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9th ICONSR 2025 - Kotor

International Conference on Social Science Research

September 3-5, 2025 in Kotor - MONTENEGRO



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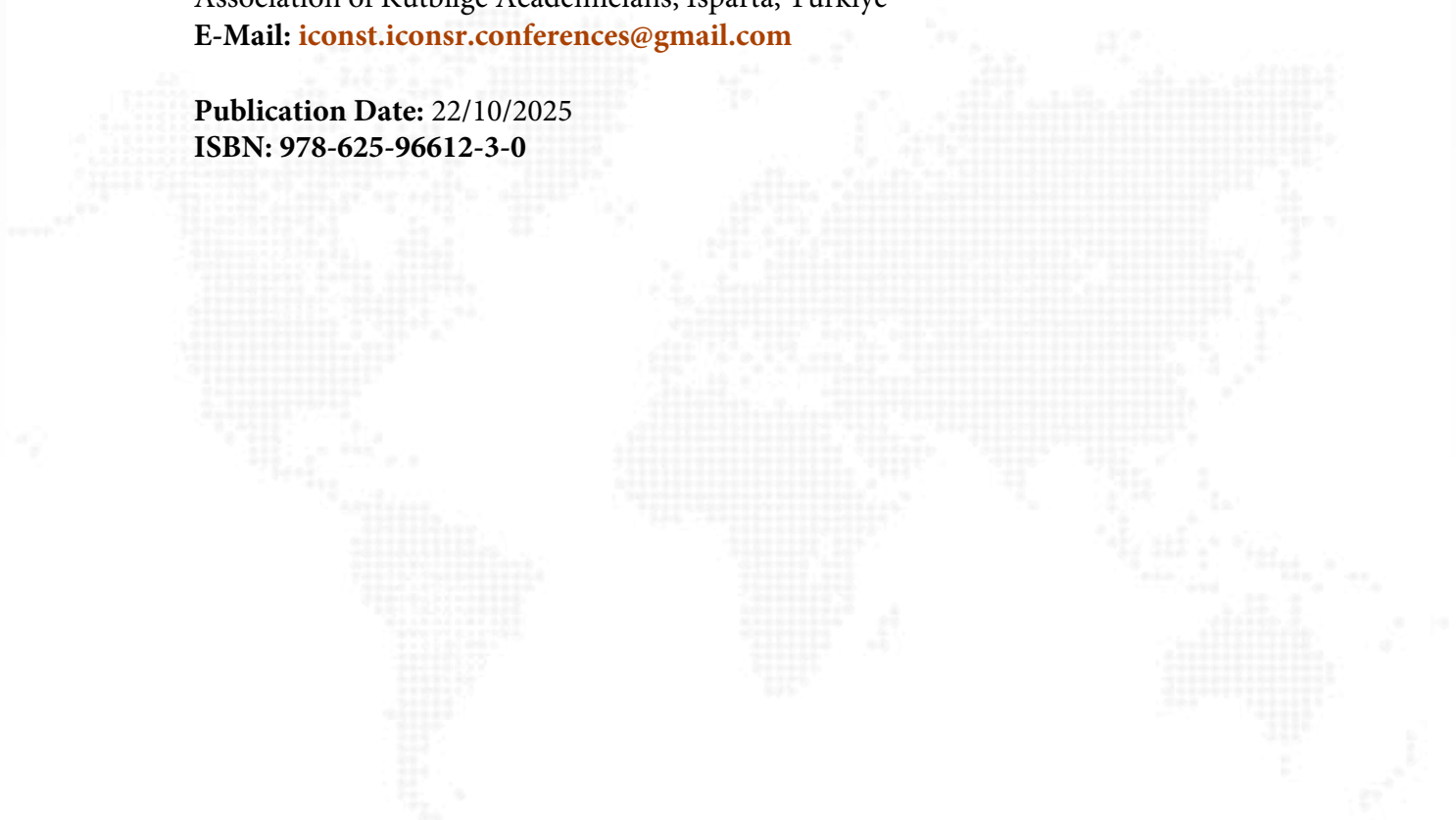
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The 9th of ICONSR organization was held in Kotor/Montenegro between September 3-5, 2025. ICONSR organizations aim to provide and encourage interdisciplinary interaction by bringing together scientists from all disciplines of social sciences. We try to provide a discussion and meeting environment for those working in the field of social sciences to share their research findings and thoughts, and to evaluate the latest developments in social sciences.

This year, 40 papers from different 7 countries (Albania, Azerbaijan, Hungary, Iran, Kosovo, Montenegro and Türkiye) presented by scientists in ICONSR organizations. Turkey is the country with the highest participation with 46%, Outside of Türkiye participant rate is totally 54%.

As ICONSR organizations, we will continue to organize organizations with the value you deserve in order to exchange ideas against the greatest threat facing humanity, to inspire each other and to contribute to science. See you at your future events.

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Analysis of G20 Countries' Digital Diplomacy Performance from a Business Management Perspective Using Multi-Criteria Decision-Making Methods

HANDE EREN*¹, GÖZDE SUNMAN²

Abstract: Digitalization is transforming the ways in which states exert influence on a global scale, and this transformation encompasses not only foreign policy practice but also areas that intersect with business disciplines such as strategic communication, digital brand management, and international perception building. In this context, digital diplomacy is increasingly taking on a multidisciplinary nature and is considered not only a political but also an administrative and institutional strategic tool. This study aims to compare and analyze the digital diplomacy performance of G20 countries and reveal the strategic importance of these performance indicators from a business management perspective. In analyzing this structure, which requires a comprehensive assessment of numerous criteria of varying importance, Multi-Criteria Decision Making (MCDM) methods were utilized. The criteria obtained from the 2023 Digital Diplomacy Index (DDI) published by Reputation Squad were weighted using the Standard Deviation (SD) method, and countries were ranked using the ARAS (Additive Ratio Assessment) method. The analysis revealed that the countries with the highest digital diplomacy performance were the US, India, and Russia, while South Korea, Argentina, and South Africa ranked last. As a result of the analysis performed using the SD method, momentum (continuity and strategic timing) was identified as the criterion with the highest importance level. In this context, the US's position at the top of the list reflects not only its high capacity for digital diplomacy, but also its ability to dynamically update its digital strategies and respond to global developments in a timely manner. The decisive role of the momentum criterion reveals that elements such as timing, agility, and strategic alignment are prominent in the field of digital diplomacy. This situation offers important insights not only in terms of public policy but also in terms of businesses' digital transformation strategies, showing that actors who can adapt quickly to the changing digital environment have a higher chance of gaining a competitive advantage. The research results reveal that countries at the forefront of digital diplomacy (the US, India, and Russia) focus on critical elements such as strategic agility, dynamic capacity, and timing (momentum). In particular, the fact that the momentum criterion has the highest weight emphasizes the decisive role of speed and adaptability in digital transformation processes. From a business management perspective, these findings indicate that strategic agility provides a competitive advantage, effective digital communication strengthens corporate reputation, and data-driven decision-making mechanisms are critical in performance evaluation. Furthermore, it demonstrates that digital maturity and technology integration are necessary for sustainable competitiveness. The results of the study highlight the need for businesses to develop dynamic competencies in their digital transformation processes and adopt strategies that are in line with global trends, thereby making important contributions to both academic literature and practitioners.

Keywords: Digital Diplomacy Performance, Business Management, Multi-Criteria Decision Making Methods, G20 Countries

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Environmental sustainability and environmental costs: The Isparta Example

NİLÜFER NEGİZ¹, CEYDA ŞATAF²

Abstract: The concept of sustainability is generally used in the literature to describe a pattern of behavior or preferences. Keleş (2017: 21) defines sustainability as "continuous and balanced development" and as "an environmentalist worldview that aims to achieve economic development without sacrificing the principle of using environmental values and natural resources in a wasteful manner, using rational methods, and considering the rights and benefits of present and future generations." The ability to live in harmony with the opportunities and resources nature provides makes establishing a reciprocal balance inevitable. The emphasis here is on a "sustainable environment." Because the resources nature provides are finite, renewable energy sources such as solar and wind must be dominant in the production process in addition to these resources. Not only this, of course, but the increasing pace of the human population should also force humanity to do so. For a sustainable environment, sustainable development should be the primary goal for the world's future. Environmental sustainability will be achieved through the implementation of public policies and administrative will. In this context, both central and local governments are key implementers in combating environmental problems and ensuring environmental sustainability. Given that a large portion of the population lives in cities, urban administrations are crucial in combating environmental problems. This study focuses on local administrations, whose environmental responsibilities are legally defined to ensure environmental sustainability. Laws numbered 2872, 5216, and 5393 regulate the environmental services and responsibilities of municipalities. A review of local government legislation reveals that municipalities incur costs related to: a) Waste Management Costs, b) Water and Sewerage Service Costs, c) Environmental Planning and Environmental Regulation Service Costs, and d) Environmental Education, Protection, and Control Service Costs. Environmental services and their costs constitute the primary focus of this study. In this context, the Isparta Municipality is the sample of the study, and a situation assessment is planned by examining Isparta Municipality's environmental services and their costs through strategy documents.

Keywords: sustainability, environmental sustainability, environment, environmental costs.

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Banking and Financial Development in the Balkan Countries: A Theoretical Assessment of Regional Integration and Stability

ERGIN KALA^{1*}

Abstract: The study emphasizes that banking and finance play a critical role not only in capital allocation but also in supporting investment, financial inclusion, and macroeconomic stability in developing and transitioning economies. The literature indicates that the Balkan region has experienced significant financial restructuring due to post-socialist transformation, European Union integration processes, foreign capital inflows, and regulatory harmonization. While financial deepening has supported credit expansion and private sector development, the region has also faced challenges such as financial fragility, external dependency, and institutional vulnerabilities. The study further discusses the role of banking supervision, risk management practices, and digital financial services in strengthening financial stability. It concludes that a balanced and well-regulated banking and financial system is essential for enhancing the competitiveness of Balkan economies and ensuring long-term economic sustainability within the global financial system.

Keywords: Banking, Financial Development, Balkan Countries, Financial Stability, Regional Integration

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A Missed Opportunity? Policy Success, Failure, and the Case of the Digital Transformation Office of the Presidency of Türkiye

SEBIHA DÜZ*¹

Abstract: This study critically examines the rise and institutional dissolution of the Digital Transformation Office of the Presidency of Türkiye (DTO) as a case through which to evaluate the dynamics of digital policy success and failure. Situated within the analytical lens of the public policy cycle—agenda setting, policy formulation, decision-making, implementation, and evaluation—the paper investigates whether the trajectory of the DTO reflects a lack of strategic continuity and institutional resilience in Türkiye’s digital governance framework. The research explores the extent to which the DTO addressed core public policy challenges such as administrative inefficiency, digital inequality, and cybersecurity vulnerability through centralized coordination and digital service integration. Employing a qualitative document analysis method, the study analyzes relevant legislative and strategic policy documents to assess how the institutional role of the DTO evolved over time. Findings suggest that while the DTO initially fulfilled key functions in policy agenda-setting and formulation, its eventual deactivation—absent a transparent transition of authority—resulted in a rupture of institutional memory and undermined policy implementation and evaluation mechanisms. This case illustrates the tension between short-term reformist ambition and the long-term demands of sustainable digital governance. The study concludes that the closure of the DTO signifies a missed institutional opportunity to consolidate Türkiye’s digital transformation within a stable, accountable, and forward-looking policy architecture, revealing a critical gap between normative policy aspirations and enduring administrative capacity.

