The 16th InTraders International Conference on Sustainable Global Trade and Economics Abstract Book

Editor

Dr. Muhamed Sabri Doğan

InTraders Academic Platform

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Fakültemiz Uluslararası Ticaret ve Finansman Bölümü öğretim üyesi Prof. Dr. Asena BOZTAŞ'ın 26-27 Ekim 2026 tarihlerinde Sakarya Üniversitesi ev sahipliğinde Babaeski, Kırklareli, Türkiye'de gerçekleştirilecek "The 16th In Traders International Conference On Sustainable Global Trade and Economics" kongresinde Üniversitemiz adına akademisyen temsilcisi olarak görev alması uygun görülmüştür.

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Declaration

InTraders herby would like to declare that from all participants coming from Romania, US, North Macedonia, Russia, Indonesia, India, Pakistan, Chile, Kosovo, Montenegro, Türkiye and ensuring international academic participation. more than half of the studies belong to countries different than Türkiye and from more than 5 different countries as mentioned above. 23 studies from Türkiye is presented, 39 studies from out of Türkiye is presented by foreign researchers. 58% is from out of Türkiye, 42 % is from Türkiye. It provides the Republic of Türkiye, Council of Higher Education "International Conference" criteria.

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Appreciation

I am gratified to have the honour to put forward the vote of thanks to all the Congressional Coordinators, Congressional Committees, and Authors who provided intensive work performance for the Conference.

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The Congress aims to include papers from academics and private-sector managers. The written language is English.

Thank you for your great work, dear friends. Last, my little motivators, Emre and Yunus ÇAPRAZ, are great….

A beautiful congress with more than international congress criteria is waiting for all of you. I wish to meet you all at these new international conferences…

Kürşat ÇAPRAZ
Secretary of InTraders Academic Platform
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Aim

The 16th InTraders International Conference on Sustainable Global Trade and Economics aims to provide an international academic platform for researchers, scholars, policymakers, industry professionals, and practitioners to exchange innovative ideas, research findings, and practical experiences in the fields of sustainable global trade, economics, business, and related disciplines.

The conference seeks to promote interdisciplinary discussions on sustainable economic development, global trade systems, digital transformation, green finance, innovation, and emerging economic challenges in an increasingly interconnected world. It also aims to encourage scientific collaboration and contribute to the advancement of sustainable economic policies and practices at both regional and global levels.

Scope

The conference welcomes original research papers, case studies, theoretical contributions, and practical applications related to sustainable global trade and economics. The scope of the conference includes, but is not limited to, the following topics:

Sustainable Global Trade
International Economics and Finance
Green Economy and Sustainable Development
Digital Economy and E-Commerce
Artificial Intelligence in Economics and Business
International Business and Management
Sustainable Supply Chain and Logistics
Green Finance and ESG Studies
Innovation and Entrepreneurship
Economic Development and Public Policy
Climate Economics and Environmental Sustainability
Financial Technologies (FinTech)
Circular Economy and Sustainable Production
Global Markets and Economic Systems
Corporate Sustainability and Governance
Smart Trade Systems and Digital Transformation
Consumer Behavior and Sustainable Marketing
Economic Resilience and Risk Management

Data Analytics and Business Intelligence

International Trade Policies and Economic Governance

The conference encourages interdisciplinary and international perspectives that address contemporary economic and trade challenges while supporting sustainable and inclusive global development.

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PROGRAM

The 16th InTraders International Conference on Sustainable Global Trade and Economics

26-27 October 2026, Kırklareli University, Kırklareli, Türkiye

26 October 2026, First Day, GMT+3

10:00	Moment of Silence – National Anthem (İstiklal Marşı)
	Opening Ceremony
10:10	Assoc. Prof. Dr. Liza Alili SULEJMANI, InTraders Journal Editor
10:20	Asst. Prof. Dr. Kemal TAYSI, KLU, Babaeski V. S., Director
10:30	Vice Rector. Dr. Luan Vardari, University "Ukshin Hoti" Prizren, Kosova
10:40	Rector, Prof. Dr. Mehmet BULUT, International Balkan University, N. Macedonia
10:50	Rector, Prof. Dr. Rengin AK, Kırklareli University, Türkiye
11:10-11:25	Coffee Break
	Keynote Speakers
11:25	Prof. Dr. S. Waleck Dalpour, University of Maine Farmington, US
11:35	Assoc. Prof. Dr. Fatma FİDAN, Sakarya University
11:45	Assoc. Prof. Dr. Elisabeta B. Ollogu - Women in Science Network, North Macedonia
11:55	Dr. Mihaela POP, Titu Maiorescu University, Romania
12:10-12:25	Oya Özer
12:30-14:00	Lunch Break

In Person Program (26 October 2026)

Session 1 Hall 1

14:00-14:50	Prof. Dr. Luan Vardari, University "Ukshin Hoti" Prizren, Asst. Prof.Dr. Gülay Keskin ÇOMÜ	The Role of AI-Driven Personalized Marketing in Enhancing Customer Engagement and Purchase Intention in Financial Services
	Prof. Dr. S. Waleck Dalpour, University of Maine Farmington, US	Emerging Market & Globalization
	Lect. Dr. Mihaela POP, Titu Maiorescu University, Romania	Sustainable Global Trade and Private International Law: Challenges of Jurisdiction and Applicable Law in Cross-Border Corporate Disputes
	Kemal Taysı Yunus Şahin , Assistant Professor, Kırklareli University, Babaeski Vocational School, Kırklareli University, Institute of Social Sciences	An Examination of the Impact of Selected Macroeconomic Indicators on Firm Sales: Evidence from the BIST Transportation Index

Session 2 Hall 2

14:00-14:50	Igballe Miftari-Fetishi, International Balkan University, Skopje, N. Macedonia; Anida Vehapi , University of Prishtina, Prishtina; Besime Ziberi, AAB College, Prishtina, Kosovo	Quality of Higher Education in the Age of Artificial Intelligence: Evidence from the Student Perspective
	Asst. Prof. Dr. Demet ONUR KALFA, Kırklareli University, Babaeski V. S.	The Impact Of The Slow Cıty Movement In Turkey On Sustaınable Local Government Policies
	Assoc. Prof. Dr. Liza Alili-Sulejmani, International Balkan University, Skopje, North Macedonia, ; Nawaz Ahmad,Shaheed Benazir Bhutto University, Nawabshah, Sindh, Pakistan and GOVCOPP, University of Aveiro, Aveiro, Portugal.; Jolita	Green Transition in the Age of Artificial Intelligence: Evidence from Developing Countries

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	Vveinhardt, Vytautas Magnus University, Kaunas, Lithuania; Besime Ziberi, AAB College, Pristina, Kosovo	
	Dr. Öznur ŞAMANDAR YILMAZ, Kırklareli University, Babaeski V. S.	Comparison of Sustainable Finance Regulations in Türkiye and the European Union: An Evamination of TSRS and ESRS Practices
	Sani Saidi, International Balkan University, N. Macedonia	MACROECONOMIC PERFORMANCE OF NORTH MACEDONIA: AN EMPIRICAL ANALYSIS OF THE RELATIONSHIPS AMONG GDP GROWTH, INFLATION, AND UNEMPLOYMENT (2005–2023)
Session 3 Hall 3 14:00-14:50		
Session 4 Hall 1		
15:00-15:50	Luljeta Aliu Mulaj, Public International College Mitrovica, Kosovo*Atdhetar Gara, , AAB College, Prishtinë Republika e Kosovës *Donat Rexha, Public International College Mitrovica, Kosovo	Corporate Social Responsibility (CSR), Brand Trust, and Consumer Purchase Intention among University Students
	As. Prof. PhD. Pharm. Vlăsceanu Gabriela, Professor PhD. Eng Nicolae Floarea, Assis. PhD. Eng. Eremia Florentina Bioterra University of Bucharest, Romania	From waste to by-product – full valorization of agri-food resources
	Asst. Prof. Dr. Özgül Uyan, Muğla Sıtkı Koçman University	Environmental Data Requirements and Border Compliance Challenges in International Trade
Session 5 Hall 2 15:00-15:50	Aytuğ Zekeriya BOLCAN, Assist. Prof Dr., Istanbul University, Faculty of Economics	IIs Energy Supplier Diversification Macroeconomic Insurance? External Energy Shocks, Inflation, Output, and Green Investment in Europe
	Lect. Dr. Gökhan MURAT, Bitlis Eren University, Türkiye	Precarization in the World of Work: New Forms of Insecurity and an Assessment from a Social Policy Perspective

	Edita Mustafa, Lejla Bilalli, International Balkan University, n. Macedonia	TOURISM DEVELOPMENT AND FEMALE LABOR FORCE PARTICIPATION IN THE WESTERN BALKANS: PANEL EVIDENCE
	Prof. Dr. Luljeta Sadiku, International Balkan University, N. Macedonia Assoc. Prof. Dr. Nimete Berisha, University of Prishtina, Kosovo	THE CORRELATION BETWEEN SHADOW ECONOMY AND TAX REVENUES FOR CENTRAL AND EASTERN EUROPEAN COUNTRIES
	Ceneta Telak Durmishi, International Balkan University, N. Macedonia	Ethical Management in the Digital Era: Balancing Innovation, Responsibility, and Sustainable Business Performance
	Assoc. Prof. Dr. Fatma FİDAN, Sakarya University, Türkiye, Kürşat Çapraz, Sakarya University, Türkiye	The Landscape of Women's Employment within Employment Strategies in Türkiye
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	Zeliha Aleyna ASLANTEKİN, Aykut AYDIN, Kırklareli University	Migration and the Inability to Migrate in the Context of Climate Change and Agricultural Vulnerability: A Study on Turkey
	Fatma KÜÇÜKGACAL, Assoc. Prof. Dr. Mehtap DEMİR, Kırklareli University	Vocational Education in Türkiye: Historical Transformation and Current Challenges
	Ceyda ORAS, Assoc. Prof. Dr. Mehtap DEMİR, Kırklareli University	Social Assistance and Social Services in Combating Poverty: A Comparison between Türkiye and France
	Asst.Prof.Dr. Berkan Imeri, Assoc.Prof.Dr. Liza Alili Sulejmani, International Balkan University, N. Macedonia	The Role of Renewable Energy and Energy Efficiency in the Western Balkans economies
	Asst. Prof. Dr. Beste Burcu Kasap, KLU, Babaeski V.S. Türkiye, Prof. Dr. Murat Selim Selvi, Namık Kemal University, Türkiye	Corporate Sustainability Discourses among High-Value Brands in Türkiye: A Thematic Analysis of the Websites of Eight Brands from Different Sectors
	Prof.Dr. Savica Dimitrievska, Assoc.Prof.Dr. Liza Alili Sulejmani, International Balkan University, N. Macedonia	Does online shopping green the economy? E-commerce adoption and CO 2 emissions in the Western Balkans

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	Ozkan Baki, International Balkan University, N. Macedonia	Environmental Sustainability, Renewable Energy, and Economic Growth in the Western Balkans
	Asst.Prof.Dr. Fatih Şahbaz, Assoc.Prof.Dr. Liza Alili Sulejmani, International Balkan University, N. Macedonia	Determinants of Economic Sustainability in the Western Balkans: A Panel Data Analysis
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	Assoc. Prof. Dr.Leena Jenefa , Hindustan Institute of Technology and Science, Chennai, India	Keynote Speaker (Online)
	Prof Dr Tulus Suryanto DiRector of Postgradute Universitas Islam Negeri Raden Intan Lampung , Indonesia	Keynote Speaker (Online)
09:00-10:00	MEHRAJ HUSSAIN PARA, Research Scholar, Maulana Azad College of Arts, Science & Commerce, Rauza Bagh, CSN, Maharashtra, India	The Earth Remembers: Ecological Memory, Environmental Justice, and Sustainable Futures in Postcolonial Literature
	Dr. Kevser Zeynep Meral , Assoc. Prof. Dr. Yurdagül Meral, İstanbul Medipol University	Navigating International Trade through E-Commerce, Distribution, and Communication (EDC): Export-Import Channel Dynamics and Marketing Capabilities

Online Session 2

	Ayyub Abbas Shaikh, Research Student, Maulana Azad College of Arts, Science and Commerce, Rauza Bagh, Aurangabad, Maharashtra, India.: Dr. Shaikh Parvez Aslam: Research Guide and HOD, , Lokseva Arts and Science College, Aurangabad, Maharashtra, India.	Ecologies of Memory: Environmental Justice in Postcolonial Literature
10:15:-11:15	Prof. Dr. Asena BOZTAŞ, Sakarya University of Applied Sciences, Dilşad TÜRKMENOĞLU KÖSE, Sakarya University	Circular Economy in the Global South: Development Strategy or New Form of Dependency?
	Khadija Bibi, Prof. Dr. Noor Jehan: ABDUL WALI KHAN UNIVERSITY, MARDAN, PAKISTAN	Employment Quality, Informality and Female Labour Market Withdrawal in Pakistan
	MEHRAJ HUSSAIN PARA, Research Scholar, Maulana Azad College of Arts, Science & Commerce, Rauza Bagh, CSN, Maharashtra, India	When Landscapes Become Archives: Ecological Memory and the Afterlives of Partition in South Asian Literature

Online Session 3

	Muhammad Faisal Prof. Dr Noor Jehan, ABDUL WALI KHAN UNIVERSITY, MARDAN, PAKISTAN	Digital Divide and Educational Equity in Pakistan
	Prof. Dr. Svetlana Rastvortseva, Ekaterina Aivazovskaia. Higher School of Economics - University. Moscow, Russia	Cross-country analysis of digital projects in the European Union in 2021–2026
11:30-12:30	Prof. Dr. Asena BOZTAŞ, Sakarya University of Applied Sciences, Dilşad TÜRKMENOĞLU KÖSE, Sakarya University	Resource Security and Circular Economy: Strategic Resilience Against Supply Chain Vulnerabilities
	Marinică Tiberiu Şchiopu, PhD, Visiting lecturer, Romanian Language Institute (Bucharest, Romania) & University of Delhi (New Delhi, India)	Environmental Sustainability in The History of Bees by Maja Lunde

