of migrants' rights and their integration into Albanian society Indicator – Number of public services from which migrants benefit
Field 3 – *Cooperation and Partnership,* the categories are: - an inter-ministerial coordination mechanism for migration, - bilateral agreements on migration, including labour migration, - regional agreements to promote mobility, - agreements for cooperation with other countries on return and readmission, - formal mechanisms to engage civil society and the private sector in the formulation and implementation of migration policy.	Specific/Strategic Objective – 1.3: Strengthening international cooperation and partnerships for safe and regular migration Indicator – Number of new partnerships for migration governance Specific/Strategic Objective – 1.4: Prevention of irregular migration to and from Albania Indicator – Number of irregular foreigners identified and deported. Number of irregular Albanians in the EU and worldwide Priority Measures – 1.1.3: Improvement of coordination mechanisms for migration governance Indicator – Percentage of institutional participation in KTM and GDM meetings Level of participation of local self-government units Priority Measures – 1.3.1: Follow-up of regional and international processes Indicator – International and regional processes and partnerships with international organizations Priority Measures – 1.3.2: Establishment of new partnerships for labour migration
Field 4 – *Socioeconomic well-being*, the categories are: - alignment/matching, through periodic assessments of labour migration policies with current and future labour market needs, - facilitation of the transfer of social security benefits, - facilitation of the recognition of skills and qualifications acquired abroad, - facilitation or promotion of remittance flows, as well as the encouragement of fair and ethical recruitment of migrant workers	**Objective - 2.1:** Creation of legal and institutional opportunities for labour migration to and from Albania. **Indicator:** Number of foreign nationals employed and self-employed in Albania. **Objective - 2.2:** Creation of opportunities and incentives for emigrants to contribute to sustainable development. **Indicator:** Simplified and digitalized information and services. **Objective - 2.3:** Ensuring the sustainable integration of Albanian nationals returned from migration, F.4. **Indicator:** Albanians returned from migration, integrated into socio-economic life. **Priority Measures - 2.1.3:** Improvement of the activity of private employment agencies. **Indicator:** Number of active private employment agencies, identified and advised. **Priority Measures - 2.2.2:** Promotion of faster, safer, and cheaper transfer of remittances and encouragement of migrants' financial inclusion. **Indicator:** Percentage of remittances sent through formal channels in relation to the estimated total of remittances. Number of migrants accessing financial instruments (such as bank accounts allowing direct deposits from employers, savings accounts, loans). **Priority Measures - 2.2.4:** Promotion of investments. **Indicator:** Number of investments made by emigrants at national and local level. **Priority Measures - 2.3.1:** Implementation of activities for the reintegration of returnees from migration. **Indicator:** Number of individuals who have attended reintegration programs, disaggregated by gender.

	Priority Measures - 2.3.2: Facilitation of the transfer, development, and recognition of skills, qualifications, and competences. **Indicator:** Number of diploma recognitions, disaggregated by gender. Number of short-term course certifications, disaggregated by gender. **Priority Measures - 2.3.3:** Creation of mechanisms for the portability of social security rights and acquired benefits. **Indicator:** Number of agreements for the recognition of social contribution periods.
Area 5 – *Dimensions of crisis mobility, the categories* are: - Creation of a system for the reception, processing, and identification of persons forced to cross international borders due to forced displacement. - Drafting of emergency plans for displaced populations, ensuring the fulfillment of basic needs such as food, hygiene, education, and healthcare. - Implementation of specific measures to provide assistance to Albanian citizens living abroad, in countries experiencing crisis or post-crisis situations. - Preparation of a national strategy for disaster risk reduction, with specific provisions for addressing the consequences of displacement caused by natural or other disasters. - Granting of temporary residence or temporary protection to persons forcibly displaced across international borders, as well as to those who are unable to return to their country of origin.	
Area 6 – Regular and Safe Migration, the categories are: - Development of a system for monitoring overstays beyond the visa term. - Establishment of control mechanisms for travel authorization prior to arrival in the host country. - Preparation of special provisions for the protection of unaccompanied or separated children. - Implementation of information and awareness campaigns on migration, aiming to increase knowledge and prevent risks. - Drafting and implementation of structured strategies to address	**Priority Measures - 1.4.1:** Information and awareness-raising. **Indicator:** Periodic on-site information campaigns. Number of people informed. **Priority Measures - 2.1.2:** Information on the format, opportunities, and procedures for labour migration to/from the Republic of Albania. **Indicator:** Number of informational materials produced. **Priority Measures - 3.1.1:** Information and protection of immigrants from discrimination. **Indicator:** Number of cases addressed regarding discrimination against foreigners in the Republic of Albania.

human trafficking and migrant smuggling.	

Note: *Adapted from data of the United Nations, Department of Economic and Social Affairs, Population Division, 2021, country data and Annex 3: Indicator Passport Formats, Action Plan 2024–2026.*

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