Keywords: Digital Transformation Office, public policy cycle, policy success, policy failure, Türkiye .

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The Relationship Between Customer Orientation and Organizational Trust: A Conceptual Review of the Mediating Roles of Organizational Identification and Organizational Commitment

MURAT URAY*¹

Abstract: This study discusses the sequential and parallel mediating roles of organizational identification and organizational commitment in explaining the impact of customer orientation on organizational trust within a holistic framework. Drawing on studies published between 1990 and 2025, it argues that customer orientation strengthens employees' perceptions of value congruence, leading to increased identification, which in turn increases affective commitment and ultimately, trust in the organization. The framework also considers direct effects and the "dark side." Boundary conditions include leader-member exchange, perceived organizational support and justice, service climate, cultural context (collectivism and power distance), fairness of reward systems, and changing job designs due to digital transformation. The study recommends multilevel and longitudinal designs, multi-source data, comparative industry samples, and meta-analytic syntheses for future research. It emphasizes the reporting standards of serial/multiple mediation models (CB-SEM and PLS-SEM) that disentangle the relative contributions of identification and commitment. In terms of implementation, it is recommended that values-based communication, fair processes, empowerment, and development-focused HR practices be designed together to achieve internal consistency within the customer-centric discourse, thereby sustainably building trust through identification and commitment.

Keywords: Customer orientation, Organizational trust, Organizational identification, Organizational commitment, Mediation, Theoretical review, Social exchange theory, Organizational identity.

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Acknowledgements: This study is derived from the doctoral dissertation titled Customer Orientation And Organizational Trust Relationship With The Intermediary Role Of Organizational Identification And Organizational Commitment, And A Research

Building Trust in Organizations: A Critical Review of the Customer Orientation, Organizational Identification, and Commitment Literature and a Research Agenda

MURAT URAY*¹

Abstract: This study synthesizes existing knowledge by integrating the customer orientation, organizational identification, and organizational commitment literatures in explaining the building of trust in organizations and offers a future research agenda. Findings suggest that customer orientation fosters identification through value congruence and meaning creation, which in turn strengthens organizational trust through affective/organizational commitment. However, a significant portion of the research suffers from methodological limitations due to cross-sectional designs, self-report data, and conceptual overlap (identification, commitment, and belonging). Measurement heterogeneity (reflective/formative indicators), common method bias, lack of target differentiation (trust in the organization/top management/team), and unclear causal direction are critical gaps. At the boundary conditions, leader-member exchange, organizational justice and support, service climate, psychological safety, cultural dimensions, and the fairness of performance/reward systems are highlighted; on the “dark side,” intense customer pressure, algorithmic management, role conflict, and burnout can erode trust. The following research agendas are recommended: (i) multilevel and longitudinal designs, experimental/field interventions, and experience sampling; (ii) dynamic/online process modeling (latent growth, RI-CLPM, DSEM), configurational approaches (fsQCA), and network analysis; (iii) multi-source data (employee–manager–customer) and the disaggregation of different trust targets; (iv) meta-analytic syntheses and open science applications. In practice, the coordination of values-based communication, fair processes, empowerment, and learning-oriented HR practices are deemed critical for the sustainable establishment of trust through identification and commitment.

Keywords: Organizational trust, Customer orientation, Organizational identification, Organizational commitment, Critical review, Research agenda, Social exchange theory.

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Sustainable Digital Business: Green Practices and Governance Principles in Management Information Systems

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Abstract: This study proposes a management information systems framework that integrates sustainability goals with digital business practices. The aim is to ensure that decisions regarding information technologies are considered not only in terms of cost and speed, but also in terms of environmental and societal impact. The proposed framework consists of five components: strategy alignment, architecture and infrastructure choices, process and supply management, people and culture, measurement and reporting. The study focuses on green practices such as energy-efficient infrastructure use, responsible management of the data lifecycle, waste reduction in software and workflows, prudent allocation of cloud resources, device lifespan extension, and effective management of e-waste. Governance principles emphasize accountability, transparency, stakeholder engagement, risk-based prioritization, and continuous improvement. Institutions are presented with a practical roadmap for clarifying goals, learning through small-scale trials, assessing maturity, and regularly monitoring indicators (energy use, carbon footprint, lifecycle cost, employee engagement). The expected results include reductions in cost and energy consumption, increased operational resilience, strengthened regulatory compliance, and enhanced corporate reputation. The study is conceptual in nature and can be applied across various sectors. It is recommended that it be developed in the future through comparative studies and best practice examples.

Keywords: Sustainable Digital Business, Management Information Systems, Green IT, Governance, Circular Economy, Resource Efficiency, Carbon Management, Corporate Sustainability.

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The relationship between rumination and maternal support in predicting anxiety and depressive symptoms among adolescents: The mediating role of resilience

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Abstract: Adolescence is a time of big changes, and teenagers are more likely to experience anxiety and depression. Rumination, which means thinking repeatedly about negative feelings, can make these problems worse. Maternal support, including warmth, closeness, and emotional care, can help protect teenagers from the harmful effects of rumination. Resilience, or the ability to cope with stress, can also play an important role in reducing the impact of rumination on mental health. This study included 298 adolescents aged 13 to 18. They completed questionnaires measuring rumination, maternal support, resilience, depression, and anxiety. The results showed that higher rumination was linked to more depressive ($r = .47, p < .001$) and anxiety symptoms ($r = .33, p < .001$). Maternal support was linked to lower rumination ($r = -.31, p < .001$) and fewer internalizing problems ($r = -.29, p < .001$). Resilience partially explained how rumination affected anxiety and depression, reducing the effect by about 20%. Teenagers with both high maternal support and high resilience were much less likely to have clinical levels of depression and anxiety compared to those with low support and low resilience. These findings show that maternal support and resilience are important in protecting teenagers from the negative effects of rumination. Programs that improve maternal involvement and help teens build resilience may be very effective in preventing or reducing anxiety and depression.

Keywords: adolescents, rumination, maternal support, resilience, anxiety, depression

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Invisible Borders: New Forms of Immigration and Racism

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Abstract: This presentation aims to theoretically address contemporary forms of racism by exploring the phenomenon of immigration beyond individual experiences, at structural and discursive levels. It focuses on how racism and discrimination faced by immigrants have transformed today and become ingrained in institutional structures. Immigration is not merely a spatial movement; it is also a political process in which the boundaries of the nation-state are reconstituted through identity, citizenship, and belonging. The focus of this presentation is the discriminatory structure increasingly observed in contemporary anti-immigrant discourses and conceptualized as the new racism. Etienne Balibar and Immanuel Wallerstein's (1991) concept of "new racism" suggests that racism, constructed on the basis of classical biological differences, has been replaced by discrimination legitimized through codes such as cultural differences, lifestyle incompatibility, and lack of integration. While this transformation expresses anti-immigrant sentiment within a framework seemingly respectful of universal values, it essentially reproduces an exclusionary social order. However, political and social discourses, particularly in the media, often emphasize immigrants as potential criminals, potential threats, economic burdens, or cultural dangers. Such representations pave the way for the normalization and institutionalization of social prejudices and discrimination. Immigration should be discussed not only as a sociological phenomenon but also as an issue with discursive, political, and ethical dimensions. This necessitates understanding the current transformation of racism and reevaluating immigration policies from a critical perspective.

Keywords: Migration, identity, belonging

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Life Cycle Assessment in Historic Buildings: A Bibliometric Exploration of Global Research Trends (2001–2025)

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Abstract: Efforts to mitigate the environmental impact of the construction sector increasingly rely on analytical tools aligned with sustainability principles. Among these, Life Cycle Assessment (LCA) plays a critical role by quantitatively evaluating the environmental effects of buildings across all life stages, thereby informing design and decision-making processes. However, existing literature predominantly focuses on LCA applications in new constructions, while historic buildings—often recognized as cultural heritage assets—remain underrepresented in this context. This study systematically investigates global academic trends in LCA applications within historic buildings through bibliometric analysis. 310 publications indexed in the Web of Science Core Collection between 2001 and 2025 were examined, based on the keywords “historic building” and “life cycle assessment.” Bibliometric tools such as VOSviewer and the Bibliometrix R package were employed to visualize keyword co-occurrence, source coupling, and author collaboration networks. Thematic classification was conducted semi-automatically using high-frequency keywords. Findings reveal that topics such as energy efficiency, carbon emissions, adaptive reuse, and sustainable restoration dominate the literature, whereas significant research gaps persist in areas like social sustainability, traditional material data, and policy support. The study aims to contribute to interdisciplinary scholarship by promoting scientifically grounded evaluations of the environmental performance of historic buildings and advancing sustainable conservation strategies.

Keywords: Life Cycle Assessment (LCA), Historic Buildings, Sustainable Conservation, Bibliometric Analysis, Cultural Heritage, Environmental Impact

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From Identity to Luxury: The Path to Premium Maritime Destinations

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Abstract: The paper aims to explore maritime identity by considering the sea as an agent of social, cultural, political, economic, and other influences. The subject of research is the role of the maritime identity in the development of luxury premium destinations. The methodological framework is based on a theoretical analysis of examples of countries that have successfully managed and marketed their maritime identities. The findings indicate measures of essential importance for the preservation and enhancement of maritime identity, especially in the context of sustainable destination development.

Special emphasis is placed on the Bay of Kotor, which, through the application of purposefully created marketing and management strategies, could ensure positioning among premium destinations.

Keywords: Identity, maritime destination, marketing

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The digital mobility revolution: Uber and GPS as individual interpretations of project utility

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Abstract: The emergence and spread of digital technologies have fundamentally transformed individual decisions and opportunities related to transportation and travel. Uber, as a location-based service, and GPS, as a universal location infrastructure, have significantly increased and continue to increase the flexibility, safety and efficiency of personal mobility. For individuals, these technologies not only enable faster and more cost-effective travel, but also support quick and efficient everyday travel decisions, reduce information uncertainty, and facilitate personalised route planning and the choice between transport alternatives. Both projects examined are considered pioneering in their respective fields, providing inspiration for other projects and solutions. Using the examples of Uber and GPS systems, the study examines how the interpretation of their usefulness is evolving in the new era of digital mobility. Based on the results of primary research conducted in 2024, this paper aims to show how users from different segments interpret the usefulness of the projects from the perspective of the country and the region, as well as society and the individual, highlighting the main differences and similarities.