Online Session 4

	Muhammad Atta Ul Islam Abrar, Prof. Dr. Noor Jehan: ABDUL WALI KHAN UNIVERSITY, MARDAN, PAKISTAN	GOVERNANCE EFFICIENCY AND DIGITAL TRANSFORMATION IN THE KNOWLEDGE PRODUCTION FUNCTION: EVIDENCE FROM OECD AND NON-OECD ECONOMIES
13:30-14:30	Asst. Prof. Dr. Cemile EVKAYA, Bilecik Şeyh Edebali University	THE TRANSFORMATION OF LABOR RELATIONS IN THE AGE OF ALGORITHMIC MANAGEMENT: A SYSTEMATIC REVIEW OF WORKER AUTONOMY, SURVEİLLANCE AND SOCIAL PROTECTION
	Asst. Prof. Dr. Cemile EVKAYA, Bilecik Şeyh Edebali University	THE ROLE OF THE DIGITAL PLATFORM ECONOMY IN CHINA IN SMALL PRODUCERS' PARTICIPATION IN DIGITAL MARKETS: AN ANALYSIS BASED ON TAOBAO VILLAGES
	Asst. Prof. Dr. Gazi Polat, Kırşehir Ahi Evran University, Department of Management Information Systems, Kaman School of Applied Sciences	Trade Openness, Structural Transformation, and Labour Productivity: A Comparison of Türkiye, China, and South Korea
	Marco Alfaro , Rashmi Bhardwaj , Roberto Acevedo Professor Marco Alfaro, Facultad de Ingeniería, Universidad San Sebastián, Bellavista 7, 8420524, Santiago, Chile; Professor Rashmi Bhardwaj, Professor of Mathematics, USBAS, GGSIPU, Delhi, India; Professor Roberto Acevedo, Facultad de Ingeniería, Universidad San Sebastián, Bellavista 7, 8420524, Santiago, Chile; (Corresponding Author).	Mining Resource Assessment: Economic Importance and State of the Art
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	Yasir Arafat, Prof. Dr. Noor Jehan: ABDUL WALI KHAN UNIVERSITY, MARDAN, PAKISTAN	Road Safety Governance and Traffic Accident Risk: The Mediating Role of Driver Behaviour and the Moderating Role of Driver Stress
14:45-15:45	Faiza Shahid, Prof. Dr. Noor Jehan: ABDUL WALI KHAN UNIVERSITY, MARDAN, PAKISTAN	Digital Access and Youth Labour Market Exclusion in Pakistan: Evidence from Not in Employment, Education and Training Status
	Oğuzhan ÖZÇELİK , Assoc. Prof. Dr. Babaeski Vocational School, Kirklareli University, Asst. Prof. Dr. Emre CEYLAN GÜNEL, Babaeski Vocational School, Kirklareli University	The Impact of Asian Tigers on Trade Among Turkish Republics: Evidence from Multi-Dimensional Panel Data Analysis

	Olcay ÇOLAK, Assoc. Prof. Dr. Uşak University	Worker Remittances and Domestic Savings in ECOWAS: A Panel Quantile CS-ARDL Perspective
	Asst. Prof. Dr. Emre CEYLAN GÜNEL, Babaeski Vocational School, Kirklareli University	A Conceptual Analysis of the Relationships Among Country-of-Origin Effect, Consumer Ethnocentrism, and Consumer Xenocentrism
Online Session 6		
	Prof. Dr. Berna BALCI İZGİ, Şeyma ÖZDEMİR, Gaziantep University	Beyond Individual Choices: Rethinking Women's Entrepreneurship through Institutional, Feminist, and Behavioral Economics in the Digital Age
	Prof. Artina Bedjeti Baftijari, International Balkan University, N. Macedonia	Renewable Energy Transition, Economic Growth and Environmental Performance: A Panel Data Analysis, 2000–2026
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	1Dr. Mauricio Sepúlveda, Facultad de Ingeniería, Universidad San Sebastián, Santiago,Chile; 2 Dr. Andrés Soto-Bubert, Facultad de Ingeniería, Universidad San Sebastián, Santiago,Chile; 3 Surbhi Sharma, Research Scholar, USBAS, GGSIPU, Delhi, India; 4 Professor Rashmi Bhardwaj, Professor of Mathematics, USBAS, GGSIPU, Delhi, India; 5 Professor Roberto Acevedo, Facultad de Ingeniería, Universidad San Sebastián,Santiago, Chile; (Corresponding Author).	Symbolic Regression Discovery of Compact Water Vapour-Pressure Correlations: Benchmarking against Classical Thermodynamic Equations

	Elmira Azimova, Istanbul Medipol University, Istanbul, Assoc. Prof. Yurdagül Meral, Istanbul Medipol University, Istanbul, Türkıye	NAVIGATING ORGANIZATIONAL CRISES THROUGH CONTINGENCY PERSPECTIVES AND INTERNAL COMMUNICATION: A SYSTEMATIC LITERATURE REVIEW
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	Asst. Prof. Dr. Özge ÜSTÜN ,Kayseri University; Asst. Prof. Dr. Mustafa ERBİR, Kayseri University: Asst. Prof. Dr. Maşide GÜRCÜ, Yozgat Bozok Üniversitesi	Sustainable Leadership and Green Human Resources Management in Healthcare Organizations: A Literature Review
	Asst. Prof. Dr. Özge ÜSTÜN ,Kayseri University; Asst. Prof. Dr. Mustafa ERBİR, Kayseri University: Asst. Prof. Dr. Maşide GÜRCÜ, Yozgat Bozok Üniversitesi	Healthcare Entrepreneurship in the Age of Artificial Intelligence: Examples of Successful Ventures
	Muhamed Sabri DOĞAN, Dr., Independent Researcher	Exploring the Health, Environment, and Economic Growth Nexus
	Asst. Prof. Dr. Ali YILDIZ, Mugla Sitki Kocman University,	International Marketing Strategies in The Lithium-Ion Battery Sector: Target MarketSelection Using The Topsis Model
Online Session 8		
18:30-20:00	1 Dr. Andrés Soto-Bubert, Facultad de Ingeniería, Universidad San Sebastián, Bellavista 7, 8420524, Santiago, Chile; 2 Miss María García-Huidobro, Facultad de Ingeniería, Universidad San Sebastián, Bellavista 7, 8420524, Santiago, Chile; 3 Miss Sabrina Pinilla, Facultad de Ingeniería, Universidad San Sebastián, Bellavista 7, 8420524, Santiago, Chile;4 Mr. Rigoberto Lillo, Facultad de Ingeniería, Universidad San Sebastián, Bellavista 7, 8420524, Santiago, Chile: 5 Professor Roberto Acevedo, Facultad de Ingeniería, Universidad San Sebastián, Bellavista 7, 8420524, Santiago, Chile; (Corresponding Author).	Mathematical, Physicochemical, and Artificial Intelligence-Based Modeling of Brine Viscosity as a Function of Composition, Temperature, and Pressure: Strategic Applications in Chilean Lithium and Copper Mining

1 Miss Camila Torres Díaz, Facultad de Ingeniería, Universidad San Sebastián, Bellavista 7, 8420524, Santiago, Chile; 2 Professor Roberto Acevedo, Facultad de Ingeniería, Universidad San Sebastián, Bellavista 7, 8420524, Santiago, Chile; (Corresponding Author).	Aluminum-Graphene Nanocomposites for Electrical Conductors: Initial Framework for a Systematic Review
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Trade Openness, Structural Transformation, and Labour Productivity: A Comparison of Türkiye, China, and South Korea

Gazi Polat[1]

Abstract

This study aims to examine the relationship between trade openness, structural transformation, and labour productivity in Türkiye, China, and South Korea over 2000–2023. Its theoretical framework draws on Lewis's dual-sector approach, Kuznets's view of structural transformation, and international trade theories concerning specialisation and resource allocation. Within this framework, trade is considered alongside sectoral production and employment patterns, recognising that its relationship with productivity growth may differ across countries. The analysis will use sectoral real value added, employment, and international trade data. Labour productivity will be measured as real value added per worker, while trade openness will be measured as the ratio of total exports and imports of goods and services to gross domestic product. Shift-share analysis will separate aggregate labour productivity growth into within-sector gains and the contribution of changes in sectoral employment shares. These components will then be compared with changes in trade openness across countries and subperiods. Where data permit, manufacturing will be examined separately from construction, and changes in the sectoral composition of exports will also be considered. The study seeks to assess whether expanding trade is accompanied by different patterns of structural transformation and productivity growth. Comparing Türkiye with China and South Korea will help evaluate the importance of production and export composition alongside trade openness. The findings are expected to inform discussions on trade, sectoral development, and productivity policies.

Keywords: Trade openness, structural transformation, labour productivity, sectoral employment, shift-share analysis.

JEL Code: F14, O14, O47

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Beyond Individual Choices: Rethinking Women's Entrepreneurship through Institutional, Feminist, and Behavioral Economics in the Digital Age

Berna BALCI İZGİ[2], Şeyma ÖZDEMİR[3]

Abstract

Women's entrepreneurship has become an increasingly important field of research; however, existing theoretical explanations remain fragmented across different disciplinary perspectives. This study addresses this gap by proposing the Layered Women's Entrepreneurship Framework, an integrated theoretical model combining institutional economics, feminist economics, behavioral economics, and digital transformation. The framework conceptualizes women's entrepreneurship as a multidimensional process shaped by the interaction of four interrelated layers: institutional conditions, social and gender structures, cognitive and behavioral mechanisms, and digital transformation. The theoretical analysis demonstrates that women's entrepreneurial decisions and outcomes cannot be adequately explained solely by individual characteristics such as human capital, risk preferences, or access to resources. Institutional arrangements influence access to finance, markets, and entrepreneurial opportunities, while gender norms, care responsibilities, and social networks shape how these opportunities are experienced. Cognitive mechanisms, including risk perception and entrepreneurial self-efficacy, mediate the relationship between structural conditions and entrepreneurial behavior. Digital technologies can expand market access, networks, and business opportunities, but may simultaneously reproduce existing inequalities through digital divides, platform dependence, and algorithmic bias.The study concludes that entrepreneurial outcomes emerge from interactions, complementarities, tensions, and feedback mechanisms among these four layers. Consequently, policies focusing exclusively on finance, training, or digital access may have limited effectiveness unless institutional, social, and gender-based constraints are addressed simultaneously. Layered Women's Entrepreneurship Framework provides a theoretically integrated and testable framework for future comparative and empirical research on women's entrepreneurship.

Keywords: Women's entrepreneurship, LWEF, institutional economics, feminist economics, behavioral economics, digital transformation.

JEL Code: J16, L26

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Environmental Sustainability in *The History of Bees* by Maja Lunde

Marinică Tiberiu Şchiopu[4]

Abstract

Maja Lunde's The History of Bees (2015) is a significant work of contemporary climate fiction that explores the complex relationship between human civilisation and the natural environment through the history and decline of bees. Spanning three different historical periods—nineteenth-century England, the contemporary United States, and a dystopian future in China—the novel connects technological development, environmental degradation, biodiversity loss, and ecological vulnerability. This paper examines The History of Bees from the perspective of environmental sustainability, focusing particularly on the decline of pollinators, climate change, industrial agriculture, and the consequences of unsustainable human intervention in natural ecosystems. The novel presents bees not simply as insects essential to agriculture but as indicators of the health and stability of the wider ecosystem. Their disappearance exposes the profound interdependence between human societies and non-human nature. Through the experiences of William, George, and Tao, Lunde demonstrates how scientific ambition, technological dependence, and economic interests can contribute to ecological imbalance when human progress is pursued without adequate environmental responsibility. The dystopian future, in which artificial pollination replaces bees, illustrates the potentially devastating consequences of biodiversity loss. Employing an ecocritical approach, this paper argues that The History of Bees functions both as a warning about ecological collapse and as a call for sustainable coexistence between humans and nature. Lunde challenges anthropocentric attitudes and emphasises ecological interconnectedness, responsibility, and biodiversity conservation as essential to the long-term survival of both human and non-human life.

Keywords: biodiversity, cli-fi, ecocriticism, environmental crisis, sustainability.

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THE ROLE OF THE DIGITAL PLATFORM ECONOMY IN CHINA IN SMALL PRODUCERS' PARTICIPATION IN DIGITAL MARKETS: AN ANALYSIS BASED ON TAOBAO VILLAGES

Cemile EVKAYA[5]

Abstract

The widespread adoption of digital technologies is transforming not only production and trade processes but also the ways in which small producers access markets. This transformation is particularly evident as digital platforms assume an increasingly central role in the organization of economic activities. The development of platforms such as Alibaba and Taobao in China necessitates an examination of the digital platform economy not only from the perspective of large technology companies but also in terms of small producers' and local businesses' access to digital markets. The aim of this study is to assess the role of the digital platform economy in China in the participation of small producers and local businesses in online markets, using the example of Taobao villages.

A qualitative research approach was adopted in this study, and the document analysis method was employed. In this context, academic studies, policy documents, corporate reports, and secondary sources were utilized. The analysis specifically addressed the digital market opportunities offered by the Alibaba and Taobao platforms, as well as the economic linkages created by Taobao villages for small producers. In addition, China's digitalization and technology policies were evaluated in conjunction with the development of digital platforms.

The study's findings indicate that digital platforms can serve as a bridge that enables small producers to reach online networks of consumers and suppliers beyond traditional markets. Taobao villages provide a striking example of how local production can be connected to broader markets through digital platforms. However, it is not possible to draw a causal conclusion that access to these platforms alone leads to economic well-being, employment, or increased income. Therefore, the impact of digital platforms must be evaluated in conjunction with factors such as local production capacity, digital infrastructure, entrepreneurial skills, and public policies.

In conclusion, this study demonstrates that, in the case of China, the digital platform economy has emerged as a mechanism capable of restructuring the ways in which small producers access the market. The example of Taobao villages can be viewed as a space where the government's digitalization policies intersect with the technological and entrepreneurial capabilities of private platform companies. However, empirical research at the micro level is needed to elucidate the long-term economic and social consequences of the platform economy on small producers.

Keywords: Digital Platform Economy, China, Taobao, Alibaba, Small Producers, Digitalization

JEL Codes: O33, L86, O53

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Precarization in the World of Work: New Forms of Insecurity and an Assessment from a Social Policy Perspective

Gökhan MURAT[6]

Abstract

"Precariat" is a concept related to a new social reality emerging in the world of work. This concept refers to workers employed under flexible employment regimes, in constantly changing jobs, and in jobs that are regularly irregular. This group, which is becoming widespread around the world, is also referred to as the working poor or precarious workers. In other words, it refers to jobs that lack a future and are devoid of social memory. Consequently, the concept of the precariat is associated with a growing group of insecure workers in the labor market. In this context, the precariat refers to workers who lack a steady income, have no job security, face limited opportunities for professional development and career advancement, and experience significant uncertainty about the future.

This study aims to examine the process of precariousness that has emerged alongside the flexibilization of working life. In this context, the study addresses flexibilization, low wages, income uncertainty, and job insecurity. This is because the various forms of work associated with the precariat negatively impact workers' economic security, their rights in the workplace, and their opportunities for organizing. The study concludes by developing recommendations to address precariousness. First and foremost, it is crucial to establish labor rights regimes, update employment programs, restructure condition-based policies, and renew social policy rights such as the freedom of association and the right to security. Additionally, the study recommends placing universal basic income and economic and social policies aimed at the redistribution of financial capital on the agenda.