Keywords: digital mobility, utility, Uber, GPS, primary research

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The Role Of Social Municipality In The Ageing Process: A Study In Turkey's Three Oldest Provinces

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Old age's described as period in human life that brings with it various physiological, social and economic changes. These changes in human life make life more difficult for some elderly people. In order to eliminate these difficulties, it has become necessary to carry out many studies at central and local government levels. WHO is first initiative that aims to implement concept of active ageing through local governments. In age we live in, the ageing of population in cities makes it necessary for cities to be elderly-friendly. In 2007, WHO outlined the characteristics that an elderly-friendly city should have. In report, WHO identified eight criteria for ageing in cities based on data obtained from the experiences of older adults. These criteria are: outdoor spaces and buildings; transportation and housing needs; social participation, respect, social inclusion; civic participation and employment; communication and information flow; community support; health services. As in rest of world, proportion of elderly population in Turkey is increasing every year, and this demographic transformation requires local governments to play a more effective role in policy-making in field of social assistance and services, in addition to policies of the central government. Most of problems faced by elderly individuals may be related to social and physical fabric of city, such as health, care, transportation, social exclusion, and income security. For these reasons, responsibility of local governments in planning and delivery of services for the elderly is increasing day by day. According to data from TÜİK, proportion of population aged 65 and over will be 10.6% in 2024. The fact that proportion of elderly population exceeds 10.0% of total population is an indicator of ageing of population. Turkey's elderly population has increased at higher rate than other age groups. According to TÜİK 2024 data, three provinces with highest elderly population ratios are Sinop at 20.8%, Kastamonu at 20.2%, and Giresun at 19.1%. Although these provinces are located in Black Sea Region, they share both common and distinct characteristics in terms of rural structure, service provision capacity, and socio-economic indicators.

Keywords: Social municipality, age-friendly city, municipalities.

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Sustainability aspects of living standards and well-being

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Abstract: The sustainability of living standards and well-being has become one of the most important socio-economic issues of our time. Climate change, the depletion of natural resources and the increase in social inequalities are all challenges that are forcing us to rethink the concept of well-being and its sustainability dimensions. In my research paper, I seek to answer the question of the relationship between living standards, well-being and sustainability, and the extent to which members of society perceive and assume the individual responsibility that this entails. The scientific article is basically divided into two parts. In the first part, I will review economic and social indicators that go beyond traditional measures of well-being to include aspects of sustainability and the protection of environmental values. These indicators, such as the GINI or the SSI, provide an opportunity to gain a more comprehensive picture of the interrelationship between well-being and sustainability. This section shows that sustainable development cannot be conceived of as economic growth alone, but also requires the integration of environmental and social aspects. It also highlights the problem of measuring performance in terms of GDP and the need for alternative measures. In the second part of the paper, I present the results of a large sample survey with nearly 5,000 respondents. The survey asked people about their attitudes towards the relationship between living standards, well-being and sustainability, and their sense of responsibility for the preservation or degradation of environmental values. While the majority of respondents perceive that their personal choices and lifestyles have an impact on the state of the environment, this perception is often not matched by active action in everyday practice. The relevance of the research is that societal responses to sustainability challenges can no longer be postponed and that the active involvement of individuals is essential for real change. In addition to individuals, the responsibility of other economic actors should also be highlighted, but for reasons of space, this is not the subject of this paper. This scientific paper is also intended to provide further evidence for the understanding that a happier and more satisfying life can only be achieved if our environmental values are properly protected.

Keywords: sustainability, living standards, well-being, individual responsibility

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Digitalization and Artificial Intelligence in Banking: An Assessment from a Financial Risk Management Perspective

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Abstract: Digitalization and AI-based solutions are radically transforming the understanding of risk management in the banking sector. This study aims to evaluate the effects of these technologies on the financial risk management approaches of banks by examining the existing literature through a compilation method. The assessment is conducted within the framework of six main categories: credit, operational, market, liquidity, legal, and exchange rate risks. Prominent findings in the literature reveal that artificial intelligence-supported applications make significant contributions to reducing credit risk, strengthening operational security and predicting market fluctuations. Furthermore, the advantages provided by these technologies in liquidity management and regulatory compliance are emphasized. However, new risk dimensions such as algorithmic biases, transparency issues, data privacy concerns, and exchange rate volatility are also emerging. Consequently, digitalization and AI-based banking solutions are considered not only tools for technical processes but also a strategic component of financial risk management.

Keywords: Digitalization, Artificial intelligence, Financial risk management, Banking

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Cultural Heritage Tourism and Regional Development: Theoretical Analysis of the Cappadocia Experience

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Abstract: Cultural heritage is addressed as a strategic resource that shapes both local identity and tourist demand, while also serving as a catalyst for economic, social, and cultural development. The literature emphasizes that heritage tourism generates economic benefits through employment creation, income generation, and the diversification of local production and services, particularly in rural and semi-rural regions. In the case of Cappadocia, unique geological formations, rich historical heritage, traditional crafts, and distinctive gastronomy form the core elements of a differentiated tourist experience. These assets not only attract international visitors but also contribute to the preservation of local culture and strengthening of community identity. The study further highlights that cultural heritage tourism supports social cohesion by encouraging community participation, intergenerational cultural transmission, and stakeholder cooperation. Within the framework of sustainability, cultural heritage tourism is evaluated as a strategic instrument in regional development policies by balancing economic growth, cultural preservation, and environmental protection. The study concludes that the integrated management of cultural heritage resources plays a crucial role in achieving long-term, sustainable regional development.

Keywords: Cultural heritage, Regional development, Tourism experience, Cappadocia, Sustainability

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The Relationship between Financial Development and Environmental Sustainability: A Conceptual Approach

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Abstract: This conceptual study examines the relationship between financial development and environmental sustainability within the framework of sustainable economic growth. The literature emphasizes that financial systems function not only as channels for capital allocation but also as key drivers of green investment and low-carbon transition. Financial development is associated with the diffusion of environmentally friendly technologies, the transformation of carbon-intensive sectors, and the promotion of sustainable production and consumption patterns. Within this scope, green finance is discussed through instruments such as green bonds, sustainability-oriented banking models, environmental performance indicators, and ESG practices. The mutual interaction between financial development and environmental performance is considered strategically important for effective climate policies, global economic integration, and long-term environmental sustainability.

Keywords: Financial development, Sustainability, Green finance, ESG, Environmental performance

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Digitalization, Affective Commitment, and Economic Growth: A Theoretical and Strategic Assessment

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Abstract: This study provides a theoretical and strategic evaluation of the impact of digitalization on economic growth by integrating organizational affective commitment and job performance into the digital economy framework. The literature emphasizes that digital technologies transform production processes, enhance innovation capacity, reduce transaction costs, and strengthen global competitiveness. Digital infrastructure investments, digital payment systems, data management capacity, and digital business models are identified as core structural components of contemporary economic growth. In parallel, the study conceptualizes affective commitment as employees' emotional attachment to their organizations, which significantly influences motivation, productivity, responsibility, and technology adaptation in digital working environments. Employees with high affective commitment demonstrate stronger engagement in computer-based work systems, higher acceptance of digital transformation, and superior digital task performance. At the macro level, digitalization affects not only economic growth indicators but also labor qualifications, educational structures, sectoral productivity, regional development patterns, and organizational cultures. The interaction between digitalization and affective commitment creates a multiplier effect on sustainable productivity, innovation performance, customer satisfaction, and long-term institutional success. This study highlights that economic growth in the digital age cannot be explained solely by technological investments but must also be supported by strong organizational commitment and human-centered digital management strategies.

Keywords: Digitalization, Economic growth, Affective commitment, Job performance, Digital economy, Productivity, Organizational culture

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A Theoretical Approach to the Relationship between Organizational Affective Commitment, Job Performance, and Computer-Based Work Systems

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Abstract: This conceptual study examines the relationship between organizational affective commitment and job performance within the context of computer-based work systems and digital organizational environments. Affective commitment is defined as employees' emotional attachment to their organization, expressed through identification, loyalty, and a sense of belonging. In modern workplaces where digital technologies, information systems, and computer-supported work processes dominate, affective commitment plays a critical role in shaping employees' performance outcomes. The literature consistently indicates that higher levels of affective commitment enhance motivation, productivity, responsibility, technology acceptance, and positive digital work behaviors. Employees with strong affective commitment demonstrate higher efficiency in computer-assisted tasks, better adaptation to digital transformation, and stronger engagement in virtual teamwork. Beyond individual performance, affective commitment contributes to organizational cohesion, digital culture continuity, data security awareness, customer satisfaction, and long-term institutional success in technology-driven organizations. The study emphasizes that affective commitment functions as a key psychological driver of sustainable job performance in both traditional and digitally integrated organizational settings.

Keywords: Affective commitment, Job performance, Computer-based work, Digital organization, Organizational culture, Motivation

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Transformational Leadership and Innovation: A Review from a Theoretical Perspective

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Abstract: This theoretical study examines the impact of transformational leadership on organizational innovativeness by synthesizing key approaches in the leadership and innovation literature. Transformational leaders are characterized as visionary, charismatic, and future-oriented individuals who articulate a compelling vision, inspire followers, and support their personal and professional development. Beyond their role in motivating employees, transformational leaders are positioned as agents of change who reshape organizational structures, norms, and processes to create a climate conducive to innovation. The literature indicates that transformational leadership contributes to organizational innovativeness through several interrelated mechanisms. First, this leadership style enhances individual and collective creativity by encouraging autonomy, critical thinking, and openness to new ideas. Second, transformational leaders strengthen psychological safety and trust, which enables employees to take risks, challenge the status quo, and propose unconventional solutions without fear of punishment. Third, they play a key role in fostering a learning organization culture by promoting continuous improvement, knowledge sharing, cross-functional collaboration, and systematic reflection on successes and failures. In this context, the relationship between transformational leadership and innovativeness is analyzed with reference to strategic decision-making, risk management, and knowledge management processes. Transformational leaders integrate innovation into the core of organizational strategy, allocate resources to research and development activities, and support systems that capture, disseminate, and utilize knowledge effectively. As a result, organizations led by transformational leaders are more likely to develop dynamic capabilities, adapt to environmental changes, and sustain competitive advantage through continuous innovation. The study concludes that transformational leadership is not only a behavioral style but also a strategic lever that shapes the organizational climate, structures, and processes required for high levels of innovativeness.

Keywords: Transformational leadership, Innovativeness, Learning organization, Strategic management

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Remote Working and Productivity: A Theoretical Examination of Post-Pandemic Working Models

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Abstract: This theoretical study examines the role of remote working within the post-pandemic labor environment and its effects on employee productivity and organizational performance. Key dimensions such as flexibility, time management, work-life balance, digital infrastructure, and technology-based productivity are evaluated within the framework of contemporary working models. Remote working is discussed as both an opportunity that enhances autonomy and efficiency, and as a challenge that reshapes traditional organizational structures. The study also addresses critical issues associated with remote work, including social isolation, communication difficulties, weakened organizational attachment, and performance monitoring problems. While remote work increases individual flexibility and job satisfaction for some employees, it may also create psychological strain and coordination challenges when not effectively managed. The literature emphasizes that hybrid working models offer a balanced structure by combining the advantages of remote and office-based working. These models are found to better support employee well-being, collaboration, and organizational efficiency simultaneously. The study concludes that remote work has become a strategic component of modern labor dynamics and plays a transformative role in reshaping organizational practices and labor market structures in the post-pandemic era.

Keywords: Remote work, Productivity, Work-life balance, Work models

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The Relationship Between Job Satisfaction and Employee Turnover: A Theoretical Assessment

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Abstract: This theoretical study examines the relationship between job satisfaction and employee turnover within the framework of organizational behavior and labor economics. Job satisfaction is defined as a multidimensional construct shaped by factors such as compensation, working conditions, leadership, career development, internal communication, organizational justice, and value alignment. The literature consistently indicates that low job satisfaction is one of the primary determinants of employee turnover intention and actual turnover behavior. Employees experiencing low satisfaction tend to exhibit reduced motivation, weakened organizational commitment, and lower performance, which increase their tendency to leave the organization. In contrast, motivation, organizational commitment, and perceived organizational support are identified as key mitigating factors that reduce turnover intentions. From an organizational perspective, high turnover rates lead to increased costs, loss of institutional knowledge, and disruptions in operational continuity. This conceptual assessment highlights that maintaining high levels of job satisfaction through effective human resource practices is a critical strategy for reducing employee turnover, ensuring institutional sustainability, and achieving long-term organizational performance.