Keywords: Precariat, Precarious Work, Social Policy

JEL Code: J08, J41, I38

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The Impact Of The Slow City Movement In Turkey On Sustaınable Local Government Polıcıes

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Abstract

Today, rapidly growing cities have made it mandatory to create new public administration policies with the influence of the concept of globalization. The efforts to become a member of the Cittaslow Union, which contributes to local governments with the understanding of sustainable municipalism in Turkey, have gained importance in socio-economic terms in recent years. With the local government policies prepared with a sustainable approach, the main policy areas of the calm city movement are environment, cultural heritage, local economy, participatory management and public space. Local governments want to become a member of the Cittaslow Association in order to introduce urban space to future generations through the concepts of economy, environment and governance and leave it as a legacy.

The concept of a Cittaslow is a new urban policy that was formed in Italy in 1999 when four small urban settlements were chosen as a Cittaslow. One of the most significant dilemmas of the modern city is the rapid passage of time within the city. The slow city movement, on the other hand, aims to improve the quality of life through slowness, which is the exact opposite of fast-paced living. Reconciling the modern with the traditional with the aim of improving the quality of life is possible through sustainable urbanization policies. Sustainable local government policies in Turkey have developed on the axis of environmental protection, local economy, sustainable transportation, social equality and governance.

The subject of this study is to investigate the socio-economic impact of the slow city movement on sustainable local government policies. Additionally, “do urban local economies constitute a self-sufficient economy for the sustainability of urban space? An answer is being sought to the question. The method of this study is to conduct a literature review on sustainable local government policies and quiet cities in Turkey and to determine how sustainable local government policies interact with the calm city movement in particular in the municipalities that are members of the Cittaslow Union.

Keywords: Sustainability, Local Governments, Slow City Movement, Cittaslow.

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The Earth Remembers: Ecological Memory, Environmental Justice, and Sustainable Futures in Postcolonial Literature

MEHRAJ HUSSAIN PARA

Abstract

This paper examines how Anglophone postcolonial literature turns ecological memory into a mode of environmental witness. Its first aim is to trace how narratives of land, extraction, displacement, and damaged habitats preserve histories that official accounts often suppress. Its second is to ask how such memories can reshape contemporary ideas of justice, sustainability, and human responsibility. The study uses comparative close reading, informed by ecocriticism, postcolonial theory, memory studies, and environmental-justice criticism. It focuses on the ways landscapes, rivers, forests, and ruined ecologies register colonial power and community experience. The analysis finds that nature functions not as passive scenery but as a living archive of dispossession, endurance, and ethical knowledge. It also reveals how marginalized communities articulate ecological values grounded in reciprocity, continuity, and care. The paper argues that postcolonial literature does more than mourn environmental loss. It converts memory into critique and critique into possibility. In doing so, it offers culturally rooted visions of sustainable futures that challenge extractive models of progress and widen the moral imagination of environmental justice.

Keywords: ecological memory, environmental justice, postcolonial literature, ecocriticism, sustainable future[8]

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When Landscapes Become Archives: Ecological Memory and the Afterlives of Partition in South Asian Literature

MEHRAJ HUSSAIN PARA[9]

Abstract

This paper examines how South Asian Partition literature transforms landscapes into repositories of historical memory, displacement, and ecological loss. It argues that Partition is remembered not only through human testimony and political history, but also through rivers, fields, abandoned homes, altered borders, and damaged environments. The study seeks to establish ecological memory as a critical framework for understanding the enduring afterlives of 1947. It further investigates how literary landscapes preserve forms of violence, belonging, and dispossession that conventional archives often fail to register.

Using close textual analysis informed by postcolonial ecocriticism, memory studies, and environmental humanities, the paper reads selected Partition narratives across regional and linguistic traditions. The analysis reveals that landscape functions as an active archive rather than a passive setting. Ecological spaces retain traces of migration, loss, and fractured belonging. The paper concludes that reading Partition ecologically expands its literary history and offers a more complex understanding of memory, place, and historical survival.

Keywords: ecological memory, partition literature, landscape archives, environmental humanities, postcolonial ecocriticism

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Navigating International Trade through E-Commerce, Distribution, and Communication (EDC): Export-Import Channel Dynamics and Marketing Capabilities

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Abstract

The rapid evolution of e-commerce, distribution, and digital communication (EDC) has fundamentally transformed international trade channels. This paper presents a comprehensive literature review that synthesizes empirical research and theoretical frameworks from 1999 to 2026, mapping the strategic dynamics of export-import ventures. Drawing on the resource-based view (RBV), dynamic capabilities theory, and contingency theory, we categorize the extant literature into four foundational themes: (1) organizational and dynamic marketing capabilities, with a focus on export-induced marketing learning, financial constraints, and consensus-based non-Western (Japanese) decision-making; (2) e-commerce capabilities, highlighting how specialized EDC resources enhance distribution and communication efficiencies; (3) relationship marketing and social media in global channels, exploring the role of importer efforts, cooperation, and the digital transmission-dialogue paradox; and (4) brand governance, green credibility, and ethical compliance in cross-border partnerships. By integrating these streams, we propose a Unified Communication-Cognition-Behavior (UCCB) model that conceptualizes international channel communication as a multi-stage signaling and co-creation process. This review contributes to both trade and marketing theory, providing actionable insights for managers and policymakers navigating complex global supply chains.

Keywords: Distribution, and Communication, International Trade, Export-Import, Marketing Capabilities, Channel Dynamics.

JEL Code: F14, M31

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The Role of Renewable Energy and Energy Efficiency in the Western Balkans economies

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Abstract

The main objective of this paper is to analyse the impact of renewable energy and energy efficiency in the economic performance of the Western Balkans economies, an in particular on their sustainable economic growth and energy transition process. The empirical analysis uses panel data for the Western Balkan countries, by employing several panel model regressions such as Ordinary Least Squares (OLS), Fixed Effects (FE), and Random Effects (RE). In order to determine the most appropriate panel mod, the Hausman test is applied, while additional model diagnostics are used to assess the robustness of the models. The findings indicate that renewable energy and improvements in energy efficiency play an important role in strengthening the economic performance of the Western Balkan economies. Furthermore, higher use of renewable energy sources and lower energy intensity are associated with higher economic outcomes, although the magnitude and statistical significance of the effects differ across the estimated models. The results also emphesise the country-specific characteristics as important determinants of the relationship between energy transition and economic performance in this region.

Finally, it can be concluded that renewable energy development and higher energy efficiency should be considered not only as environmental priorities, but also as important components of the long-term economic development strategy of the Western Balkan countries. Therefore, policymakers should concentrate their policies in investments in renewable energy capacities, technological improvements and energy-saving measures, toghether with stronger institutional support and greater alignment with European Union energy and climate policies.

Keywords: renewable energy, energy efficiency, economic growth, panel regression, Western Balkans

JEL Classification: Q42, Q43, Q48

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Resource Security and Circular Economy: Strategic Resilience Against Supply Chain Vulnerabilities

Asena BOZTAŞ[14], Dilşad TÜRKMENOĞLU KÖSE[15]

Abstract

The intensification of global economic and environmental crises has broadened the scope of the concept of security, turning areas such as resource flows, production infrastructures, and supply chains into strategic risk areas. Although the circular economy is generally addressed in the context of environmental sustainability, it is increasingly becoming central to national and international security debates. Growing demand for critical raw materials, global supply chain disruptions, and geopolitical tensions have made production continuity and industrial capacity a matter of security. In this context, circular production systems are not only technical solutions that provide environmental efficiency, but also security tools that reduce resource dependency, create buffers against supply disruptions, and increase strategic resilience.

The study examines the relationship between the circular economy and security from the perspective of resource security and supply chain resilience. Within the framework of security studies literature, and particularly the securitization approach, it analyzes how critical minerals, production infrastructure, and industrial capacity are incorporated into the security domain. It discusses how circular economy practices reduce vulnerabilities through recovery technologies, strategic stockpiling, and strengthening local production capacity. Findings show that circular industrial capacity strengthens states' economic security by supporting production continuity during crises. Thus, the concept of security is evolving into a structural framework that goes beyond military threats to encompass production and resource management dimensions. Consequently, the circular economy emerges as a strategic element that shapes the material infrastructure of security in the 21st century, beyond being an environmental policy approach.

Keywords: Resource security, circular economy, supply chain resilience, securitization, strategic resilience.

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Circular Economy in the Global South: Development Strategy or New Form of Dependency?

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Abstract

While the circular economy is presented as the new paradigm for sustainable development on a global scale, the consequences of this transformation for countries in the Global South are debatable. Goals such as resource efficiency, waste reduction, and green industrialization may offer developing countries the opportunity to modernize their production structures and move up the global value chain. However, the same process may also bring new forms of dependency due to inequalities in technology access, high compliance costs, and environmental standards becoming trade barriers. In particular, waste trade, the persistence of economies based on raw material exports, and the risks of dependence on green finance reveal the contradictory nature of the circular economy's impact on development.

The study examines whether the circular economy constitutes a development strategy or a new regime of dependency for Global South countries. The theoretical framework, drawing on dependency theory and development studies literature, analyzes how power asymmetries in global production structures are reproduced through sustainability policies. The effects of circular economy policies on technology transfer, local industrial capacity, and financing mechanisms are evaluated. Findings indicate that the transition to a circular economy, without an appropriate policy framework and institutional capacity, may trap developing countries in low-value-added activities. Conversely, strategies that enhance local production capacity and support technology acquisition can transform the circular economy into an opportunity for development. In conclusion, the circular economy is neither an automatic development solution nor an inevitable dependency trap for the Global South; its impact is directly related to policy choices and position within the global economic structure.

Keywords: Global South, circular economy, development strategies, dependency theory, green industrialization.

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Critical Minerals and State Fragility: An Empirical Analysis from the International Political Economy Approach in the European Union (EU)

Orhan CENGİZ[18], Şahin NAS[19]

Abstract

Critical minerals (CMs) play a crucial role in many aspects of many countries' economies. From national wealth to international competition, they are closely connected to countries' long-term goals. In the 21st century, geopolitical disputes among countries have re-emerged, highlighting the importance of CMs. Because, CMs are crucial for enhancing national security and are used as a raw material in most strategic commodities, including technology, electronics, energy, and the defence industry. Therefore, sustaining national interests requires securing CMs. However, the European Union (EU) countries are heavily dependent on imports of critical raw materials from only a few countries. Increasing dependence on CMs may expose countries to external vulnerability and lower state capacity against external threats. Hence, high CMs may negatively affect state capacity. This study empirically investigates the impact of CMs imports on state fragility in the EU spanning the period 2007-2024 and discusses the results within the international political economy (IPE) framework using the Driscoll-Kraay estimator. The empirical results show that CMs imports positively affect state fragility. This means that in the EU, as CMs imports increase, state fragility rises as well. Moreover, economic growth, trade openness, institutional quality, and military expenditures reduce state fragility. Our findings highlight that CMs are not solely related to raw materials for specific products, but also play a key role in sustaining political stability. In other words, in order to sustain political stability, self-sufficiency is crucial, and macroeconomic conditions and institutional factors are important for policymakers.

Keywords: Critical minerals, state fragility, institutions, international political economy, European Union

JEL Code: F52, Q34

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Mining Resource Assessment. Economic importance and state of the art

Marco Alfaro[20], Rashmi Bahrdwaj[21], Roberto Acevedo[22]

Abstract

Several computational methods and packages now perform automatic mining resource assessment calculations, from geological interpretation to conditional simulation in a deposit. However, little is said about the conditions and limitations under which these new techniques can be applied. With recent advances in computational tools for mining resource estimation (DataMine, Gemcom, MineSigh, Vulcan, Seequent, etc.), it is necessary to study the risks of using these packages inappropriately. This work discusses the latest developments in geostatistics, emphasising the conditions for applying each technique analysed. This chapter discusses several complex issues and explains the methodology, strategy, and applications of these techniques in the mining sector worldwide. We focus on technical developments and applications that increase process rates and make final products more valuable.

Keywords: Mineral resource assessment; Geostatistics; Conditional simulation; Mineral resource estimation; Geological modelling; Mining software.

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Artificial Intelligence for Sustainable Materials Design: Smart Polymer Nanocomposites and Their Economic Implications for Green Industry

Alvena Shahid[23], Roberto Acevedo[24]

Abstract

Conventional approaches to materials design are often associated with a long and resource-intensive process of trial and error. This paper aims to demonstrate how artificial intelligence (AI) can help reduce the time spent on the development of advanced polymeric nanocomposites for electrochemical sensing and energy storage. The paper suggests a concept that uses machine learning to encode the relationships between processing-structure-performance-property linkages at the levels of fillers, their contents, and processing methods. It is argued that encoding this information reduces the need for trial-and-error experiments. The paper also highlights potential applications of such nanocomposites. It describes their use in sensors for water and air quality monitoring and emission control and their use in electrodes and other elements for energy storage. It evaluates the economic impact of accelerating the development of such nanocomposites. While reducing the costs of research and development (R&D), the use of AI in materials design can lead to uneven outcomes because of different levels of readiness to adopt new technologies. This is explained by the fact that firms in developing countries possess fewer resources, including data, expertise, and computational power, and face greater challenges in protecting intellectual property. Finally, it is suggested that AI-driven materials design contributes to sustainable trade practices and economic competitiveness if data are shared openly and R&D, industry, and policymakers collaborate. The paper concludes with a list of research questions for future studies.

Keywords: artificial intelligence, polymer nanocomposites, materials design, sustainable technology, green industry

JEL Code: O33, Q55, Q01

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Aluminum-Graphene Nanocomposites for Electrical Conductors: Initial Framework for a Systematic Review

Camila Torres Díaz[25], Roberto Acevedo[26]

Abstract

This study presents the initial stage of a systematic review on aluminium-graphene nanocomposites intended for electrical conductor applications. The review addresses the challenge of simultaneously improving electrical conductivity and mechanical strength in aluminium-based materials, given that conventional strengthening mechanisms may increase electron scattering and reduce conductivity. Graphene and related derivatives have emerged as potential reinforcements; however, published results remain highly variable because of differences in aluminium matrix composition, graphene type and content, processing route, microstructure, porosity, and interfacial characteristics. Following the general principles of PRISMA 2020, we conducted a structured search in the Web of Science Core Collection using terms related to aluminium, graphene-based reinforcements, metal-matrix composites, and electrical transport properties. Seventy-three records were initially identified; after screening titles, abstracts, and keywords, 47 publications were selected for evaluation, and 38 studies were ultimately included in the critical and descriptive quantitative synthesis. The review framework emphasises relationships among processing conditions, graphene dispersion and orientation, interface formation, electrical conductivity or resistivity, mechanical response, thermal stability, durability, reproducibility, and industrial scalability. Subsequent analysis will compare absolute and relative property changes against control materials to identify the conditions that favour or limit the use of aluminium-graphene nanocomposites as electrical conductors.

Keywords: aluminum-graphene nanocomposites; electrical conductivity; mechanical properties; systematic review; electrical conductors

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Mathematical, Physicochemical, and Artificial Intelligence-Based Modeling of Brine Viscosity as a Function of Composition, Temperature, and Pressure: Strategic Applications in Chilean Lithium and Copper Mining

Andrés Soto-Bubert[27], María García-Huidobro[28]

Sabrina Pinilla[29], Rigoberto Lillo[30], Roberto Acevedo[31]

Abstract

Brine viscosity is a critical transport property in lithium and copper mining because it governs hydraulic losses, pumping energy, mixing, mass transfer, phase separation, sedimentation, and the operation of wells, solar ponds, hydrometallurgical circuits, thickeners, tailings systems, and seawater-transport infrastructure. This review compares classical mathematical, semi-empirical, physicochemical, thermodynamic, equation-of-state, and artificial-intelligence approaches for predicting viscosity as a coupled function of composition, temperature, and pressure. Classical models such as Arrhenius, Barus, Doolittle, and Grunberg–Nissan provide useful first approximations but are limited for concentrated multicomponent brines. Models such as Laliberté, Hu, Lencka–Anderko–Sanders–Young, and Soto-Bubert offer greater physicochemical interpretability and industrial applicability. Soto-Bubert-type formulations report AAD values below 1.6% for binary systems and below 1.5% for ternary systems, while Gaussian Process Regression reports %AAD = 0.96%, RMSE = 0.0001, and R^2 = 0.9979 for binary-brine data. Pressure-aware BP neural networks and ePC-SAFT-FVT approaches are particularly relevant to wells, reservoirs, and pressurised transport. The review further identifies opportunities for hybrid models that combine an interpretable physicochemical basis with AI corrections trained on local data. Preliminary economic valuation suggests that improved viscosity prediction could support meaningful savings through reduced design uncertainty, optimized pumping, better equipment selection, and lower operational risk in Chilean mining.

Keywords: Brine viscosity; lithium mining; copper mining; artificial intelligence; physicochemical modeling

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Thickeners in Chilean Copper Mining: Design Fundamentals, Water Recovery, and Economic Impact

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Abstract

Thickeners are essential solid-liquid separation units in Chilean copper mining, where declining ore grades, water scarcity, increasing seawater use, and stricter tailings-management requirements intensify the need for efficient water recovery and stable slurry handling. This chapter reviews the design fundamentals, operating principles, modelling approaches, and economic implications of conventional, high-rate, high-density, paste, and deep-cone thickeners. The analysis integrates sedimentation and flocculation theory, mass and solids balances, solids-flux methods, compaction behavior, rheological models, hydraulic criteria, and multiphase computational fluid dynamics. Particular attention is given to interactions among feedwell hydrodynamics, hindered settling, bed consolidation, underflow rheology, rake torque, and discharge control, as well as the influence of mineralogy, particle-size distribution, clay content, solids concentration, and flocculant dosage. The review also considers data-driven prediction and control in relation to instrumentation quality and model validation. In Chile, improved thickening can reduce external water demand, increase process-water recirculation, and decrease the hydraulic volume of tailings sent to storage. The review concludes that thickener selection and operation require integrated technical, economic, environmental, and geotechnical assessment supported by representative experimental and industrial data.

Keywords: thickening; copper mining; water recovery; tailings; rheology

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Symbolic Regression Discovery of Compact Water Vapour-Pressure Correlations: Benchmarking against Classical Thermodynamic Equations

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Abstract

This study investigates whether evolutionary symbolic regression (SR) can generate compact, interpretable correlations for water saturation vapour pressure while retaining accuracy comparable to established thermodynamic formulations. Using high-quality thermodynamic reference data, we applied a genetic-programming framework with a complexity-penalised fitness function across 200 independent evolutionary runs to balance predictive accuracy and structural simplicity. We assessed candidate models through train-test partitions, repeated runs, residual analysis, high-temperature stress testing, and comparison with classical formulations including Magnus-Tetens, Antoine, Goff-Gratch, Huang, Gueymard, Murphy-Koop, and Wagner-Pruß. Three compact equations were selected. For the wide temperature range approaching the critical point, P0-374_v2 achieved a test mean relative error (MRE) of approximately 0.06% and a maximum relative error (MAXRE) of 0.15%, while Wagner-Pruß retained stronger worst-case performance at high temperature. For 0–100 °C, P0-100 achieved MRE = 0.01% and MAXRE = 0.05%. The discovered equations exhibit exponential-rational structures consistent with thermodynamic principles while introducing nonlinear corrections. Their reduced algebraic complexity makes them attractive for repeated calculations in simulation, optimisation, embedded control, mining, and desalination applications. The results support symbolic regression as a complementary scientific-discovery approach for developing transparent, computationally efficient thermodynamic correlations rather than as a replacement for high-fidelity reference equations.

Keywords: Water vapour pressure; Symbolic regression; Thermodynamic modelling; Mining applications; Empirical equations

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From waste to by-product – full valorization of agri-food resources

Vlăsceanu Gabriela[44], Nicolae Floarea[45], Eremia Florentina[46]

Abstract

The circular economy offers the agri-food sector the opportunity to reduce raw material losses by transforming secondary processing streams into value-added resources. This ***study aims*** to analyze the application of circular economy principles to the full utilization of plant-based resources and to identify technological solutions for obtaining by-products and ingredients for new food applications. ***The methodology*** involved analyzing experimental results regarding currants, sea buckthorn berries, and blueberries, as well as by-products derived from flaxseed and alfalfa processing. Techniques employed included organoleptic and physicochemical evaluations, freeze-drying, cold pressing, and maceration, alongside the nutritional and rheological characterization of flour blends and bakery products enriched with agro-industrial by-products. The ***results*** highlight the feasibility of integrating secondary streams into new value-recovery chains. Flaxseed press cake and alfalfa concentrate were used to create flour blends with functional potential, and the resulting bakery products exhibited acceptable physicochemical and sensory characteristics. For currants, non-invasive processing enables the recovery of streams that can be further utilized as colorants, gelling agents/pectins, premixes, fermented products, and bio-compost. ***Conclusions.*** The findings confirm the potential of circular economy principles to transform secondary agri-food streams into by-products and resources for new applications, thereby contributing to waste reduction and the closing of value-recovery loops.

Cuvinte-cheie: *bioeconomie circulară; agroindustrie; ingrediente funcționale.*

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MACROECONOMIC PERFORMANCE OF NORTH MACEDONIA: AN EMPIRICAL ANALYSIS OF THE RELATIONSHIPS AMONG GDP GROWTH, INFLATION, AND UNEMPLOYMENT (2005–2023)

Sani Saidi[47]

Abstract

This paper empirically examines the macroeconomic performance of North Macedonia by analyzing the interrelationships among GDP growth, inflation, and unemployment. The Phillips Curve framework is applied to assess the relationship between inflation and unemployment, while Okun's Law is employed to examine the relationship between GDP growth and unemployment. The empirical analysis is based on time-series regression models using annual data for the period 2005–2023. The stationarity properties of the variables are tested using the Dickey–Fuller test, and robust standard errors are applied to address potential heteroscedasticity. The results reveal a positive relationship between inflation and unemployment, which does not support the existence of a conventional Phillips Curve relationship in North Macedonia. In contrast, the findings confirm a negative relationship between GDP growth and unemployment, indicating that higher GDP growth is associated with lower unemployment, consistent with Okun's Law. Overall, the analysis suggests that North Macedonia experienced relatively modest macroeconomic performance during the observed period, particularly in the second decade of the sample. These findings highlight the importance of growth-oriented policies and labor-market reforms in improving employment outcomes and strengthening macroeconomic stability.

Keywords: Unemployment, inflation, GDP growth, Phillips Curve, Okun's Law

JEL Code: E31, J64, O40

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Determinants of Economic Sustainability in the Western Balkans: A Panel Data Analysis

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Abstract

Economic sustainability represents a main challenge for the Western Balkan countries due to the convergence pursuing with the European Union while on the other hand are facing structural weaknesses and energy transition pressures. Thus, the main objective of this paper is to analyze the main factors that are affecting the economic sustainability of the Western Balkan countries (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia) by utilizing annual data for the time period 2008-2024. Using such panel data and several regression techniques such as pooled OLS, Fixed and Random effects, we examine the role of macroeconomic factors (foreign direct investment, trade openness, public debt, and remittances), institutional quality (rule of law, control of corruption, and government effectiveness), and energy and environmental factors (energy consumption, the share of renewable energy, and CO_2 emissions), while economic sustainability is measured by GDP per capita growth. The results show that institutional quality, foreign direct investment, and a higher renewable energy share support sustainable growth, while high public debt, dependence on remittances, and energy- and carbon-intensive production act as constraints.

Finally, such findings offer policy implications for strengthening institutions, maintaining fiscal discipline, and accelerating the energy transition as conditions for sustainable growth and successful EU integration.

Keywords: economic sustainability, Western Balkans, institutional quality, energy consumption, renewable energy, CO_2 emissions

JEL Classification: O47, O43, F21, Q43, C23

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Environmental Sustainability, Renewable Energy, and Economic Growth in the Western Balkans

Ozkan Baki[50]

Abstract

This study examines the relationship between environmental sustainability, renewable energy consumption, and economic growth in the Western Balkan countries (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia). By using annual panel data, for CO_2 emissions, renewable energy consumption and economic growth, alongside a set of control variables, three static panel regression techniques are applied: pooled ordinary least squares (OLS), fixed effects (FE), and random effects (RE), with the appropriate specification selected on the basis of the Hausman test estimation. The findings indicate that renewable energy consumption plays an important role in improving environmental quality, while economic growth continues to exert pressure on the environment, demonstrating the reliance of these countried on carbon-intensive energy sources. The results also highlight the relevance of country-specific characteristics in determining the nexus between energy, growth and environment.

Finally, the evidence suggests that a greater share of renewables in the energy mix can support the enhancing of economic growth from environmental degradation in the Western Balkans. The findings offers policy implications for accelerating the energy transition, encouraging investment in renewable capacity, and aligning national energy strategies with the EU Green Agenda for the Western Balkans.

Keywords: environmental sustainability, renewable energy, economic growth, Western Balkans, CO2 emissions

JEL Classification: Q43, Q56, O44, C33

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Cross-country analysis of digital projects in the European Union in 2021-2026[51]

Svetlana RASTVORTSEVA[52], Ekaterina AIVAZOVSKAIA[53]

Abstract

The expansion of digital technology use by businesses and public authorities, the strengthening of the population's digital skills, and the EU-wide development of digital infrastructure have been among the key objectives of the "Europe's Digital Decade" programme since 2021. However, despite the programme's implementation, several challenges continue to hinder the achievement of these objectives, including the limited uptake of digital technologies by small and medium-sized enterprises, the digital divide between urban and rural areas, and other issues.

In the context of the programme's implementation, it is important to examine which projects have been carried out since 2021 to address emerging challenges. To this end, approximately 300 completed projects funded under the DIGITAL programme between 2021 and 2026 were selected and analyzed. The analysis focused on both the projects' objectives and the outcomes and effects of their implementation.

The analysis revealed a high level of institutional and cross-border cooperation, broad geographical coverage, and a wide range of priorities across the EU's regions and member states. The greatest emphasis was placed on the development of digital innovation hubs that bring together technological, advisory, and educational resources for organizations seeking to benefit from them. Among the participating countries, Belgium, Germany, France, and the Netherlands were involved in the largest number of projects, which were concentrated primarily in their capital cities. As a result of these digital projects, the European Union is not only undergoing technological renewal but is also becoming a favourable and secure digital environment at all levels.

Keywords: digitalization, digital projects, the European Union, Europe Digital Decade

JEL Code: R51, R11, O31, O52

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Social Assistance and Social Services in Combating Poverty: A Comparison between Türkiye and France

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Abstract

Social assistance and social services are among the fundamental components of social policy systems, playing a crucial role in combating poverty, reducing social risks, and supporting the social inclusion of disadvantaged groups. However, countries' historical trajectories, institutional structures, and welfare regimes shape the ways in which these services are organized and delivered. This study aims to examine the social assistance and social services systems of Türkiye and France from a comparative perspective and to identify the main similarities and structural differences between the two countries. Adopting a comparative social policy approach, the study examines the social protection systems of both countries in terms of the nature of social assistance, institutional arrangements, income support, links with employment policies, family and child benefits, housing assistance, services for older people and persons with disabilities, and care policies. The analysis draws on the relevant literature, institutional arrangements, and the main implementation mechanisms of social assistance systems. The findings indicate that France has a more institutionalized and multi-actor social protection system integrated with social insurance mechanisms, whereas social assistance in Türkiye is primarily structured around needs-based support provided through central government institutions and Social Assistance and Solidarity Foundations. The differences between the two countries are particularly evident in minimum income protection, access to assistance, employment-related measures, and the organization of social care services. While France has a more developed institutional framework for the care of children, older people, and persons with disabilities, care responsibilities in Türkiye remain largely dependent on families, particularly women. In conclusion, the study argues that social assistance and social services systems should be evaluated not only in terms of income transfers but also with regard to institutional capacity, access to social rights, the organization of care services, and efforts to combat social inequalities.

Keywords: Social assistance, social services, combating poverty, social policy, Türkiye, France.

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Vocational Education in Türkiye: Historical Transformation and Current Challenges

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Abstract

This study aims to examine the historical development, current status, and fundamental challenges of the apprenticeship and vocational education system, which plays a critical role in training qualified mid-level workforce required by the labor market in Türkiye. Originating in the Turkic-Islamic tradition under the umbrella of the Ahism organization as a traditional vocational education model based on the hierarchy of assistant-apprentice-journeyman-master, apprenticeship has undergone a structural transformation alongside industrialization and social changes. With the transition from small workshops to factories and the increase of mechanization in production, the traditional master-apprentice relationship has evolved into a modern vocational education structure involving the state, schools, and workplaces jointly.

In the study, a qualitative research method was adopted, and semi-structured interviews were conducted with 13 teachers and administrators working in vocational education institutions in the central district of Kırklareli province. Qualitative findings indicate that students receiving education at vocational education centers have a greater advantage in terms of practical skills; however, theoretical and practical training do not always fully align due to the technological equipment deficiencies in schools. Furthermore, rapid technological developments necessitate continuous in-service training for master instructors, while the 4+4+4 compulsory education system directly affects participation dynamics in apprenticeship. One of the most striking findings of the research is the negative societal perception towards vocational education. Apprenticeship education is still identified with academic failure and perceived by families as a secondary choice.

In conclusion, the study demonstrates that the traditional Ahism model cannot be sustained on its own against today's large-scale industrial structure. In order for Türkiye to adapt to the dynamic labor market, it is essential to increase the vocational education budget, strengthen technological infrastructure, update instructional curricula, expand workplace inspections, and carry out guidance activities to overcome negative societal perception.

Keywords: Vocational Education, Apprenticeship System, Ahism, Labor Market, Kırklareli.