Keywords: Job satisfaction, Turnover, Labor economics, Institutional sustainability

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Destination Branding and Tourist Perception: A Conceptual Study on Antalya

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Abstract: This conceptual study examines destination branding as a strategic and multidimensional process that plays a central role in shaping tourists' perceptions, preferences, and travel decision-making behaviors. Taking Antalya as a case example, the study evaluates how key components such as brand image, destination identity, perceived quality, and perceived value interact with tourists' experiences before, during, and after visitation. Within this framework, destination branding is discussed not only as a promotional activity but also as a comprehensive communication and positioning strategy that reflects the cultural heritage, natural assets, social structure, and environmental sustainability of a destination.

The study is based on an extensive review of the relevant literature on branding, place marketing, and tourism management. Theoretical findings indicate that a strong and consistent destination brand contributes significantly to tourist satisfaction, emotional attachment, and destination loyalty, while also enhancing word-of-mouth communication and repeat visitation intention. Furthermore, destination branding is shown to support sustainable tourism development by helping to preserve local identity, promoting responsible visitor behavior, and strengthening stakeholder collaboration.

Antalya is presented as a prominent tourism destination that demonstrates the practical outcomes of successful branding strategies in terms of global recognition, market competitiveness, and diversified tourism demand. The conceptual analysis suggests that Antalya's brand positioning, built upon its natural attractions, historical heritage, and tourism infrastructure, plays a decisive role in shaping positive tourist perceptions and maintaining its competitive advantage in international tourism markets. The study concludes that destination branding is a vital tool for long-term regional economic development, tourism sustainability, and the creation of a powerful and distinctive destination identity.

Keywords: Destination branding, Brand image, Tourist behavior, Antalya, Tourism marketing

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Performance Analysis of Tertiary Education Expenditures in Selected OECD Countries

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Abstract: Tertiary education supports economic development by enhancing individuals' knowledge and skill levels. It is also a key factor that promotes social progress and strengthens international competitiveness. High levels of tertiary education attainment and spending are based on various strategic goals and state policies from both domestic and foreign policy perspectives. This study aims to analyze the performance of tertiary education expenditures in selected OECD countries. Eight criteria from 22 countries were evaluated. The first four criteria include public, private, household, and other private institution spending on tertiary education as a share of total education expenditures. The remaining criteria are the percentage of the population with tertiary education, tertiary graduation rate, and public and private spending on tertiary education as a share of GDP. The data consist of the most recent available indicators obtained from the OECD database. In the analysis, the multi-criteria decision-making (MCDM) methods MOOSRA, SAW, and ARAS were employed. A dominance ranking was established based on the results of these three methods, thereby increasing the reliability of the findings. According to the results, the top three performing countries are the United Kingdom, Australia, and Israel. These countries demonstrate the best performance among the selected group in terms of tertiary education expenditures. In conclusion, countries with high levels of tertiary education, which are often aligned with broader economic development policies, are expected to serve as models for lower-performing countries. By examining the investment levels and strategic approaches of these high-performing countries, it is anticipated that others will generate innovative ideas and raise awareness in this area.

Keywords: Performance, MCDM, MOOSRA, SAW, ARAS

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1. INTRODUCTION

Tertiary education refers to the level of education offered after secondary school, encompassing universities, colleges, and postgraduate programs. Investments in this field enable the development of a skilled workforce, thereby enhancing productivity and strengthening innovation capacity. In this way, tertiary education contributes not only to economic growth but also to the enhancement of global competitiveness. Conversely, insufficient investment in this level of education may result in a decline in workforce quality, productivity losses, and a weakening of innovation potential, which in turn negatively affects a country's international competitive advantage.

Highly qualified human capital plays a crucial role in national development. Human capital, which encompasses knowledge, skills, abilities, and education levels within society, constitutes one of the most fundamental production factors in a rapidly transforming and globalizing world. Investments aimed at developing human capital increase the quality of the labor force and foster the creation of new employment opportunities. However, this can only be achieved through a comprehensive and high-quality education system (Arabacı, 2011, p. 101). In Türkiye, the largest share of public expenditures is allocated to education. Nevertheless, factors such as the size of the population benefiting from education, regional disparities, and the ratio of Gross National Product (GNP) lead to various challenges regarding the sufficiency and equitable distribution of allocated resources (Arabacı, 2011, p. 103).

Enhancing investments in education and fostering the development of qualified individuals is of great importance for countries. In this respect, addressing deficiencies in the education system and improving unfavorable conditions play a vital role in raising societal welfare levels (Yurtgiden, 2024, p. 202).

Education, as one of the essential components of human capital, is a multidimensional phenomenon. From an economic perspective, a qualified labor force fosters growth and development. The recognition of education's impact on economic growth emerged particularly with the introduction of endogenous growth models. Investments in education and related initiatives serve as intermediaries for innovation and technological progress within human capital. Consequently, they are widely acknowledged as mechanisms that enhance labor productivity and stimulate economic growth (Köksel & Tecirli, 2023, p. 98).

Investments in tertiary education not only accelerate economic growth but also promote social equity, thereby enhancing countries' global competitiveness. The primary aim of this study is to conduct a performance evaluation of tertiary education expenditures in selected countries. In doing so, the study underscores the significance of tertiary

education and identifies the countries demonstrating the highest performance. Multi-Criteria Decision-Making (MCDM) methods are employed in the analysis. Based on the tertiary education investments of 22 selected countries, a performance ranking was carried out.

A review of the literature on tertiary education highlights its substantial effects on economic growth, employment, social equity, and political structures. The studies reveal that investments in higher education foster skilled labor, increase productivity and innovation capacity, contribute to regional development, and enhance individual incomes. Moreover, tertiary education is noted to partly reduce gender inequality, although the returns vary depending on programs and national contexts (Şerifoğlu & Güney, 2022; Ischy, 2020; Acar, 2022; Taskinsoy, 2012; Çetin & Maral, 2022; Kurt & Gümüş, 2021; Alemdaroğlu, 2022). When examining research on the application of MCDM methods in the field of tertiary education, studies have largely focused on university rankings, site selection, quality criteria assessments, performance ranking, and efficiency evaluations, among other areas (Bougnol & Dulá, 2006; Wu et al., 2012; Güneri Tosunoğlu, 2020; Parlar & Palancı, 2020; Ömürbek & Karataş, 2018; Yadegaridehkordi & Nilashi, 2022; Uluskan et al., 2022).

2. MATERIAL AND METHOD

The fundamental characteristic of Multi-Criteria Decision-Making (MCDM) methods is their ability to evaluate multiple criteria and alternatives simultaneously. These methods facilitate the identification of the most critical criteria by determining the relative importance of the factors included in the analysis. In doing so, they enable the revelation of crucial information that may influence the decision-making process. MCDM methods not only identify the most suitable alternative but also allow for the ranking of alternatives. A wide range of MCDM methods are commonly employed in the literature. Among the principal methods used for ranking alternatives and determining the optimal choice are TOPSIS, MAIRCA, COCOSO, ARONMAN, SAW, MULTIMOORA, MOOSRA, COPRAS, PROMETHEE, ARAS, MAUT, and ELECTRE. The selection of a particular method may vary depending on the characteristics of the data subject to analysis.

SD Method

The SD method was introduced into the literature by Diakoulaki et al. (1995). SD (Standard Deviation) is employed in the solution phase of MCDM methods to determine the importance weights of criteria. While calculating these weights, the SD method conducts an evaluation that is not based on subjective judgments; rather, the results obtained from the method rely on objective weighting. Specifically, the method is used to measure the extent to which the data deviate from their respective means (Akbulut & Şenol, 2021, p. 166). The steps of the SD method are outlined as follows (Jahan et al., 2012, p. 413; Akbulut & Şenol, 2021, p. 166).

The first step of the SD method is the construction of the decision matrix. Following the establishment of the decision matrix, a normalization process is carried out. In this process, Equation (1) is applied for benefit criteria, while Equation (2) is used for cost criteria.

Another step involves calculating the Q_j (standard deviation) values for each criterion, as expressed in Equation (3).

$$r_{ij} = \frac{x_{ij} - x_j^{\min}}{x_j^{\max} - x_j^{\min}} \quad (1)$$

$$r_{ij} = \frac{x_j^{\max} - x_{ij}}{x_j^{\max} - x_j^{\min}} \quad (2)$$

$$\sigma_j = \sqrt{\frac{\sum_{i=1}^k (y_{ij} - \bar{y}_j)^2}{k}} \quad (3)$$

The value \bar{y} presented in Equation (3) represents the mean of the j th criterion, and Equation (4) is used to calculate the weight of importance for each criterion.

ARAS (Additive Ratio Assessment) Method

The ARAS (Additive Ratio Assessment) method was proposed by Zavadskas and Turskis in 2010 (Adalı & Işık, 2016,

$$w_j = \frac{\sigma_j}{\sum_{j=1}^n \sigma_j} \quad (4)$$

p. 128). As one of the Multi-Criteria Decision-Making (MCDM) methods, the ARAS approach compares the utility function values of the identified alternatives with the utility function value of the optimal alternative introduced into the decision problem (Sliogeriene et al., 2013, p. 13). In practice, the proportional similarity of all alternatives to the ideal alternative is calculated (Dadelo et al., 2012, p. 68). The steps of the ARAS method are outlined as follows (Zavadskas & Turskis, 2010, pp. 163–165):

Step 1: Construction of the Decision Matrix

In this step, a row consisting of the optimal values for each criterion is included.

The decision matrix is denoted as X .

$$X = \begin{bmatrix} x_{01} & x_{0j} & \dots & x_{0n} \\ x_{i1} & x_{ij} & \dots & x_{in} \\ \dots & \dots & \dots & \dots \\ x_{m1} & x_{mj} & \dots & x_{mn} \end{bmatrix} ; \quad i = 0, 1, \dots, m \quad j = 0, 1, \dots, n \quad (5)$$

m : represents the number of alternatives,

n : represents the number of criteria

x_{ij} : denotes the performance value of the i th alternative with respect to the j th criterion. i.

x_{0j} : denotes the optimal value of the j th criterion.

If the optimal value for a given criterion is uncertain or unknown in the decision problem, it is determined based on whether the criterion is of a maximization or minimization type, using Equation (6) and Equation (7).