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Migration and the Inability to Migrate in the Context of Climate Change and Agricultural Vulnerability: A Study on Turkey

Zeliha Aleyna ASLANTEKİN, Aykut AYDIN[56]

The impacts of climate change on agricultural production undermine rural livelihoods. This situation can lead to increased food insecurity and migration pressure. Drought, the depletion of water resources, and declines in agricultural productivity negatively affect producers' incomes. Furthermore, rising production costs and food prices make it difficult for economically vulnerable groups, in particula, to Access food. However, migration is not always a viable option in the face of climate-related risks. A lack of financial resources and alternative livelihood opportunities can force individuals to remain in high-risk areas.

This study examines the relationship between climate change-mediated by agricultural vulnerability and food insecurity- and the phenomena of migration mobility and the inability to migrate, focusing specifically on Türkiye. Employing a systematic document analysis, the study evaluates the interaction between environmental risks and socio-economic conditions within a holistic framework. It emphasizes that the impacts of climate change are not limited to agricultural production losses and migration flows; the vulnerabilities faced by populations lacking the capacity to migrate must also be taken into account. Accordingly, enhancing agricultural resilience, supporting rural livelihoods, and addressing climate-induced migration risks from a social policy perspective are of critical importance.

Keywords: Climate Change, Agricultural Vulnerability, Food Insecurity, Migration, Türkiye

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Barriers to Innovation and Digital Transformation in Manufacturing SMEs in Kosovo: Evidence from an Exploratory Study

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Abstract

Innovation and digital transformation are important drivers of competitiveness, productivity, and sustainable business development. However, manufacturing enterprises in emerging economies often face organizational and structural challenges that limit their ability to adopt new technologies and innovative business practices. This study examined the current state of innovation and the organizational barriers affecting digital transformation among manufacturing enterprises in Kosovo, with particular emphasis on ownership structures, managerial attitudes, and organizational readiness for change.

The research employed an exploratory empirical approach based on survey data collected from eight manufacturing companies operating in Kosovo. The study investigated innovation practices, organizational characteristics, and attitudes toward the introduction of new technologies and changes in business operations. A descriptive analysis was used to identify common patterns and challenges among the participating enterprises.

The findings revealed a relatively low level of innovation among the surveyed companies, with limited implementation of new technologies, products, and organizational practices. Most participating enterprises were family-owned businesses, characterized by relatively rigid management structures and resistance to organizational change. The results indicated that traditional management approaches and reluctance to modify established business practices represented important barriers to innovation. These findings suggest that organizational culture and managerial openness to change may play a significant role in shaping the innovation capacity of manufacturing enterprises.

The study concludes that strengthening innovation among manufacturing SMEs in Kosovo requires not only investment in digital technologies but also changes in organizational culture, management practices, and strategic decision-making. Greater managerial flexibility, employee involvement, and openness to new business approaches may help manufacturing enterprises overcome internal barriers and improve their competitiveness. Although the small sample limits the generalizability of the findings, the study provides exploratory evidence of organizational challenges affecting innovation in Kosovo's manufacturing sector.

Keywords: Innovation, Digital Transformation, Manufacturing SMEs, Family Businesses, Organizational Resistance, Kosovo.

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Does online shopping green the economy? E-commerce adoption and CO_2 emissions in the Western Balkans

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Abstract

The Western Balkan economies are pursuing digital transformation and decarbonization at the same time, as part of their alignment with the European Green Deal and the Green Agenda for the Western Balkans. Yet the environmental effect of the rapid shift of consumption to online channels in the region remains unexplored. E-commerce may lower emissions by replacing physical retail and shopping trips, but it may also raise them by stimulating consumption, parcel logistics and energy demand in economies that still rely heavily on coal. This paper examines the relationship between e-commerce adoption and CO_2 emissions in the six Western Balkan economies over the period 2017–2024. E-commerce adoption is measured by the share of individuals who purchased goods or services online in the previous twelve months, drawn from Eurostat's survey on ICT usage in households and by individuals. The empirical strategy relies on fixed-effects estimation with panel-corrected standard errors, with Driscoll–Kraay standard errors and feasible generalized least squares as robustness checks, controlling for income, energy intensity and a break in the survey series in 2020. The study tests whether e-commerce adoption is associated with higher or lower emissions and whether a larger share of renewable energy weakens this association.

Finally, the main findings will serve as suggestions for further coordination of digital and climate policies in Western Balkan countries.

Keywords: online purchasing, CO_2 emissions, energy intensity, Western Balkans, panel data

JEL Classification: L81, M31, Q43, Q56, C23

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THE CORRELATION BETWEEN SHADOW ECONOMY AND TAX REVENUES FOR CENTRAL AND EASTERN EUROPEAN COUNTRIES

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Abstract

The shadow economy is a key factor depressing tax revenues, while the tax burden has been shown to be a primary driver of the shadow economy itself. Subsequently, this study aims to analyse the correlation between the shadow economy and tax revenues in Central and Eastern European (CEE) countries. The analysis incorporates recent estimates of the informal economy, covering a period of over two decades. A series of econometric models are performed to panel data, taking also into account institutional factors such as control of corruption, government effectiveness and regulatory quality as well as macroeconomic indicators that considerably influence the growth of the informal economy. Empirical results confirm a negative relationship between the informal economy and tax revenues, though contrary to expectations the correlation is not strong. Conversely, institutional factors show a strong correlation with the informal economy, highlighting their potential importance in curbing informality and, consequently, boosting tax revenues in these countries. So, the study implies that reducing shadow economy alone is not sufficient, but most important for improving fiscal outcomes is good governance.

Keywords: Shadow economy, tax revenues, correlation, governance, panel regression

JEL Code: H26, O17

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TOURISM DEVELOPMENT AND FEMALE LABOR FORCE PARTICIPATION IN THE WESTERN BALKANS: PANEL EVIDENCE

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Abstract

Tourism is an important source of economic activity and employment in the Western Balkans; however, the connection between tourism and women's participation in the labor market deserves to be empirically studied. This paper examines the relationship between tourism arrivals and women's participation in the labor market in five Western Balkan countries: Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia during 2009-2020. Using balanced panel data, the study applies fixed effects and random effects regression models to examine the relationship between tourism arrivals and women's participation in the labor market while controlling for GDP per capita as a proxy of economic development. The Hausman specification test recommends using the random effects model. The empirical results show the presence of a positive and statistically significant relationship between tourism arrivals and women's participation in the labor market. GDP per capita is positively and statistically significantly related to women's participation in the labor market as well. Thus, it could be noted that tourism development and overall economic development are important determinants of women's participation in the labor market in the Western Balkans.

Keywords: Tourism arrivals; female labor force participation; economic development; Western Balkans;

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Employment Quality, Informality and Female Labour Market Withdrawal in Pakistan

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Abstract

Although women's education has improved, women's labour force participation remains very low. This paper examines whether employment characteristics and labour market informality explain the weak correlation between expanding women's education and higher female labour force participation. Drawing on human capital theory and labour market segmentation theory, this study challenges the notion that higher education alone improves women's employment outcomes, highlighting the importance of job opportunities and their economic returns. The study will use pooled cross-sectional data from the Labour Force Survey of Pakistan for females aged 15-64 years. Using multinomial logistic regression, the study will examine the association between education and four labour market outcomes (non-participation, unpaid family work, informal paid work, and formal paid work). The analysis will account for individual, household, and region-specific factors, such as age, marital status, household size, province, and urban–rural residence. The study will examine these relationships regionally and within the household to assess whether they differ. The study aims to advance understanding of female labour market outcomes in Pakistan and move beyond the employment-non-employment dichotomy. It suggests a weak association between education and labour market participation because of limited employment opportunities, i.e., a lack of secure, formal, wage-based employment. The findings are expected to inform discussions on gender and development and provide insights for policies that align with investments in women's education and improve employment quality and access to decent work.

Keywords: Female labour force participation, employment quality, informality, education level, labour market segmentation and Pakistan.

JEL: J16, J21, J24, J31, C25

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Digital Access and Youth Labour Market Exclusion in Pakistan: Evidence from Not in Employment, Education and Training Status

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Abstract

Youth employment, education, and training exclusion (NEET) is a major development issue in Pakistan. While digital technologies can increase access to information, skills training, and work, uneven access can further exacerbate socio-economic inequalities for young people. This research explores the association between digital access and being NEET (not in education, employment, or training) among Pakistan's youth, with an emphasis on gender and urban-rural differences. The study uses microdata from the Labour Force Survey 2024-25 and focuses on youth aged 15-29. The main outcome measure is not in employment, education, or training, which indicates the proportion of young people who are NEET. It uses binary logistic regression to analyse the relationship between digital access and the probability of being NEET, adjusting for relevant individual and socioeconomic characteristics, and employs an empirical approach. It further examines whether the relationship differs by gender and place of residence. The preliminary descriptive analysis showed 81,916 observations in the youth age group in total, with an unweighted NEET rate of 32.18% and a weighted rate of 31.41%. These numbers suggest a need for further research into youth exclusion but do not clearly show the role of digital access. The study aims to contribute to policy discourse and discussion on digital inclusion, youth employability, and equitable access to economic opportunities in Pakistan by linking digital inequality to youth labour market exclusion.

Keywords: Digital access, youth, NEET, labour market exclusion, gender inequality, Pakistan.

JEL: J13, J21, J24, O33, C25

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Digital Divide and Educational Equity in Pakistan

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Abstract

Digital technologies play an increasing role in educational opportunities; however, unequal access can exacerbate existing educational inequities. This study explores the correlation between digital access and educational equity in Pakistan, using nationally representative household- level data from the Household Integrated Economic Survey (HIES) 2024–25. We assess digital access using a multidimensional Digital Access Score (DAS) from 0 to 3, based on mobile phone, computer/tablet, and internet access. The focus on educational equity is based on three outcomes: 1) achievement in foundational learning, 2) participation in education, and 3) attainment of schooling.We estimate these relationships using survey- weighted descriptive statistics, logistic regression, generalised ordered logistic regression, predicted probabilities, interaction models, and robustness checks, while adjusting for demographic, geographical, and socioeconomic characteristics.The results show significant digital disparities: 26. 44% of the population aged 10 and older has no access to digital content in any of the three dimensions, while 5. 30% has access to digital content in all three dimensions. Digital access significantly shapes learning achievement in a positive way. The adjusted predicted probability of having basic reading and numeracy skills is 0. 4481 for individuals with DAS = 0, compared with 0. 9321 for individuals with DAS = 3. Likewise, the chances of having tertiary education increase from 1. 96% to 37.86. 86%, while the odds of having no schooling decrease from 64. 73% to 8. 41%. Educational participation is also statistically linked to digital access, though this relationship is less consistent across the intermediate categories of digital access. The findings also suggest that gender, rural–urban, provincial, and socioeconomic disparities persist. While the urban–rural and gender gaps in foundational learning skills shrink as access to digital tools increases, they do not disappear. The robustness analysis results reveal that mobile, computer/tablet, and internet access are all positively associated with foundational learning achievement. The study finds that access to digital resources is a vital correlate of educational opportunity in Pakistan, and that access to digital resources, not access itself, can ensure educational equity. Policies should integrate cost- effective connectivity and suitable devices, digital literacy, quality educational materials, teacher capacity, and targeted support for disadvantaged groups. The data are cross-sectional, so the findings are interpreted as associations, not as cause and effect.

Keywords: Digital access; educational equity; foundational learning achievement; schooling attainment; digital divide; Pakistan.

JEL Code: I24, I25

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Are U.S. Macroeconomic Spillovers Consistent with the Beggar-thy-neighbour Hypothesis? Evidence from Türkiye[70]

Ferhat ÖZTUTUŞ[71], Sevda YAPRAKLI[72]

Abstract

This paper examines whether the relationships between selected U.S. macroeconomic indicators and Türkiye's current account balance fit the cross-border spillover pattern posited by the beggar-thy-neighbour (BTN) hypothesis, using annual data from 1980 to 2022. It investigates whether U.S. exchange-rate, corporate-tax, monetary, interest-rate, and government-expenditure conditions are systematically related to Türkiye's external balance. The study then asks which of these macroeconomic channels provide the strongest evidence of BTN-consistent international spillovers between 1980 and 2022. The Augmented ARDL (AARDL) bounds-testing approach is used to assess cointegration. FMOLS, DOLS, and CCR estimators are applied to estimate the long-run coefficients, and Granger-causality tests trace temporal predictive relationships. The bounds tests indicate cointegration among the variables. Across the three long-run estimators, Türkiye's current account balance is positively associated with the U.S. real effective exchange rate and negatively associated with the U.S. corporate tax rate. We find no long-run evidence for the long-term interest rate, government expenditure, or broad money supply. The short-run coefficients on the real effective exchange rate and the corporate tax rate retain their long-run signs. Granger-causality results show predictive links from the U.S. real effective exchange rate, corporate tax rate, and government expenditure to Türkiye's current account balance. The findings are consistent with BTN-type international spillovers, particularly through exchange-rate and corporate-tax conditions. Because the empirical design identifies neither exogenous policy changes nor policy intent, these channel-specific links should be read as compatible with the BTN hypothesis rather than as evidence of deliberate BTN policy.

Keywords: Beggar-thy-Neighbour Policy, Current Account Balance, Granger Causality, Macroeconomic Policy, Augmented ARDL

JEL Code: F32, F41, C32, E52, E62

[70] This conference abstract is derived from Ferhat Öztutuş's PhD thesis.

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GOVERNANCE EFFICIENCY AND DIGITAL TRANSFORMATION IN THE KNOWLEDGE PRODUCTION FUNCTION: EVIDENCE FROM OECD AND NON-OECD ECONOMIES

Muhammad Atta Ul Islam Abrar, Noor Jehan[73]

Abstract

This research examines the relationship between governance efficiency, digital transformation, and the knowledge production function in OECD and non-OECD economies. Drawing on the knowledge production function framework, the study examines the causal relationship between R&D investment and knowledge production, and how governance affects R&D effectiveness. It also analyses the direct impact of digital transformation on knowledge production and tests these connections across institutional and developmental settings. It uses a panel data sample of 40 countries: 20 OECD and 20 non-OECD countries between 2005 and 2023. Knowledge production is measured by residents' patent applications, and R&D expenditure is measured as a percentage of GDP. Governance efficiency is measured by applying principal component analysis to the Worldwide Governance Indicators' Government Effectiveness, Regulatory Quality, and Rule of Law indicators. Digital transformation is measured by the percentage of people using the Internet. Control variables include human capital, GDP, and trade openness. The empirical model includes an interaction term between R&D expenditure and governance efficiency to test whether institutional quality moderates the relationship between R&D inputs and outputs. The study is in the empirical analysis phase; the data and main variables have been prepared, and the econometric estimation is underway. The study aims to advance understanding of the factors that affect the relationship between innovation input and measurable knowledge output, including governance efficiency and digital transformation, and to offer comparative OECD and non-OECD economies evidence.

Keywords: Governance efficiency; Digital transformation; Knowledge production function; R&D expenditure; Patent applications; OECD; Non-OECD economies; Innovation.