Maximization:

$$x_{0j} = \max_i x_{ij} \quad (6)$$

Minimization:

$$x_{0j} = \min_i x_{ij} \quad (7)$$

Step 2: Normalization Process

The normalized decision matrix, \bar{X} , consists of \bar{x}_{ij} values. These \bar{x}_{ij} values are calculated according to whether the criterion is of a benefit or cost type. If it is assumed that higher performance values of a criterion are preferable, Equation (8) is applied.

$$\bar{x}_{ij} = \frac{x_{ij}}{\sum_{i=0}^m x_{ij}} \quad (8)$$

If it is assumed that lower performance values of a criterion are preferable for the analysis, the process is carried out in two stages. First, the criterion values are converted into benefit-type values using Equation (9), and then the normalized values are calculated using Equation (10).

$$x_{ij}^* = \frac{1}{x_{ij}} \quad (9)$$

$$\bar{x}_{ij} = \frac{x_{ij}^*}{\sum_{i=0}^m x_{ij}^*} \quad (10)$$

Step 3: Weighted Normalized Decision Matrix

Using the determined weights w_j , the weighted normalized decision matrix \hat{X} is obtained. The weight values for each criterion must satisfy the condition $0 < w_j < 1$ and the sum of the weights must satisfy Equation (11).

$$\sum_{j=1}^n w_j = 1 \quad (11)$$

Equation (12) is used to obtain the weighted normalized values \hat{x}_{ij} for the criteria.

$$\hat{x}_{ij} = \bar{x}_{ij} w_j \quad (12)$$

Using the calculated \hat{x}_{ij} weighted normalized values, the weighted normalized decision matrix \hat{X} is obtained as shown in Equation (13).

$$\hat{X} = \begin{bmatrix} \hat{x}_{01} & \hat{x}_{0j} & \dots & \hat{x}_{0n} \\ \hat{x}_{i1} & \hat{x}_{ij} & \dots & \hat{x}_{in} \\ \dots & \dots & \dots & \dots \\ \hat{x}_{m1} & \hat{x}_{mj} & \dots & \hat{x}_{mn} \end{bmatrix} \quad i = 0, 1, \dots, m \quad j = 0, 1, \dots, n \quad (13)$$

Step 4: Optimal Values

The optimal values for each alternative are obtained using Equation (14).

$$S_i = \sum_{j=1}^n \hat{x}_{ij}, \quad i = 0, 1, \dots, m \quad (14)$$

S_i : The optimal function value of the i th alternative

The S_i values of the alternatives are divided by the optimal value S_0 to obtain the K_i utility degrees. This process is carried out using Equation (15).

$$K_i = \frac{S_i}{S_0}, \quad i = 0, 1, \dots, m \quad (15)$$

The K_i ratios take values within the range $[0,1]$. These values are then ranked from highest to lowest to determine the ranking of the alternatives.

SAW (Simple Additive Weighting) Method

The SAW method, also known as the Weighted Sum Method, was proposed by Churchman and Ackoff (1954). This method is based on calculating the weighted sum of each alternative's performance across all attributes (Hadi et al., 2019). The steps of the method are as follows (Zanakis et al., 1998):

Step 1: Construction of the Decision Matrix

The decision matrix is obtained as shown in Equation (5).

Step 2: Normalized Decision Matrix

During the normalization process, Equation (16) is used for benefit-oriented criteria, while Equation (17) is applied for cost-oriented criteria.

$$r_{ij} = \frac{x_{ij}}{\max x_{ij}}, \quad i = 1, \dots, m, j = 1, 2, \dots, n \quad (16)$$

$$r_{ij} = \frac{\min x_{ij}}{x_{ij}}, \quad i = 1, \dots, m, j = 1, 2, \dots, n \quad (17)$$

Step 3: Preference Values

The total preference value for each alternative is obtained using Equation (18).

$$S_i = \sum_{j=1}^n w_j r_{ij} \quad j=1, \dots, n \quad (18)$$

Step 4: Selection of the Best Alternative

Finally, the best alternative is selected. The optimal alternative, A^* , is determined using Equation (19).

$$A^* \in \{A_i^* | = \max S_i\} \quad (19)$$

MOOSRA Method

The MOOSRA method is an MCDM technique developed by Das, Sarkar, and Ray. It is one of the multi-objective and optimization-based methods (Jagadish & Ray, 2014, p. 560). In the MOOSRA method, the total performance values of each alternative are obtained using a simple ratio approach (Balezentienė et al., 2013, p. 85). The steps of the MOOSRA method are outlined below (Jagadish & Ray, 2014, pp. 560–561):

Step 1: Construction of the Decision Matrix

The decision matrix is obtained as shown in Equation (5).

Step 2: Normalized Decision Matrix

Equation (20) is used for the normalization process. The value X_{ij}^* represents the normalized value of the i^{th} alternative with respect to the j^{th} criterion.

$$X_{ij}^* = \frac{x_{ij}}{\sqrt{\sum_{i=1}^n x_{ij}^2}} \quad (20)$$

Step 3: Determination of Alternative Values

The performance values of all alternatives, denoted as (Y_i) , are calculated using the simple ratio of the weighted sums of benefit- and cost-oriented criteria. These performance values are obtained according to Equation (21).

$$Y_i = \frac{\sum_{j=1}^g w_j X_{ij}^*}{\sum_{j=g+1}^n w_j X_{ij}^*} \quad (21)$$

Step 4: Ranking of Alternatives

The ranking of alternatives is obtained using Equation (22), with the highest value considered as the best alternative.

$$Y_i = \frac{\sum_{j=1}^g X_{ij}^*}{\sum_{j=g+1}^n X_{ij}^*} \quad (22)$$

3. RESULTS

In this study, a performance analysis was conducted on tertiary education expenditures of selected countries. The analysis employed the MCDM methods MOOSRA, SAW, and ARAS. Using multiple methods allowed for testing the reliability of the results. The primary advantage of MCDM methods is their ability to evaluate multiple criteria and alternatives simultaneously. In this study, the aim was to evaluate the selected countries and their eight expenditure items in tertiary education concurrently.

Since simultaneous data were available for 22 countries, the analysis was conducted with these 22 countries. The countries considered as alternatives are: the United Kingdom, Australia, Israel, New Zealand, Turkiye, the Netherlands, Spain, Latvia, Lithuania, Portugal, Italy, Denmark, Slovakia, Austria, Norway, Sweden, Estonia, the Czech Republic, Slovenia, Finland, Iceland, and Luxembourg. The data were obtained from the OECD website (OECD, 2025,

<https://www.oecd.org/en/data/indicators/spending-on-tertiary-education.html>) and represent the most recent values available in the OECD database.

The data were analyzed as eight variables, each evaluated as a benefit-type criterion. These variables are: the share of total education expenditures allocated to tertiary education by the government (C1), private sector (C2), households (C3), and other private institutions (C4); the percentage of the population with tertiary education (C5); tertiary education graduation rate (C6); and public (C7) and private (C8) expenditures on tertiary education as a share of GDP. The importance weights of the criteria were calculated using the SD method.

Before applying the SD method, the decision matrix was constructed from the data of alternatives and criteria. The decision matrix is presented in Table 1.

Table 1. Decision Matrix

	C1	C2	C3	C4	C5	C6	C7	C8
Australia	36,28	63,72	51,53	12,19	55,93	36,62	0,68	1,20
Austria	89,88	10,12	3,54	6,57	43,08	40,03	1,64	0,18
Czechia	75,01	18,15	7,38	10,77	34,62	29,11	0,85	0,20
Denmark	83,24	11,54	0,02	11,52	49,01	46,59	1,59	0,22
Estonia	72,10	16,10	6,57	9,53	43,91	29,76	1,09	0,24
Finland	90,36	4,29	0,31	3,98	40,76	38,50	1,45	0,07
Iceland	89,68	7,53	6,83	0,70	40,93	33,06	1,24	0,10
Israel	56,70	43,30	21,24	22,07	46,25	35,96	0,80	0,61
Italy	61,43	36,45	32,91	3,53	29,20	35,27	0,62	0,37
Latvia	58,13	33,27	23,50	9,77	45,88	35,94	0,80	0,46
Lithuania	69,74	26,96	17,39	9,57	58,15	48,27	0,86	0,33
Luxembourg	90,32	5,25	1,33	3,92	60,03	5,85	0,43	0,02
Netherlands	68,47	28,14	15,41	12,73	56,42	39,26	1,21	0,50
New Zealand	57,86	42,14	30,87	11,27	44,09	36,88	0,95	0,69
Norway	91,69	6,70	4,05	2,65	56,43	45,81	1,82	0,13
Portugal	60,67	30,78	26,81	3,98	44,44	44,46	0,77	0,39
Slovak Rep.	73,78	23,88	10,88	13,00	39,11	27,15	0,78	0,25
Slovenia	80,93	14,44	11,50	2,94	47,30	42,15	1,01	0,18
Spain	65,81	32,47	30,38	2,09	50,51	54,88	0,96	0,47
Sweden	84,12	11,46	1,22	10,24	52,30	31,93	1,34	0,18
Türkiye	68,81	30,06	13,98	16,08	41,25	59,13	1,06	0,46
United Kingdom	24,67	71,89	54,40	17,48	57,70	42,45	0,51	1,48

Following the construction of the decision matrix, the steps of the SD method were sequentially applied to conduct the analysis. The resulting importance weights of the criteria, obtained at the final stage of the analysis, are presented in Table 2.

Table 2. Importance Weights of Criteria Calculated Using the SD Method

	C1	C2	C3	C4	C5	C6	C7	C8
Weights	0,1272	0,1306	0,1403	0,1272	0,1285	0,0983	0,1298	0,1181

Examining the importance weights of the criteria, the criterion with the highest significance was C3 (household expenditures as a share of total education expenditures), with a weight of 0.1403. A visual representation of the importance weights of the criteria is presented in Figure 1.

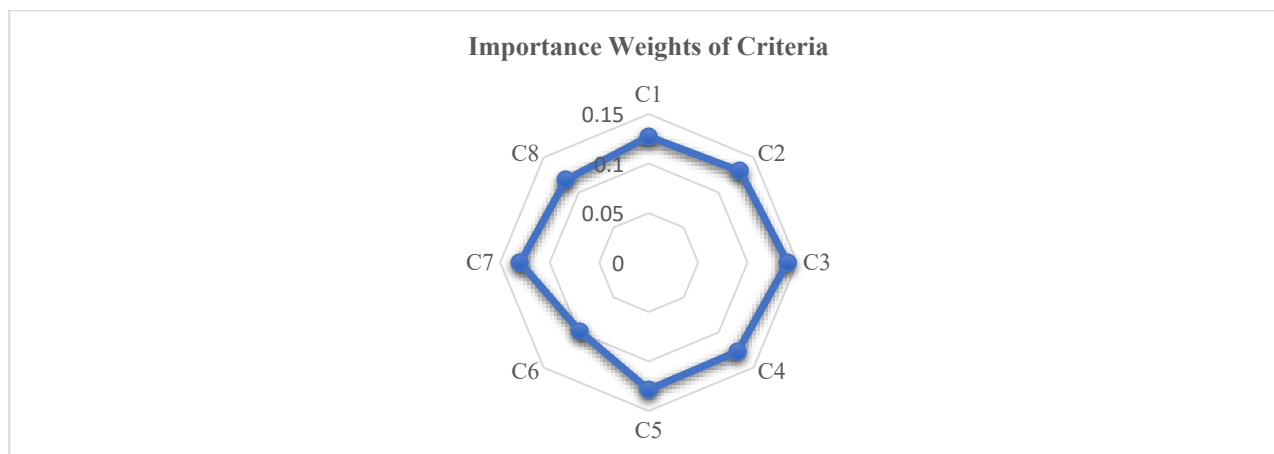


Figure 1. Importance Weights of the Criteria

The calculated importance weights of the criteria were sequentially incorporated into the MOOSRA, SAW, and ARAS methods to conduct the analyses. The final ranking results of the analyses are presented in Table 3.