JEL: O31, O32, H11, O38, O57

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Road Safety Governance and Traffic Accident Risk: The Mediating Role of Driver Behaviour and the Moderating Role of Driver Stress

Yasir Arafat, Noor Jehan[74]

Abstract

Road traffic accidents (RRTC) continue to pose a public policy and public safety challenge in Pakistan, causing significant human, social and economic losses. While road safety research has long focused on infrastructure and personal driving behaviour, the effectiveness of governance institutions and the behavioural mechanisms linking governance to accident risk warrant further exploration. This study proposes an integrated model to examine the relationship between road safety governance and the risk of traffic accidents in District Mardan, KPK, Pakistan. In particular, it explores the mediating influence of driver behaviour and the moderating influence of driver stress in this relationship. The study is a quantitative, cross-sectional survey, and primary data will be collected using a structured questionnaire from drivers in District Mardan. Measures of road safety governance, driver behaviour, driver stress and perceived risk of traffic accidents are multi-item scales drawn from relevant literature. The proposed analysis is a mediation-moderation analysis using Hayes' PROCESS Model 14 to investigate indirect effects and the conditional association between driver behaviour and accident risk, employing bootstrap resampling. Control variables are included that are relevant to demographic and driving-related data. By combining institutional governance, behavioural responses, and psychological conditions in one analytical framework, the study aims to bridge the gap between infrastructure-based explanations of road safety and broaden understanding of road safety. The proposed research is likely to provide context-specific evidence for road safety governance, augment traffic law enforcement, enhance driver training and assist with interventions to mitigate the impact of stress on driving. The findings could play a role in the development of more co-ordinated and behaviourally-informed road safety policies in Pakistan.

Keywords: road safety governance, driver behaviour, driver stress, traffic accident risk, mediation, moderation, Pakistan.

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Comparison of Sustainable Finance Regulations in Türkiye and the European Union: An Examination of TSRS and ESRS Practices

Öznur ŞAMANDAR YILMAZ[75]

Abstract

The concept of sustainability, which aims to protect nature, society, and the economy in the long term while utilizing resources, has gained recognition in the financial sector, as in many other fields. Sustainable finance, which encompasses investment and financing activities aimed at generating direct environmental benefits, seeks not only to create economic value but also to provide long-term benefits to the environment and society. In Türkiye, the standards governing the implementation of sustainable finance by businesses are set out in the Türkiye Sustainability Reporting Standards (TSRS). In the European Union, sustainability standards are established under the European Sustainability Reporting Standards (ESRS). This study aims to compare the sustainable finance approaches implemented in Türkiye and Europe, identify similarities and differences between the reporting standards, and determine Türkiye's strengths and areas requiring improvement within the framework of sustainable finance standards. Based on the examination and comparative analysis of the TSRS and ESRS documents, this study adopts a qualitative research approach. The findings indicate that TSRS is not a consolidated copy of the ESRS and that significant differences exist between the two frameworks, particularly in terms of the materiality approach and the scope of sustainability matters. Türkiye's strengths include its high level of alignment with the ISSB and the ability to link sustainability information based on financial materiality to investor decision-making. While ESRS provides broader coverage of environmental, social, and governance issues than TSRS, the investor-oriented approach of TSRS and its linkage of sustainability information to financial risks, access to finance, and cost of capital provide significant advantages.

Key Words: TSRS, ESRS, Sustainable Finance, Sustainability

JEL Code: G00, G23, M48, Q26, Q58

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International Marketing Strategies in The Lithium-Ion Battery Sector: Target Market Selection Using The Topsis Model

Ali YILDIZ[76]

Abstract

A dynamic consumer trends in the renewable energy and electric vehicle markets have made lithium-ion batteries a strategic focal point in international marketing. This study aims to determine strategic target markets for enterprises operating in the lithium-ion battery (HS Code: 850760) sector for Türkiye from a Multi-Criteria Decision-Making (MCDM) perspective. The primary objective of the study is to move beyond traditional export volume-oriented approaches to provide a strategic marketing perspective that identifies alternative markets offering high profitability and market depth, away from intense competition. Accordingly, an empirical framework incorporating the TOPSIS model based on objective criteria weighting has been constructed. Using data obtained from the Trademap and MacMap databases, the criteria of market size, 5-year market growth rate, current market share, customs duties, and geographic distance were analyzed. Through variance-based objective weighting, current market share and market size were identified as the most fundamental factors affecting marketing performance. As a result of the TOPSIS ranking, Cyprus, Libya, Azerbaijan, and Morocco emerged as the niche markets with the highest potential for marketing activities. The findings demonstrate that in market entry strategies, turning to regional niche markets where Turkey has strong market penetration and brand positioning, rather than massive markets characterized by fierce competition, will maximize the return on investment (ROI).

Keywords: International Marketing, Target Market Selection, Market Entry Strategy, TOPSIS, Lithium-Ion Battery.

JEL Code: M31, M16, F10

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Environmental Data Requirements and Border Compliance Challenges in International Trade

Özgül Uyan[77]

Abstract

In international trade, environmental objectives have increased the importance of data on production methods, embedded emissions, raw material sources, supply chains, and product life cycles, beyond product prices and physical characteristics. This transformation has turned environmental data from mere reporting elements into a compliance area associated with market access, customs procedures, and export competitiveness. This study examines the relationship between environmental data requirements and border procedures through a comparative review of legislation and an analytical assessment of Türkiye. The European Union's Carbon Border Adjustment Mechanism (CBAM), the Regulation on Deforestation-Free Products (EUDR), the Ecodesign for Sustainable Products Regulation (ESPR), and the Digital Product Passport approach have different product and stakeholder scopes, yet they all highlight the importance of reliable data generation, traceability, and verification capacity. The World Trade Organization's Trade Facilitation Agreement, together with the World Customs Organization's and the World Trade Organization's work on digital technologies, provides an analytical basis for assessing risk management, single window systems, and digital integration. According to European Commission data, in 2025, 42.7% of Türkiye's merchandise exports went to the European Union, while 35.3% of its merchandise imports originated from the EU. Furthermore, Türkiye's exports of 18.34 million tonnes of CBAM-covered goods to the EU during the 2023–2025 reporting period demonstrate the economic significance of environmental data compliance. This study proposes a compliance gap framework encompassing data generation, verification, traceability, interoperability between digital systems, and inter-institutional coordination. The findings are analytical assessments based on legislation and institutional sources rather than measured firm-level performance.

Keywords: International trade, trade facilitation, trade policy, green trade, digital customs.

JEL Code: F13, F18, Q56, L91

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Corporate Social Responsibility (CSR), Brand Trust, and Consumer Purchase Intention among University Students

Luljeta Aliu Mulaj[78], Atdhetar Gara, Donat Rexha[79]

Abstract

Purpose: The paper explains the relation among brand trust, consumer purchase intention as well as the corporate social responsibility in the modern era among university students in Kosovo – public and private higher education institutions.

Methodology: Quantitative research approach was used for the study, applying structured questionnaire. The data were collected through online distribution of the questionnaire at different universities. Collected data are analyzed using STATA and SPSS software. A multiple linear regression model was used to analyze the relationships between study variables. The model assesses the impact of Environmental Awareness (EA), Green Marketing (GM), Corporate Social Responsibility (CSR), Consumer Trust in Sustainable Companies (CT), Sustainable Consumer Behavior (SCB) and Social Media Impact on Sustainability Awareness (SMI) on Sustainable Purchase Intention (SPI).

Findings: According to the regression results, Environmental Awareness (EA) is the strongest factor of Sustainable Purchase Intention. This indicates that the higher the level of awareness of young consumers about environmental issues, the more they tend to adopt sustainable purchase behaviors. Corporate Social Responsibility (CSR) was identified as the second most important predictor. Young consumers show considerable sensitivity to companies' efforts to contribute to sustainable development, ethics, and social responsibility.

Originality Value: The study brings evidence from emerging consumer markets for an underexplored topic by integrating CSR, brand trust and purchase intention.

Keywords: Marketing, Brand trust, Consumer Purchase, Corporate Social Responsibility, Sustainable Consumption.

JEL classification: M3; M30; M31; M38

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The Evolution of Insurance Risk Premiums in the Context of the Global Energy Crisis

Marian Lucian Achim[80]

Abstract

The global energy crisis has generated significant economic imbalances, influencing production costs, inflation, financial market volatility, and the risk exposure of both individuals and businesses. Within this context, the insurance industry faces increasing pressure to reassess risk premiums and adapt pricing strategies to a rapidly changing economic environment.

This study aims to examine the relationship between global energy market disruptions and the evolution of insurance risk premiums, focusing on the transmission mechanisms through which rising energy prices affect claims costs, insured asset values, operational expenses, and reinsurance conditions. Particular attention is given to non-life insurance segments, including property, motor, industrial, and business interruption insurance.

The research proposes a comparative analysis of energy price dynamics, inflation indicators, and insurance market developments, supported by statistical data and relevant economic literature. The study also considers the role of actuarial models, underwriting practices, and risk management strategies in maintaining premium adequacy and insurers' financial stability.

Keywords: Insurance Risk Premiums; Global Energy Crisis; Inflation; Actuarial Pricing; Insurance Market.

JEL Codes: G22

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Online Consumer Interest in Digital Banking and Digital Payment Services in Türkiye: A Google Trends Analysis

Beste Burcu Kasap[81], Murat Selim Selvi[82]

Abstract

This study aims to investigate how online consumer interest in digital banking and digital payment services in Türkiye varies over time, across provinces, and in terms of related search queries. The study employs a descriptive and exploratory secondary data analysis based on weekly relative search volume (RSV) data obtained from Google Trends on 14 July 2026, covering the period from 13 July 2021 to 13 July 2026. Internet and mobile banking were examined in one search group, while mobile payments, contactless payments, QR code payments, and electronic money were examined in a separate group. In the banking group, the mean relative search volume for internet banking (50.43) was higher than that for mobile banking (10.81). In the payment group, the mean RSV values were 38.24 for contactless payments, 30.90 for mobile payments, 11.34 for QR code payments, and 9.01 for electronic money. Since the QR search term differs in scope from the corresponding Topic query, these values are not interpreted as providing a definitive ranking of interest in the respective services. A general decline was observed in searches for internet banking, whereas searches for QR code payments showed an upward trend after 2024. The leading provinces and related search queries varied across service categories. The findings indicate that aggregate online search interest in digital financial services is not uniform and provide comparative insights into potential information needs regarding these services from a marketing perspective. Search interest is not interpreted as a measure of service usage or the number of users.

Keywords: Google Trends, digital banking, digital payments, online search interes

JEL Codes: G21, G23, M31

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Corporate Sustainability Discourses among High-Value Brands in Türkiye: A Thematic Analysis of the Websites of Eight Brands from Different Sectors

Beste Burcu Kasap[83] **Murat Selim Selvi**[84]

Abstract

This study examines how eight corporate brands operating in different sectors frame sustainability on their official websites and identifies common themes and emphases associated with their business activities. Eight brands—Turkish Airlines, Arçelik, Türkiye İş Bankası, Ford Otosan, LC Waikiki, Anadolu Efes, Turkcell, and Migros—were purposively selected. Their sustainability landing pages, relevant subpages, and selected policy texts were examined. Content accessed on 27 September 2026 was analysed thematically within a qualitative document analysis framework. A total of 106 coded records of sustainability-related statements were compared across five categories: environmental impacts and resources; social value and inclusion; value chains and responsible sourcing; governance and targets; and sustainable product and service solutions. The findings show that the brands associate sustainability with environmental responsibility and long-term value creation, while the specific content of their discourses varies with their core activities. The selected content addresses fuel and emissions at Turkish Airlines, green finance at Türkiye İş Bankası, digital inclusion at Turkcell, technology and resource efficiency at Arçelik and Ford Otosan, and materials, sourcing, and relationships with local producers at LC Waikiki and Migros. The study provides a comparative account of the business contexts of corporate sustainability communication among the selected brands. The findings are limited to the selected web content; corporate statements concerning targets, policies, and performance were not treated as independently verified outcomes.

Keywords: sustainability communication, corporate brand, website, thematic analysis, cross-brand comparison.

JEL Codes: M14, M31, Q56

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Worker Remittances and Domestic Savings in ECOWAS: A Panel Quantile CS-ARDL Perspective

Olcay ÇOLAK[85]

Abstract

While foreign capital inflows are vital for developing economies, the specific mechanisms through which workers' remittances influence domestic savings remain complex and relatively underexplored compared with the other types of foreign capital flows. Accordingly, the present study aims to investigate the remittance-savings nexus across the Economic Community of West African States (ECOWAS), addressing a critical gap in regional financial integration. Moving beyond traditional mean-based estimators that overlook distributional asymmetries, this research employs the novel Panel Quantile Cross-Sectionally Augmented Autoregressive Distributed Lag (Quantile CS-ARDL) technique. This advanced methodology rigorously accounts for unobserved cross-sectional dependence and slope heterogeneity across different quantiles of the savings distribution. The empirical findings reveal a highly asymmetric relationship. In the short run, temporary fluctuations in remittance flows exert a positive and predominantly significant impact on domestic savings across most quantiles. However, the long-run structural effects are fundamentally non-linear. In countries located at the lower and middle quantiles, the long-term impact of remittances is statistically negligible, primarily absorbed by immediate household consumption. Conversely, in the upper quantiles, remittances function as productive liquidity, significantly boosting domestic savings. These results indicate that the transformative potential of remittances depends heavily on a nation's existing savings capacity and financial maturity. Consequently, policymakers in the ECOWAS region must design targeted, quantile-specific strategies to effectively channel external inflows into formal financial systems rather than relying on broad, one-size-fits-all approaches.

Keywords: Remittance Flows, Domestic Savings, ECOWAS, Quantile CS-ARDL, Cross-Sectional Dependence.

JEL Codes: C23, F21, O14, O33, O15

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The Landscape of Women's Employment within Employment Strategies in Türkiye

Fatma FİDAN[86]

Abstract

This study aims to discuss the current landscape of women's employment within the context of Turkey's employment strategies. In a digital economy—where increasing employment has become more challenging and the rise of artificial intelligence and digitalization poses a threat to various professions and jobs—achieving targets for women's employment has become even more difficult. Although Turkey has seen an upward trend in women's labor force participation and employment rates in recent years, these figures still lag behind those of developed nations, and structural issues persist. In this regard, the objectives concerning women's employment within broader employment strategies and policies are of significant importance. This study seeks to analyze the current state of women's employment within the framework of the employment strategies implemented in Turkey. The 2025–2028 National Employment Strategy aims to increase women's employment by contributing to the creation of an inclusive and equitable labor market. An examination of the targets set for women's employment reveals a goal for the labor force participation rate to reach 41% by 2023 and 43.9% by 2028. The 2028 target sets the labor force participation rate at 43.9% and the employment rate at 40.1%. According to data from the Turkish Statistical Institute (TÜİK), the labor force participation rate for 2026 is projected at 35.0%, with an employment rate of 35.0% (TÜİK, 2026). These figures indicate that current progress remains behind the established targets.