Table 3. Dominance Ranking According to the MOOSRA, SAW, and ARAS Methods

Ranking	MOOSRA	SAW	ARAS	Dominance Ranking
1	United Kingdom	United Kingdom	United Kingdom	United Kingdom
2	Australia	Australia	Australia	Australia
3	Israel	Israel	Israel	Israel
4	New Zealand	New Zealand	New Zealand	New Zealand
5	Türkiye	Türkiye	Türkiye	Türkiye
6	Netherlands	Netherlands	Netherlands	Netherlands
7	Spain	Spain	Spain	Spain
8	Latvia	Lithuania	Latvia	Latvia
9	Lithuania	Denmark	Lithuania	Lithuania
10	Portugal	Latvia	Portugal	Portugal
11	Italy	Norway	Italy	Italy
12	Denmark	Portugal	Denmark	Denmark
13	Slovak Rep.	Austria	Slovak Rep.	Slovak Republic
14,15	Norway	Sweden	Austria	Austria, Norway
14,15	Austria	Slovak Rep.	Norway	Austria, Norway
16	Sweden	Italy	Sweden	Sweden
17	Estonia	Slovenia	Estonia	Estonia
18	Slovenia	Estonia	Czechia	Slovenia
19	Czechia	Czechia	Slovenia	Czechia
20	Finland	Finland	Finland	Finland
21	Iceland	Iceland	Iceland	Iceland
22	Luxembourg	Luxembourg	Luxembourg	Luxembourg

Based on the results of the analyses, a dominance ranking was established, thereby reinforcing the reliability of the findings through mutual corroboration. According to the dominance ranking, the top three countries are the United Kingdom, Australia, and Israel. These countries demonstrated the highest performance in terms of both the scale and effectiveness of their investments in tertiary education, serving as benchmark models for other nations seeking to optimize their higher education policies and strategies.

4. DISCUSSION AND CONCLUSIONS

Tertiary education expenditures enhance individuals' knowledge and skills, thereby promoting innovation and productivity. Investments in education, particularly in tertiary education, not only accelerate economic growth but also support social equity and strengthen countries' global competitiveness. The findings of this study, along with the policy recommendations derived, focus on optimizing higher education expenditures at the national level and aligning them with strategic development goals.

The study examined eight indicators related to tertiary education for 22 selected countries. The MCDM methods MOOSRA, SAW, and ARAS were employed. Based on the results obtained from these three methods, a dominance ranking was established, which increased the reliability of the findings. According to the results, the top three performing countries are the United Kingdom, Australia, and Israel. These countries demonstrated the highest performance among the selected group in terms of higher education expenditures.

As a result, it is generally expected that countries with high levels of tertiary education, which are often aligned with broader economic development policies, serve as models for lower-performing countries. Analyzing the investment levels and strategic approaches of these high-performing countries suggests that other countries can generate innovative ideas and raise awareness in this domain. Planning higher education investments in alignment with economic and social objectives, promoting private sector contributions to diversify resources, and adapting the practices of the United Kingdom, Australia, and Israel to local contexts are recommended strategies.

Additionally, the study emphasizes the importance of regularly monitoring both the amount and the effectiveness of countries' education expenditures and integrating higher education spending with development and labor policies. The use of MCDM methods in this study provided a comparative assessment of country performance and demonstrated the applicability of these methods in the field of tertiary education evaluation.

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It should be written as short as possible and expressing the contribution made without giving the number.

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Author Contributions

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Conflict of Interest

The authors have no conflicts of interest to declare.

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Fiscal Policy And Fiscal Rules In The European Union

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Abstract: This paper examines the evolution, implementation, and effectiveness of fiscal policy and fiscal rules within the European Union (EU). It provides a critical analysis of the institutional framework governing fiscal discipline, focusing on the Stability and Growth Pact (SGP), the Fiscal Compact, and other mechanisms designed to ensure sound public finances among member states. The study explores the tension between national fiscal sovereignty and supranational oversight, particularly in the context of asymmetric economic shocks and the diverse economic structures across the euro area. Furthermore, it evaluates the challenges posed by the global financial crisis, the European sovereign debt crisis, and the COVID-19 pandemic, which have prompted a re-examination of the flexibility and adequacy of existing fiscal rules. Through both theoretical insights and empirical observations, the paper assesses the trade-offs between fiscal sustainability, economic stabilization, and growth. The findings underscore the need for a more coherent and countercyclical fiscal framework that enhances economic resilience while preserving the integrity of the EU's Economic and Monetary Union (EMU).

Keywords: Central Bank, Monetary Policy, Financial Stability, Inflation Control, Currency Regulation, Financial Supervision, Central Bank Independence

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Intoduction

In his revolutionary work, the godfather of modern fiscal policy, Lord Maynard Keynes, gave a central role to discretion in fiscal policy. Thus, in some ways, he, and even more his followers, who probably pushed his ideas beyond where he would have liked, gave policymakers what many of them had always wanted: a justification for spending more or, in particular cases, for reducing taxes without cutting public spending. A correct or effective discretionary fiscal policy is difficult to pursue because it requires information and attitudes that are often in short supply. When countries try to fine-tune their fiscal policy, they often end up making mistakes. This paper will focus on those difficulties within the European context. It will discuss problems that have not received the attention that they deserve.¹ Since it was first proposed, and then endorsed by the Keynesians, with a revolutionary fervor that at times paralleled that of true religious believers, counter cyclical fiscal policy has been subjected to occasional criticism. Three major lines of criticism can be distinguished. First, there is the existence of various lags. It was noticed from the beginning that there are likely to be lags in: (a) the recognition that fiscal action is needed; (b) in the taking of the action; and (c) in the time that passes between when the action is taken and when the economy begins to feel its effects. These lags reduce the effectiveness of counter-cyclical policy. This criticism was frequently heard in the 1950s and the early 1960s but, although it is certainly valid and important, it seems to have largely disappeared from recent writings. A good discussion of the early criticism can be found in Stein (1969).

The existence of lags may help explain why empirical studies of fiscal policy often find it to be pro cyclical rather than counter-cyclical. See for example, OECD (2004) and IMF (2004). It may be worth while to cite the IMF study: "Discretionary fiscal policies in Euro area countries over the past three decades have generally been pro-cyclical – that is, [they have been] expansionary in good times, contractionary in bad times – thereby undermining the role of automatic stabilizers." (p.111). This was a concern of those who stressed the significance of these lags. For other groups of countries, fiscal policy has also been found to be pro-cyclical. For example, a study of 104 countries found that "fiscal policy is pro cyclical (i.e. government spending increases in good times and falls in bad times ...);" see Kaminsky, Reinhart and Vegh (mimeo, September 2004). Gavin and Perotti (1997) found pro-cyclical fiscal policies for Latin American countries and Talvi and Vegh (2000) found pro-cyclical fiscal policy for the whole developing world. Thus, the problem of pro-cyclicality seems to be common rather than the exception. However, that problem has not been related, in recent writings, to the existence of these lags. It has not reduced the policymakers' and economists' enthusiasm for fiscal discretion and for counter-cyclical fiscal policy. This enthusiasm is largely at the base of the attacks against the Maastricht rules, which are accused of impeding such a policy. Second, there is the criticism associated with the so called Ricardian equivalence. This criticism was often heard in the late 1970s and in the 1980s after Robert Barro reformulated and publicized a theory (first advanced by Ricardo) that had been well known in the Italian literature on public finance for a very long time; (see Barro, 1974). This theory assumes that individuals react to government deficits and public debt by increasing their own savings in anticipation of higher future taxes to repay the debt. By so doing, they may neutralize fully, or at least to some extent, the potential effect on the economy of the fiscal policy action. There has been considerable controversy about the extent of this presumed reaction or compensation on the part of individuals. Some, including Vilfredo Pareto almost a century ago, have been skeptical that individuals have

the foresight to anticipate future tax increases. However, while many economists have rejected the notion of a full compensation, many would agree that there is some compensation. This is more likely to happen now, when the information about the existence of fiscal deficits and public debts is more generally available, than in Ricardo's times.

A recent analysis, conducted by the OECD, has concluded that in OECD countries, "The evidence of partial, yet substantial, direct offsetting movements in private saving is strong. The aggregate initial offset is about half in the short term ... rising to around 70 percent in the long run;" see OECD (2004), p. 143. The third line of criticism can be based on the observation that it is easier to find countries whose economies have grown faster after fiscal contractions than after fiscal expansions. It is, in fact, hard to find specific countries where a counter-cyclical fiscal policy led to a fast recovery from a cyclical downturn. Some would point to the United States after 2001, when record expansionary measures were taken by the Bush administration that, in the view of some observers and claims from the Bush administration, pulled the country out of the downturn. However, in 1993, the country came out of an even steeper down turn while contractionary fiscal measures were being taken, and the expansion of the 1990s became one of the longest in U.S. history. Furthermore, in 2001 to 2002, the Fed took extraordinary measures by reducing interest rates to historically low levels. Work by Giavazzi and Pagano (1996), followed by works by Alesina and Ardagna (1998), Schuknecht and Tanzi (2005) and others, have shown that fiscal contractions can be expansionary for a variety of reasons, but mainly because they reduce the worries about future fiscal developments, thus helping change the psychology of economic agents and investors. "Animal spirits" are certainly influenced by the psychological attitudes of individuals. I would like to add one additional difficulty encountered in the pursuit of counter-cyclical fiscal policies. It is a difficulty, or criticism, based on public choice considerations. An implicit and fundamental assumption of countercyclical fiscal policy is that taxes and public spending can be changed with the same facility in both directions. Thus, there is no bias in the application of Keynesian policies. However, in reality, there is often asymmetry in the use of fiscal instruments, because it is generally far easier, politically, for governments to cut taxes and raise spending, than to do the reverse. This asymmetry tends to lead to structural fiscal deficits and to high debts even in normal periods, as the European experience indicates; see Tanzi (2004). The above criticisms should have reduced the enthusiasm of many for the possibility of using counter cyclical policy in the real world. But apparently they have not. The enthusiasm for discretionary fiscal policy remains strong. In this paper, I will not elaborate on the above criticisms. Rather, I will deal with issues that, though important, have received far less attention, perhaps because they require a kind of insider's knowledge not easily available to many economists who write papers on fiscal policy. These are issues of particular importance for European countries and especially for the application of the Stability and Growth Pact. The rest of the paper is organized as follows. Section II describes the process by which fiscal rules have become progressively more relaxed over the years. They have lost their bite. Section III discusses problems of a practical nature that arise in the real life implementation of counter-cyclical fiscal policy. Section IV discusses briefly fiscal policy in the European Union. Finally, Section V summarizes the arguments and draws some conclusions.

The progressive relaxation of fiscal rules

As a consequence of the Keynesian "revolution," fiscal rules that had traditionally guided fiscal actions were dismissed as archaic or reflecting the views of "dead economists." The proponents of the Keynesian revolution were very critical, especially in the formative years of the 1950s and 1960s, when the "revolution" was in full swing, vis-à-vis these rules and vis-à-vis policymakers who still abided by them. For example, in 1958, James Tobin would state that, "[o]rthodox fiscal doctrines have ... dominated our policies ... and ... have brought the nation to the brink of catastrophe ... (Tobin, 1966, p. 57). The "orthodox fiscal doctrines," alluded to by Tobin, that had guided fiscal policy, at least since Cicero's time, were the "balanced budget rule" and the belief that the level of public spending and of taxes should be as low as possible. These doctrines collided with the Keynesian view that the public sector should be larger and the budget did not need to be in balance.¹

Of course it had always been recognized that when exceptional events occurred, such as wars, major catastrophes, major public works and so on, the balanced budget rule could be broken and was broken. Over the centuries, these events had occasionally led to (temporary) tax increases and to debt accumulation. But, once normal times returned, the governments were expected to fully repay the debts they had accumulated by running fiscal surpluses, to reduce the exceptional spending and taxes, and, as soon as feasible, to return to the balanced budget rule. This "tax smoothing" was consistent with a rule that required zero debt and balanced accounts in normal times. Keynes added the business cycle to the reasons that justify violation of the balanced budget rule. It should be noted, however, that he was writing during the Great Depression, an event that surely qualified as exceptional.² The Keynesians added the normal business cycle (as distinguished from a depression) to the list of events that required the abandonment of the balanced budget

¹ Citing again Tobin, "increased taxation is the price of growth" (ibid, p. 87); and citing Galbraith, the "conventional wisdom of balanced budgets ... [has become obsolete]," Galbraith (1958, p.18).

² During the Great Depression, 25 percent of the American labor force was unemployed. GDP fell from \$97 billion in 1930 to \$58 billion in 1933. Between 1930 and 1941, when the United States entered the war, the fiscal deficit of the US government fluctuated between a surplus of 0.8 percent of GDP in 1930 to a deficit of 5.9 percent of GDP in 1934. For other years, it was generally around 4 percent of GDP.

rule. More recently, the policy makers who met in Brussels in March 2005 and modified the Maastricht arrangements on fiscal policy added, implicitly, a slowdown in economic growth (which is different from a cycle) to the list of events that can justify the abandonment of fiscal rules.³ Some policymakers have been arguing for special treatment, in the fiscal accounts, for a whole range of categories of public spending (public investment, R&D, defense, contributions to the EU, expenditures for structural reforms) or even for reductions in public revenue due to tax cuts. They have argued that these expenditure increases or revenue reductions would justify larger fiscal imbalances. In their view, the measure of the fiscal deficit that should determine whether a country is in compliance with the general Maastricht rules should be corrected to reflect these fiscal actions. Thus, we have been witnessing a progressive slackening of the discipline that used to guide the policymakers in charge of fiscal policy. We seem to have gone from a straight jacket to one that may approach complete laxity. According to this thinking, the relevant gauge for assessing fiscal policy must be adjusted for the effect of the cycle and for that of particular expenditures or even particular tax cuts. The recent relaxation of the Maastricht rules is an almost natural extension of the relaxation of the balanced budget rule that started with the Keynesian revolution. In the early 1960s, a sophisticated version of the Keynesian counter-cyclical fiscal policy introduced the theoretically important distinction between actual revenue and expenditure and their cyclically adjusted counterparts; see The Economic Report of the [U.S.] President of 1962. According to this version, the actual budgetary outcomes could be compared with the counterfactual or virtual budgetary outcomes that would have occurred if the economy had been at its “potential.” The differences between these variables would indicate whether current fiscal policy provided the needed stimulus or whether it was “deflationary” or “expansionary.” It would thus signal whether some restrictive or stimulative policy action was needed. The theory assumed that potential income was a variable that could be estimated objectively (even though it existed only in its virtual form) and that its future growth could be forecast. One could project with some confidence, using past trends, how potential income would evolve in future years and use this projection for determining the needed discretionary fiscal action.⁴ A fiscal policy judged to be sound required a balance between the cyclically adjusted revenue and the cyclically adjusted public expenditure. In other words, it required a balanced budget rule applied to (unobservable) virtual variables.⁵ If these cyclically adjusted variables were not in balance, policy action was required. This policy could be used to stimulate the economy or to slow it down.⁶ If cyclically adjusted revenue exceeded cyclically adjusted expenditure, fiscal policy would justify more spending or less taxation. If the reverse were true, fiscal action would promote less spending or higher taxes. A cyclically adjusted budget that was balanced would, thus, be consistent with an (actual) fiscal deficit in a recession (when “potential” income fell below actual income) and a fiscal surplus during a boom (when actual income exceeded “potential” income).

Built-in stabilizers would make the response of fiscal variables to the cycle more accentuated. They would create larger surpluses in boom time and larger deficits in recession and help reduce the amplitude of the cycles. There was a push in the 1960s to make income taxes more progressive and the taxes on corporations more important because these taxes reacted more to fluctuations in income helping to stabilize the economy. The sensitivity of the tax system to changes in income was a variable that received much attention in the 1960s and 1970s; see for example Tanzi (1969) and Tanzi and Hart (1972). Flat rate taxes and low taxes on enterprises now in fashion, especially in the new market economies of Europe, would reduce the built-in stabilizing properties of the fiscal variables and require larger discretionary actions during business cycles. A “cyclically-neutral” fiscal policy, applied faithfully and correctly, would produce a zero fiscal deficit over the cycle and, thus, would not lead to long-term debt accumulation. The debt accumulated during a recession should be repaid during the upswing. However, with rare exceptions (Luxembourg, Norway, Estonia), countries have ended up with large public debts, even in periods when no major wars, depressions, catastrophes, or big pushes in public works have occurred. This is evidence, if one were necessary, that more constraining fiscal rules are needed. Large public debts divert valuable tax resources toward the servicing of the debt and make it more difficult for countries to have their fiscal accounts in balance. There is some empirical evidence that interest payments on public debts reduce public investment; see Tanzi and Chalk (2000). Some European countries’ authorities have, on the one hand, argued that the high public debt makes it difficult for the country to have good fiscal accounts. On the other hand, they have supported the push towards more fiscal relaxation that could easily lead to the further accumulation of public debt. Furthermore, when public debt is towards foreigners, the cost of servicing it becomes higher and the potential danger associated with it also grows. For economies that had been centrally planned, the public debt is often foreign debt, because they do not have developed domestic financial markets. For these countries, the sustainable public debt is likely to be lower than in more advanced countries with more developed financial institutions; see Coricelli (2005).

Pitfalls in the implementation of discretionary policy

³ In this case, the rule that would be compromised would be the one that constrains the deficit to three percent of actual domestic product.

⁴ At that time, American economists believed that business cycles were well behaved. There were courses on business cycles in universities and these courses explained the average length of cycles and their average amplitude. Also, productivity growth was assumed to be largely a constant.

⁵ That is, it required fiscal balance at potential income.

⁶ By the way, the role of monetary policy in this context was always vague.

Surprisingly, while the theory of counter-cyclical fiscal policy has received a lot of attention over the years, and is routinely taught in economics courses, its implementation has received very little attention. The view must be that what is true in theory must be correct and feasible in practice. Or, alternatively, it is possible that those who teach the theory are not fully aware of the many difficulties faced in its implementation.⁷ In the rest of this paper, I will focus on the practical implementation of the theory. I have little difficulties with the theory itself. In a perfect world, I would want to follow it. But then a perfect world would not have economic fluctuations. Cyclically adjusted fiscal policy compares actual variables (revenue, expenditure, fiscal deficits and even public debt) with counterfactual variables, that is with variables that are not observed and that must, somehow, be estimated as if they existed. This is far more difficult than is assumed. In this process, mistakes tend to creep in, and they may not always be honest or random errors. Furthermore, even the measurement of actual current fiscal variables has proven to be difficult, as Eurostat, now, and the IMF, over many years, have found out.⁸ Thus, it is easy to imagine the difficulties that exist in estimating counterfactual variables. The issues discussed below are complex. They would deserve a more extensive treatment. But I hope to convey a sense of the difficulties. I will discuss first the technical requirements for adopting a counter-cyclical fiscal policy and then focus briefly on political difficulties. Consider first the technical requirements: First, a counter-cyclical policy requires the estimates of “potential” income for the current and relevant future periods. How far is the actual income from the potential income? The theoretical literature assumes that the question can be answered easily. Unfortunately, this is not the case. Business cycles are not well behaved and it is difficult or impossible to determine whether current changes in the growth of income reflect the effect of a genuine business cycle or a change in trend caused by structural obstacles. A good example of this difficulty is provided by Japan. A decade or so ago, when the Japanese economy slowed down, the IMF and the OECD mistook the change in that country’s income for a cyclical slow down, rather than a change in trend. Thus, these organizations strongly and vocally recommended expansionary fiscal policies to inject additional demand. After some hesitations, the Japanese endorsed the recommendation. The result has been that a country that in the early 1990s had by far the best fiscal accounts among OECD countries now has the worst, with a public debt that is 170 percent of GDP and a gaping fiscal deficit that gives no sign of shrinking. This sharp deterioration in the fiscal accounts (a) did not produce any positive effects on the real economy and (b) is likely to constitute a major obstacle to the future growth of that economy.⁹ Are we confident that the recent slowdown in several European countries, and especially in the large ones, is part of a cycle and not the beginning of a new slower growth trend? And are we confident that a relaxation of the Maastricht constraints will stimulate growth and not repeat the Japanese mistake? Second, the pursuit of a correct counter-cyclical policy requires that the effect of the cycle on the fiscal accounts can be isolated from the effect of discretionary changes on the revenue and the expenditure sides of the budget. Most economists do not appreciate how difficult it is to isolate changes in fiscal variables due to discretionary measures (including those of an administrative character) from those due to the cycle. In many countries, this separation is impossible to make, but it is still reported. In many countries, discretionary changes, either of a policy type or, more often, of an administrative type, take place all the time. Especially tax administrations are very active and their activities can have significant effects on tax revenue. This is an area where the US experience has influenced thinking. In the United States, until recent years, and especially on the tax side, there were few if any discretionary changes in most years. Only infrequent tax reforms introduced such changes. The Internal Revenue Service is required to administer the taxes in a consistent way. The policy changes come at discrete times and are highly advertised.

Thus, cyclical adjustments that might have had some justification when applied to the United States have been applied to countries with very different situations. In the footnote to the table that reports the output gap relative to potential GDP, the European Commission cautions that, “Output gaps are often non-observable concepts and can be measured in different ways. Analysis based on them should be treated with prudence.” The IMF warns that, “Estimates of the output gap and of the structural balance are subject to significant margins of uncertainty.”¹⁰ Unfortunately, they do not seem to be treated with “prudence”, and the “significant margins of uncertainty” are ignored. Third, the pursuit of a correct counter-cyclical policy requires the availability of well-established and robust quantitative relationships between public revenue or public spending, on one side, and national income, on the other. These relationships must have been estimated for long periods of time by netting out the effects of discretionary actions, which, as already stated, is often almost impossible to do. These relationships have proven unstable in various situations, as for example in the later years of the Clinton administrations when the profits from the “new economy” distorted tax revenues. Recently, they have also proven unstable in the UK and Germany. Therefore, past relationships may be poor predictors of future

⁷ Once again, I am ignoring here the difficulties connected with lags that did receive attention. I am also ignoring the theoretical criticism associated with the so-called Ricardian equivalence. This criticism dominated the economic literature in the 1980s, but it seems to have almost disappeared from recent discussions.