Keywords: Employment strategies, Women's employment, Women's employment in employment strategies.

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ESG Implementation in Romania: The Legal Framework and a Case Study of OMV Petrom

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Abstract

Environmental, Social, and Governance (ESG) principles are increasingly important for corporate transparency, accountability, and sustainable development. This study examines ESG implementation in Romania, focusing on the relationship between the European regulatory framework, national legislation, and corporate reporting practices. The research employs qualitative methods, combining legal and regulatory analysis with a case study of OMV Petrom, a major Romanian energy company. The analysis considers Directive (EU) 2022/2464 on Corporate Sustainability Reporting (CSRD), the European Sustainability Reporting Standards (ESRS), Regulation (EU) 2020/852 on the EU Taxonomy, and relevant Romanian legislation. Publicly available sustainability reports and corporate disclosures are examined to assess how environmental, social, and governance objectives are integrated into reporting and corporate strategy. The study aims to identify the main challenges associated with ESG implementation, including regulatory compliance, data transparency, reporting comparability, and accountability. It also explores the implications of sustainability reporting for companies, accounting professionals, investors, and regulators. The research contributes to understanding the practical implications of ESG regulation in Romania and highlights the importance of aligning corporate sustainability practices with applicable legal requirements.

Keywords: ESG; sustainability reporting; CSRD; Romanian legislation; corporate governance

JEL Code: Q56, M14, M41, K22

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Is Energy Supplier Diversification Macroeconomic Insurance? External Energy Shocks, Inflation, Output, and Green Investment in Europe

Aytuğ Zekeriya Bolcan[88]

Abstract

This study asks whether energy supplier diversification provides macroeconomic insurance against external supply disruptions in Europe, distinguishing supplier concentration from import dependence. The proposed analysis targets the 27 European Union member states, using monthly Eurostat data for 2008–2025 and annual data on real private business investment in climate change mitigation for approximately 2008–2023, subject to predefined data coverage criteria. Natural gas is the primary focus; crude oil provides a separate robustness analysis. Supplier concentration will be measured from physical import quantities using the Herfindahl–Hirschman index and alternative diversity indicators. A shift-share exposure measure will combine 2017–2019 supplier shares with unexpected changes in suppliers' deliveries to other sample countries, excluding each importing country's own purchases. Lag-augmented panel local projections with country and time fixed effects will estimate dynamic responses of energy, headline and core consumer prices, manufacturing output and climate mitigation investment. Interactions with baseline concentration and import dependence will assess their distinct roles in shock transmission. The investment analysis will examine both short-run crowding out and possible medium-run acceleration through energy substitution. Alternative portfolio scenarios will assess potential exposure reductions under the same supplier shocks, without treating these calculations as welfare estimates. The study aims to clarify whether more diversified supply portfolios can limit inflationary pressures and output losses while sustaining private climate investment, thereby linking energy security, macroeconomic resilience and the continuity of the green transition.

Keywords: Supplier diversification; Energy security; Inflation; Industrial production; Climate mitigation investment

JEL Code: C23, E31, E32, F14, Q43

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The Role of AI-Driven Personalized Marketing in Enhancing Customer Engagement and Purchase Intention in Financial Services

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Abstract

The rapid digital transformation of financial markets has fundamentally reshaped how financial institutions communicate with consumers. Artificial intelligence (AI), big data analytics, and predictive algorithms have enabled financial service providers to develop highly personalized marketing strategies that improve customer experiences while increasing competitive advantage. Despite the widespread adoption of AI-powered marketing technologies, empirical evidence regarding their influence on customer engagement and purchase intention in financial services remains limited, particularly in emerging markets. This study aims to examine the impact of AI-driven personalized marketing on customer engagement, trust, and purchase intention within the financial services sector. The research develops a conceptual framework grounded in Relationship Marketing Theory and the Technology Acceptance Model (TAM), proposing that personalization enhances customer trust and engagement, which subsequently increase customers' intentions to adopt financial products and digital banking services.

The study employs a quantitative research design based on survey data collected from users of digital banking and fintech applications. Structural Equation Modeling (SEM) will be utilized to examine the relationships among personalization, perceived usefulness, trust, customer engagement, and purchase intention. The expected findings suggest that AI-driven personalized marketing positively influences customer engagement and trust, both of which significantly contribute to stronger purchase intentions. Furthermore, perceived usefulness is anticipated to strengthen the relationship between personalization and customer engagement.

The study contributes to the growing literature on financial marketing by integrating AI-based personalization into customer behavior models within financial services. The findings are expected to provide practical implications for banks, fintech companies, and financial marketers seeking to improve customer relationship management and digital marketing effectiveness through intelligent personalization strategies.

Keywords: Financial Marketing; Artificial Intelligence; Personalized Marketing; Customer Engagement; FinTech.

JEL Code: M31, G41, O33

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Ethical Management in the Digital Era: Balancing Innovation, Responsibility, and Sustainable Business Performance

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Abstract

The fast-paced development of digital technologies has led to significant changes in contemporary business settings through creating new opportunities for innovation, organizational effectiveness, and competitiveness and at the same time posing challenging issues from the perspective of ethics. As organizations start using more digital means of operation and decision making, ethical management becomes one of the key aspects related to responsible innovation and sustainable business development.

This study is meant to address the issue of ethical management in the context of sustainable development of organizations by focusing on the connection between ethical leadership, responsible adoption of technologies, corporate social responsibility, and organizational competitiveness. The paper will be based on a conceptual research that involves a structured review of academic literature on the subject of interest with an emphasis on the challenges that small and medium enterprises face in terms of ethical management in emerging markets.

A conceptual model of the connection between ethical management and transparency, responsibility, accountability, and responsible innovation will be elaborated in the paper.

This paper contributes to the literature on management by considering ethical management as a strategic tool in digital transformation in business rather than a matter of compliance. The paper further provides directions for future empirical research in the field as well as practical implications for managers who strive to achieve sustainable development in their organizations.

Keywords: Ethical Management, Digital Transformation, Responsible Innovation, Sustainable Business Performance, Corporate Social Responsibility

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The Impact of The Asian Tigers on Trade among The Turkish Republics Themselves: Evıdence From A Multıdimensıonal Panel Data Analysıs

Oguzhan OZCELIK[92], Emre CEYLAN GUNEL[93]

Abstract

Following the dissolution of the Soviet Union, Azerbaijan, Turkmenistan, Kazakhstan, Uzbekistan, and Kyrgyzstan gained their independence. Given the historical, cultural, and linguistic ties between Türkiye and these countries, it was expected that their declarations of independence would lead to increased commercial, political, and cultural interactions.On the other hand, the economies known as the Asian Tigers—Singapore, South Korea, Taiwan, and Hong Kong—have attracted global attention due to their remarkable success in increasing their share of world trade through the export of high value-added goods.This study provides the first empirical evaluation in the literature of trade among the countries included in the sample and investigates the impact of the Asian Tigers on trade among the Turkic Republics themselves. The multidimensional panel data analyses were conducted using the Gravity Model and the Pseudo-Poisson Maximum Likelihood (PPML) estimator. The findings, based on 312,012 observations covering the period 1994–2021, indicate that the Turkic Republics trade with one another above their potential levels. In contrast, the results reveal that the Asian Tigers have exerted a negative impact on trade among these countries, particularly in the post-2015 period. In other words, as the Turkic Republics have expanded their trade relations with the Asian Tigers in recent years, their trade with one another has declined.

Keywords: Asian Tigers, Turkish Repeblics, Gravity Model

JEL Code: F14; F18, Q56

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Healthcare Entrepreneurship in the Age of Artificial Intelligence: Examples of Successful Ventures

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Abstract

The healthcare sector is undergoing a significant transformation due to demographic changes, the increasing burden of chronic diseases, cost pressures, and rapidly developing digital technologies. Artificial intelligence, big data, mobile health, wearable technologies, and remote patient monitoring systems are transforming not only the clinical dimension of this transformation but also the nature and business models of healthcare entrepreneurship.

The aim of this study is to evaluate the development of healthcare entrepreneurship in the age of artificial intelligence through national and international literature and successful startup examples. The study is a conceptual review based on a literature review. Within the scope of the review, the fundamental characteristics of digital health entrepreneurship and the new opportunities created by artificial intelligence are evaluated through selected examples from startups such as Virasoft, EyeCheckup, SmartAlpha, BioIntelliSense, Vivoo, WeWALK, and Otsimo. When the literature and examples are examined together, it is seen that successful healthcare startups rely not only on the use of advanced technology but also on accurately defining a real health problem, developing a value proposition suitable for clinical and user needs, establishing a scalable business model, clinical validation, regulatory compliance, data security, and the capacity to create social benefit. In conclusion, while artificial intelligence creates significant opportunities in healthcare entrepreneurship, sustainable success depends on the coordinated management of technological innovation with clinical reliability, ethical responsibility, and a human-centered service approach.

Keywords: Health entrepreneurship, artificial intelligence, digital health, health technologies.

JEL Code: I15, L26, O31, O33.

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Sustainable Leadership and Green Human Resources Management in Healthcare Organizations: A Literature Review

Özge ÜSTÜN[97], Mustafa ERBİR[98], Maşide GÜRCÜ[99]

Abstract

The healthcare system, in addition to its fundamental role in protecting and improving public health, will create significant responsibilities in terms of sustainability due to high energy and resource consumption, the generation of treatment waste, and heating services. Therefore, sustainability in healthcare needs to be addressed not only through technical applications but also through managerial capabilities and human resources policies. The aim of this study is to expand on sustainability in healthcare, sustainable management, and green human resources management, to broaden the current literature, and to examine the contribution value of these two approaches to institutional sustainability. The study is a review based on the examination of national and international literature on the subject. Sustainable leadership is addressed through its dimensions of long-term perspective, heating and social responsibility, unit focus, and the development of a sustainability culture; while green human resources management is addressed within the scope of green procurement, training and development, performance evaluation, compensation and rewards, and employee employment programs. In the literature, it is seen that sustainable management is achieved through green human resources management, and green human resources practices are achieved through outputs such as operational change, climate commitment, green innovation, and sustainable performance. In conclusion, it is important to address leadership understanding and human resources policies holistically for the institutionalization of sustainability in healthcare management.

Keywords: Sustainable leadership, green human resources management, healthcare institutions.

JEL Code: I15, M12, M14, Q01

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Exploring the Health, Environment, and Economic Growth Nexus

Muhamed Sabri DOĞAN[100]

Abstract

The increase in greenhouse gas emissions has become a major threat to environmental quality and human health. Fossil fuel consumption, population growth, traffic density, and expanding industrial activities contribute to higher levels of environmental pollution and increase individuals' exposure to environmental risks. Deteriorating environmental quality may increase the incidence of disease, mortality, and disability, thereby raising the demand for healthcare services and health expenditures. Economic growth, in this context, may have a dual effect. While higher production and energy consumption can intensify environmental pressures, economic development may also improve environmental and health conditions through technological progress, better healthcare infrastructure, and greater investment in clean energy. Accordingly, the increasing use of renewable energy sources has gained importance as a means of reducing dependence on fossil fuels and limiting greenhouse gas emissions. Greater use of clean energy is expected not only to improve environmental quality but also to reduce pollution-related health problems and, consequently, health expenditures. The aim of this study is to examine the interaction among health expenditures, economic growth, and environmental factors and to evaluate the direction of these relationships. In this regard, the study reviews the existing literature on the relationships among health expenditures, economic growth, environmental degradation, and renewable energy and evaluates these interactions within an integrated framework.

Keywords: Health expenditures, GDP, renewable energy, environmental sustainability

JEL Code: Q56, O44, I15

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An Examination of the Impact of Selected Macroeconomic Indicators on Firm Sales: Evidence from the BIST Transportation Index

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Abstract

This study examines the effects of selected macroeconomic indicators on the sales growth of firms listed in the BIST Transportation Index. The study aims to determine the sensitivity of transportation firms' sales performance to changes in macroeconomic conditions and to provide implications for investors, firm managers, and policymakers. The research covers six firms listed in the BIST Transportation Index over the 2015–2024 period, comprising 66 observations. Panel data analysis was employed to investigate the effects of inflation, the U.S. dollar exchange rate, gold prices, and interest rates on changes in firms' sales. The findings indicate that the overall model is statistically significant and that the independent variables explain approximately 62% of the variation in sales growth. Inflation and gold prices have statistically significant positive effects on sales growth, whereas increases in the U.S. dollar exchange rate and interest rates have statistically significant negative effects. The positive effect of inflation is associated with firms' ability to reflect increased costs in service prices and the resulting increase in nominal sales revenues. The negative effects of exchange rates and interest rates indicate the importance of cost and financing conditions for transportation firms. Accordingly, policymakers should prioritize exchange-rate and interest-rate stability, while transportation firms should strengthen their financial risk management and pricing strategies. Improving access to financing and developing measures that enhance firms' resilience to macroeconomic fluctuations may also contribute to sustainable sectoral growth.

Keywords: Macroeconomic Indicators, Sales Growth, BIST Transportation Index, Panel Data Analysis, Transportation Sector

JEL Code: E43, E31, F31, C23, R40

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COST OPTIMIZATION THROUGH ECONOMIC-MATHEMATICAL REGRESSION IN BREAST NEOPLASM TREATMENT

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Abstract

Breast cancer remains the most prevalent malignancy and the leading cause of oncological mortality among women in European states. Effective management requires not only advanced clinical interventions but also a rigorous optimization of healthcare expenditures. This study aims to evaluate the economic implications of breast cancer monitoring, screening, and treatment pathways. It quantifies how early detection affects both the overall financial burden on the healthcare system and patient survival rates.

We developed an economic-mathematical regression model using clinical and financial data from a cohort of patients. The model analyzes the cost-effectiveness of diagnostic pathways (breast ultrasound and mammography) against therapeutic workflows, including personalized surgical interventions, tumor marker screening, hormone receptor status evaluation (ER/PR), and post-operative follow-up care.

The regression analysis demonstrates a strong inverse correlation between the staging at detection and total treatment costs. Implementing standardized screening protocols -annual ultrasound for women aged 40+ and biennial mammography for women aged 50+ -resulted in a significant reduction in average treatment costs per patient compared to late-stage interventions. The model confirms that early-stage surgical and personalized hormonal treatments yield a highly favorable Incremental Cost-Effectiveness Ratio (ICER). Furthermore, targeted post-operative monitoring successfully mitigates the financial risks and high expenditures associated with disease recurrence and over-treatment.

Implementing a structured cost-management framework backed by mathematical economic regression is vital. It provides a data-driven approach to optimize healthcare resource allocation, lowers the financial burden of oncological care, and significantly extends patient life expectancy through timely, cost-efficient interventions.

Keywords: Mammary glands, breast neoplasm, mammography, breast ultrasound, economic-mathematical regression.

JEL Classification: I11, I12, C02, C51

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THE ECONOMIC AND FINANCIAL IMPACT OF INDUSTRIAL ROBOTICS ON ENTERPRISE PERFORMANCE AND SUSTAINABILITY: AN INTERDISCIPLINARY APPROACH

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Abstract

The rapid advancement of industrial robotics and intelligent automation is transforming modern manufacturing processes, creating new opportunities for improving operational efficiency, financial performance, and long-term business sustainability. In an increasingly competitive and technologically dynamic economic environment, the integration of robotic systems into industrial production represents both a strategic investment and a significant managerial challenge.

This paper aims to explore the relationship between industrial robotics implementation and enterprise financial performance by combining economic and engineering perspectives. The proposed research focuses on assessing the potential impact of robotic automation on production costs, labor productivity, operational efficiency, return on investment, and financial stability.

The methodology is based on a multidisciplinary approach integrating financial ratio analysis, cost-benefit assessment, and the technical evaluation of industrial robotic systems. Particular attention is given to investment appraisal indicators, including Return on Investment (ROI), Net Present Value (NPV), and Payback Period, alongside technical performance parameters such as cycle time, production capacity, system availability, and energy consumption.

The study proposes an integrated assessment framework designed to connect technical improvements generated by robotic automation with their potential economic and financial implications. Furthermore, it addresses implementation challenges, including initial investment costs, maintenance requirements, workforce adaptation, and technological risks.

The expected contribution of this research is the development of a conceptual framework supporting evidence-based investment decisions and facilitating collaboration between financial specialists and robotics engineers. The proposed approach highlights the importance of interdisciplinary analysis in promoting industrial competitiveness, resource efficiency, and sustainable enterprise development.

Keywords: Industrial Robotics, Financial Performance, Robotic Automation, Investment Efficiency, Cost-Benefit Analysis, Industry 4.0, Business Sustainability

JEL Classification: O33, G31, M21, L23

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Driving a Vehicle under the Influence of Alcohol or Other Substances in Romanian Criminal Law: Historical Evolution, Current Regulation and Recent Legislative Amendments

Nadia-Elena DODESCU[108]

Abstract

The analysis of the historical evolution of the regulations on driving under the influence of alcohol and psychoactive substances reveals a progressive and coherent normative path: from a mere administrative prohibition in the nineteenth-century traffic regulations, to the express criminalization introduced by Decree no. 328/1966, and up to the current normative system, built around Article 336 of the Criminal Code and supplemented by Articles 336[1] and 337.Recent legislative amendments, namely Law no. 172/2024 and Government Decision no. 877/2024, together with the jurisprudential clarification brought by Decision no. 25/2025 of the High Court of Cassation and Justice, show that this legal framework is constantly evolving, responding both to dynamic social realities and to the need to unify judicial practice in this field. In the following chapter, we will carry out a detailed analysis of the constituent elements of the offence provided by Article 336 paragraphs (1) and (2) of the Criminal Code, using this historical and normative foundation as a reference point. The offence of driving a vehicle under the influence of alcohol or other substances is regulated by Article 336 of the Criminal Code, as amended by Law no. 172/2024. This offence occupies a central place within the system of offences against public road traffic safety and, statistically, represents one of the most frequent criminal cases pending before Romanian courts.

The rationale for criminalization lies in the significant danger created by the driving of a vehicle by a person whose psychophysical capacity is diminished by the effects of alcohol or psychoactive substances, endangering not only the life and physical integrity of other road users, but also that of the driver himself.

Keywords: driving under the influence of alcohol; psychoactive substances; Article 336 of the Criminal Code; public road traffic safety; Law no. 172/2024; High Court of Cassation and Justice Decision no. 25/2025; legislative evolution; unification of judicial practice.

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LIABILITY OF LEGAL ENTITIES FOR DAMAGES CAUSED BY ARTIFICIAL INTELLIGENCE

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Abstract

Artificial intelligence (AI) is not exempt from the principles of legal liability. It rather reshapes the questions posed by existing legal norms in this field. This article examines how various entities, whether developers, providers, users (those who deploy the systems), or simply economic beneficiaries of automated decisions, are held liable for harm caused by AI systems. Following the withdrawal of the proposed AI Liability Directive in October 2025, the European Union has arrived, more by implication than through a deliberate strategy, at a three-tiered architecture: ex ante rules of conduct (the AI Act, whose obligations for high-risk systems were deferred under the 2026 digital legislative package); strict liability for defective digital products (Directive (EU) 2024/2853, which must be transposed by December 9, 2026); and national fault-based regulations for all other scenarios. The critical gap lies within this third tier, as the entity deploying the AI system, such as a bank, platform, employer, or insurer utilizing the technology, is typically the party closest to the victim. By analyzing EU and Romanian legislation, as well as recent case law from the EU, Canada, and the United States, this article demonstrates that liability tends to center on a single concept: organizational fault—that is, an entity's failure to select, supervise, document, and correct the manner in which it employs AI. The paper concludes with de lege ferenda proposals: using the obligations set forth in the AI Act as a legal benchmark for due diligence; establishing rebuttable presumptions in cases of documentation deficiencies; allocating liability along the AI value chain based on the degree of control exercised; and enshrining an explicit duty for directors to ensure technological oversight.

Keywords: artificial intelligence; corporate liability; product liability; AI Act.

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Line Balancing in Robotic Systems: Opportunities and Challenges within the Lean Manufacturing Framework

Selin Çolmabey[110], İnanç Kabasakal[111]

Abstract

Industry 4.0 has transformed manufacturing by accelerating the integration of industrial robots, collaborative robots, and digital technologies into production systems. These developments have reshaped traditional line balancing problems, requiring coordinated task allocation between human operators and robotic systems. From a Lean Manufacturing (LM) perspective, effective line balancing is essential for reducing waste, improving workflow, and ensuring efficient resource utilization.

This study examines the opportunities and challenges of robotic line balancing through a review of academic publications from the last decade (2016–2026), focusing on the relationship between Industry 4.0 technologies and Lean Manufacturing principles. The literature indicates that robotic integration can improve operational consistency, increase productivity, enhance production flexibility, and facilitate the reassignment of repetitive or physically demanding tasks. However, it also introduces challenges related to task allocation, cycle-time coordination, workstation assignment, human–robot interaction, safety, and system integration.

In addition to the literature review, a case study on robotic line balancing was conducted as part of an industrial project to illustrate the practical implications of robotic integration. The results demonstrated that effective robotic line balancing can contribute to stable production operations and improved resource utilization. Addressing these challenges requires appropriate mathematical modeling and optimization approaches. Overall, the findings highlight that automation alone does not guarantee lean performance; robotic technologies must be aligned with lean principles such as continuous flow, waste reduction, and continuous improvement.

Keywords: Industry 4.0, Lean Manufacturing, Robotic Systems, Line Balancing, Human–Robot Collaboration

JEL Code: O14, O32

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Emerging Markets & Globalization: Strategic Perspective in Challenge, opportunity, and success

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Abstract

During colonial rule, peripheral economies served as sources of raw materials and markets for industrialized nations' finished products. In the second half of the twentieth century, developing countries' role in the international division of labor changed significantly. As this group's share of global GDP and industrial production changed, its role in world trade shifted. During this period, developing countries' export quotas grew threefold, and the shift in export structure began to favor industrial products.

Over the past two decades, a subgroup emerged within this category of countries, known as "newly industrialized countries" (NICs), also called emerging market countries. These countries are characterized by a high level of development and higher economic growth rates than industrialized countries.

The global economic crisis has dramatically altered the emerging market development landscape. According to the European Central Bank, "Emerging economies are home to over 80% of the world's population"; thus, investing in the growth of these economies is a vital priority and an inviting entrepreneurial prospect. However, financial and political instability has been prevalent in many low- and middle-income per capita nations over the past decade, complicating further investment and expansion. Today's emerging markets face many challenges, making it difficult to navigate opportunities without understanding the parallels, differences, and barriers across the social, political, geographic, and economic dimensions of emerging markets.

On the one hand, studying the globalization of world economic ties, particularly in the financial sector, is a leading and essential trend in modern economic thought. On the other hand, the current global financial crisis has exposed several problems, the solutions to which depend on the development of the global economic system at all levels.

This paper analyzes multifaceted emerging economies and compares their diversification to provide a clear "roadmap" and targeted tools for understanding emerging market economies with the potential to sell products, enter markets, and/or manufacture in the context of globalization and global competition.

Keywords: *Emerging markets, globalization*

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THE TRANSFORMATION OF LABOR RELATIONS IN THE AGE OF ALGORITHMIC MANAGEMENT: A SYSTEMATIC REVIEW OF WORKER AUTONOMY, SURVEİLLANCE AND SOCIAL PROTECTION

Cemile EVKAYA[114]

Abstract

The integration of artificial intelligence and digital technologies into the world of work is transforming not only the nature of jobs but also management and oversight processes in the workplace. Algorithmic management, which has become a key driver of this transformation, refers to the use of algorithmic systems for monitoring workers, allocating tasks, evaluating performance, and making decisions related to work processes. The purpose of this study is to examine the effects of algorithmic management on labor relations through the dimensions of worker autonomy, surveillance, and social protection.

The study adopted a qualitative research approach using the systematic literature review method. In this context, academic studies published between 2020 and 2026 were examined, along with reports and policy documents from international organizations such as the International Labor Organization (ILO) and the OECD. The literature was evaluated in terms of the effects of algorithmic management on working conditions, worker autonomy, workplace surveillance, performance evaluation, job security, and social dialogue.

The studies examined show that while algorithmic management can increase the speed of decision-making and enable rapid access to information in work processes, it also raises new debates, such as the need to monitor employee performance and ensure transparency in decision-making processes. OECD data reveals that, as a result of the widespread adoption of algorithmic management tools, managers harbor various concerns regarding employees' physical and psychosocial well-being, accountability, and the transparency of decisions. The literature also emphasizes that algorithmic management has a dual nature: it can both limit and, under certain conditions, support employee autonomy.

In conclusion, algorithmic management brings about a technological transformation in labor relations and opens up a new policy arena in terms of oversight, worker autonomy, labor rights, and social protection. For this reason, it is crucial to ensure that workers are informed about the use of algorithmic systems and to further strengthen transparency, worker autonomy, and social dialogue mechanisms.

Keywords: *Algorithmic Management, Artificial Intelligence, Labor Relations, Worker Autonomy, Social Protection*

JEL Codes: *M54, O33, J53, J24, J08.*

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Ecologies of Memory: Environmental Justice in Postcolonial Literature

Ayyub Abbas Shaikh[115], Shaikh Parvez Aslam[116]

Abstract

This paper examines how postcolonial literature, with particular emphasis on Indian English writing, transforms ecological memory into a critical discourse of environmental justice. It investigates how literary representations of land, rivers, forests, displacement, and resource extraction preserve memories of ecological loss and expose unequal environmental burdens. The study also asks how such narratives connect cultural identity, historical trauma, and questions of sustainable coexistence.

Methodologically, the paper adopts qualitative close reading and comparative literary analysis, drawing on postcolonial ecocriticism, environmental justice theory, and memory studies. Indian English texts form the central literary frame, supported by selective comparisons with African and Caribbean postcolonial writing. Attention is given to narrative voice, imagery, symbolism, landscape, and remembered place as literary strategies through which environmental histories are reconstructed.

The analysis finds that ecological memory often functions as a counter-archive, challenging official narratives of development and revealing continuities between colonial extraction and contemporary ecological inequality. In the Indian context, memories of land and displacement also illuminate the cultural costs of development, marginalization, and environmental disruption. The paper concludes that postcolonial literature enriches sustainability debates by joining ecological responsibility with historical accountability, cultural memory, and social justice, thereby imagining more equitable and sustainable futures.

Keywords: Indian English literature, postcolonial ecocriticism, ecological memory, environmental justice, cultural sustainability

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NAVIGATING ORGANIZATIONAL CRISES THROUGH CONTINGENCY PERSPECTIVES AND INTERNAL COMMUNICATION: A SYSTEMATIC LITERATURE REVIEW

Elmira Azimova[117], Yurdagül Meral[118]

Abstract

This systematic literature review synthesizes academic research at the intersection of contingency theory, management control systems (MCS), and internal crisis communication (ICC) to evaluate how organizations navigate high-volatility environments.The overarching is to establish an integrated theoretical framework demonstrating how structural and communicative fit directly influences employee behavioral and affective outcomes during organizational disruption.Traditional static control models often fail under severe environmental uncertainty; consequently, modern management perspectives emphasize dynamic "MCS packages" and loosely coupled control mechanisms that facilitate operational adaptability.Parallely, internal crisis communication has evolved from top-down directional directional dissemination toward employee-centered, accommodative strategies that prioritize psychological safety and social resilience.Incorporating multi-dimensional measurement metrics such as the Crisis Information Needs Adequacy in Internal Settings (CINA-IS) scale,this review evaluates informational and affective messaging adequacy during destabilizing events.By synthesizing vertical leadership communication and horizontal coworker dynamics (communicative coworkership), this review illustrates that internal communicative fit mediates cognitive evaluations of crisis management, directly buffering turnover and accelerating operational recovery. Theoretical implications highlight the conceptual transition from rigid, predictive management controls toward dynamic, relational organizational capabilities.Practical implications offer enterprise leaders actionable strategies for designing flexible communication architectures and contingent control packages tailored to situational risk factors.

Keywords; Contingency Theory, Internal Crisis Communication, Psychological Safety, Social Resilience, Management Control Systems, Accommodative Communication Strategies

JEL Classification: M10

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Analysis of Variation and the Tapio Approach in Measuring Sustainable Growth

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Abstract

The relationship between environmental pressures and economic growth and their interaction is one of the most important topics in discussions on sustainable development. In particular, economic growth policies, by disregarding environmental quality and bringing environmental costs to the forefront, further highlight the importance of the relationship between the environment and the economy. Consequently, the concept of decomposition, which examines this relationship, or, in other words, the direction of change in environmental pressures while economic activities continue, provides an important analytical framework. The aim of this study is to examine, from theoretical and methodological perspectives, the variation analysis and Tapio (2005) decoupling approaches that address this relationship. While variation analysis reveals the nature of the divergence based on the relative direction of changes in economic and environmental indicators, the Tapio approach offers a more detailed classification through "decoupling elasticity," calculated by comparing the proportional change in environmental pressure to the proportional change in economic growth. Through these methods, it is possible to identify various scenarios, such as a reduction in environmental pressure accompanying economic growth, a slower rate of increase in environmental pressure, or an increase in environmental pressure that outpaces economic growth. The study provides a comparative analysis of the conceptual foundations, calculation, and classification frameworks, as well as the analytical strengths and limitations of both approaches. The evaluation concludes that both methods offer useful tools for monitoring sustainable growth performance; however, the results obtained must be interpreted with due consideration of cyclical fluctuations, initial values, and the structural characteristics of economies.

Keywords: Variation Analysis, Tapio decoupling, environmental sustainability

JEL Code: Q56, O44

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