⁸ Eurostat has recently made embarrassingly large revisions to the deficit estimates for some countries (Greece, Italy) for past years. The IMF has often discovered that the deficits reported for some countries were substantially wrong.

⁹ Also, the emphasis on the fiscal expansion and the pressure on the Japanese coming from the international organizations and from the G-7 countries distracted the Japanese authorities from the major obstacles to growth that were structural in nature. The statements of the G-7 always emphasized the need for a fiscal expansion over the need for structural reforms.

¹⁰ See IMF (September 2004, p. 188).

relationships even in the absence of discretionary changes. When these estimates of past relationships are based on only a few years, as it must be the case for new members of the European Union, they would be particularly suspect.

Finally, the pursuit of counter-cyclical fiscal policy requires a precise determination of where a country is at a given moment. What is its true current fiscal situation?¹¹ Unfortunately, as strange as it may sound, definitive, objective measures of current revenue, spending, fiscal deficit, and even income are often not available. There are practical or even conceptual difficulties in providing these measures and ex post changes in the measures are common and at times embarrassingly large. Estimates of the fiscal deficit were traditionally based on cash payments to and from the government. These are the easiest to calculate when all the flows can be controlled. That is when there are no extra budgetary flows. However, they lend them selves to maneuvers aimed at making the deficits look smaller for given periods, and at times do not cover the whole public sector, but only a part of it. Partly for the first of these reasons and partly because “accrual” concepts are supposed to better reflect the time when the measures have an impact on the real economy statisticians tend to prefer measures based on accrual concepts. Eurostat has favored accrual measures. These, however, are not easy to determine and often can only be determined with considerable lags.¹² Also, there remain several grey areas in the Eurostat methodology that create debates and invite interpretation on the part of the countries’ experts.¹³ A consequence has been that large “revisions” to the estimates are often made years after the data have been provided by the governments. In particular cases (Greece and Italy), these revisions have amounted to several percentage points of GDP. Unfortunately, the revisions are in one direction. They all raise the size of the fiscal deficit suggesting that the errors may not have been purely random. Because of political pressures, the incentives for the national experts have been to interpret the Eurostat rules in ways that tend to reduce the size of the fiscal deficits. A related point is that in some cases, as in Italy, there have been uncomfortably wide differences between the cash measure of the fiscal deficit and the accrual or, better, Eurostat measure. Furthermore, there have been differences even between supposedly conceptually identical definitions, but measured by different institutions. This raises two questions: First, which measure of the deficit is the correct one? Second, which is the one relevant for the pursuit of a counter-cyclical policy? When one measure gives a deficit of, say, two percent of GDP and another a deficit of, say, four or five percent of GDP, which measure should drive counter-cyclical fiscal policy? Unfortunately, these questions have been largely ignored by economists, even though they are fundamental to the conduct of counter-cyclical policy. Consider now the political requirements of an effective counter-cyclical policy. Political cycles must not be present; elections must not influence the fiscal decisions of governments; there must be no incentive to present biased data; and there must not be any incentive to manipulate the data through “financial engineering” or through once-for-all (*una tantum*) measures.

Unfortunately, tax amnesties; sales of public assets; creation (*à la Enron*) of extra budgetary accounts to which some debt is shifted; the assumption of contingent liabilities on the part of the government not shown in the accounts; attempts to push some institutions outside of the budget; postponement of some payments, as for example tax refunds, to creditors; anticipation of some future revenue, for example by pressuring some enterprises in which the government has a controlling interest to anticipate the distribution of dividends; and so on, are only too frequent occurrences, as various papers and the events of some countries have shown; see Koen and den Noord (2005); and Bixi (2005). “Financial engineering” has come to strongly influence fiscal policy. In the ministries of finance of some countries, “financial engineers” have replaced, in influence at least, traditional fiscal experts. Their role is to “package” the financial accounts to make them look better than they are. Unfortunately, some policymakers seem to be more interested in making the accounts look good than at genuinely improving them. At times, they lose the ability to distinguish the genuine accounts from the “packaged” ones. Add to all of this the view, now popular with some policymakers, that fiscal deficits are good for growth (and not just to help a country get out of a temporary recession) and it is easy to see the potential problems encountered when a broadly defined “balanced budget rule” is abandoned. The problems mentioned above become greater when flexibility is introduced in a rule that already allows fiscal deficits of three percent of GDP and public debts of 60 percent or more of GDP. It would be better if the rule required a zero fiscal deficit and a zero public debt as the normal objective recognizing that this objective could not be achieved every year or immediately by countries that started their membership in the European Union by being far from it. The flexibility should be in the speed of transition toward a zero deficit and a near zero public debt and not vis-à-vis much less ambitious goals. When a three percent deficit and a 60 percent debt, as proportions of GDP, are allowed, these tend to become the minimum, as it has happened recently.

Fiscal policy in the EU

The abandonment of a strict interpretation of the whole package of Maastricht rules (excessive deficit provision and procedure plus the Stability and Growth Pact proper) signals a worrisome trend. A few years from now we may be lamenting the recent decisions by the Council of Ministers. But, by that time, other ministers would be on the scene and

¹¹ The fact that this question is now being asked almost daily in countries such as the United States, Italy, Germany and so on indicates that the question is not rhetorical.

¹² This, for example, is the case of health expenditure in Italy.

¹³ The Eurostat methodology is still partly dependent on cash flows and thus it is not purely accrual.

would suffer the consequences of the March 2005 decision taken by their predecessors. The pre-Maastricht period was fiscally friendly. There were no wars, no major catastrophes, and no major depressions in EU countries. There was yet no fiscally unfriendly aging of the population and no, or little, negative impact on tax revenue coming from tax competition and globalization. The economic competition from lower spending and lower taxing countries (China, India, Mexico, other countries from South East Asia) was still very limited. Therefore, in this fiscally friendly, pre-Maastricht period, one would have expected healthy fiscal outcomes for European countries. One statistic is sufficient to convey a sense of fiscal developments in that period. For the 12 EU countries combined, the share of public debt in GDP rose from 31 percent in 1977 to 75.4 percent in 1997. This was a phenomenal change that took place in a fiscally friendly period.¹⁴ With all its faults and possible tricks, Maastricht brought that growth to a temporary stop. Before Maastricht, some among the 12 EU countries were risking to go the Argentine way. The growth in public debt seems to have started again and from a much higher level. Such growth, combined with, or promoted by, higher interest rates, could create a truly worrisome debt dynamic. The bad experiences of many countries with fiscal outcomes, both within and outside Europe, have brought back some interest in fiscal rules. Many different rules have been proposed and some have been introduced into the laws or the constitutions of some countries, including the Netherlands and Poland. But these rules remain controversial because they go against the political and short-run interests of policymakers, who worry about the next elections, and against the entrenched intellectual beliefs of many economists, who have spent too little time in the real world and too many in the Keynesian world. In some way, as Milton Friedman once remarked, at some point, we all became Keynesians. This often means that, when we come to fiscal policy, we pay little attention to structural impediments to growth and we put our faith in an active fiscal policy.

Unfortunately, this policy is often implemented from a position in which the fiscal accounts are already in difficulty and they are already sending worrisome signals to the public. At this point, counter-cyclical fiscal policy is not likely to do much good because whatever stimulative effect it may have on consumers is balanced by the negative effects on investors and economic agents that originate from and accompany deteriorating fiscal accounts. When, for example, a government wants to stimulate an economy by spending more or taxing less, but the message that economic agents receive daily is that the discretionary action will make precarious fiscal accounts even more precarious, why should we expect a positive impact from the fiscal action? The introduction of fiscal rules runs, of course, into the problem of different initial positions. Two countries that have very different fiscal situations cannot be expected, overnight, to move to identical fiscal outcomes. This was, especially, the situation on the public debt in 1997 because of the high debts of Italy, Belgium and Greece. It may be the situation on the fiscal deficit today for Poland, Hungary and some other countries, which start with higher fiscal deficits. Thus, flexibility is required as to the time needed to conform to the rule, but the rule should not be relaxed to the point of making sinning more acceptable for everyone.

Fiscal policy during the the Covid-19 Pandemic

The COVID-19 pandemic triggered one of the most profound economic shocks in the history of the European Union (EU). The crisis tested the resilience and flexibility of the EU's fiscal governance framework, prompting an unprecedented policy response. This chapter explores the impact of the pandemic on fiscal policy and the application of fiscal rules in the EU, with a particular focus on the temporary suspension of the Stability and Growth Pact (SGP), the implementation of extraordinary support measures, and the implications for public debt, economic stability, and long-term fiscal reform.

Before the pandemic, the EU's fiscal governance was guided by the Stability and Growth Pact, which established numerical benchmarks for fiscal discipline: a general government deficit not exceeding 3% of GDP and a public debt ratio below 60% of GDP. These rules were intended to safeguard the stability of the eurozone by preventing excessive deficits and debt accumulation. However, critics had long argued that the rules were too rigid, procyclical, and ill-suited to dealing with asymmetric shocks or supporting growth-enhancing investment.

In March 2020, the European Commission activated the General Escape Clause of the SGP, allowing member states to temporarily deviate from the budgetary requirements of the fiscal framework. This decision provided critical legal and institutional flexibility for governments to implement large-scale fiscal stimulus without the risk of formal sanctions or procedural penalties under EU law.

Member states responded with massive discretionary spending, including wage subsidies, tax deferrals, liquidity support for businesses, and emergency healthcare spending. As a result, average general government deficits soared from 0.5% of GDP in 2019 to over 7% in 2020, while debt ratios rose significantly across the EU, with some countries surpassing 120–150% of GDP.

In addition to national measures, the EU introduced innovative supranational instruments. The most notable was the Next Generation EU (NGEU) recovery fund, a €750 billion package financed through joint borrowing by the European

¹⁴ In the three largest countries of the EU, the debt share of GDP rose as follows: from 26.8 to 61.0 percent in Germany; from 20.1 to 59.3 percent in France; and from 56.4 to 120.2 percent in Italy.

Commission. The Recovery and Resilience Facility (RRF), the main component of NGEU, provided grants and loans to support green and digital transitions and enhance economic resilience.

The pandemic exacerbated existing debt divergences among EU member states. While countries like Germany and the Netherlands maintained high fiscal space, others—such as Italy, Spain, and Greece—faced sharp increases in debt burdens. This divergence raised concerns about long-term debt sustainability and the need for differentiated fiscal strategies.

The temporary suspension of fiscal rules opened a broader debate about the adequacy of the EU's fiscal architecture. Critics argued that the crisis exposed the limitations of the current rules, particularly their inability to accommodate large countercyclical responses and long-term investment needs. As a result, the European Commission launched a review of the economic governance framework, aiming to create a more credible, growth-friendly, and adaptable set of fiscal rules.

The EU's response to COVID-19 demonstrated that flexibility within fiscal rules is both possible and necessary in times of severe crisis. However, a key challenge going forward is restoring fiscal discipline without undermining recovery or public investment. A credible framework must support countercyclical policies during downturns while ensuring debt sustainability in the medium term.

The crisis also highlighted the importance of fiscal solidarity. Joint EU-level borrowing and transfers under NGEU represented a significant shift toward fiscal integration. Sustaining this momentum could pave the way for a permanent fiscal capacity at the EU level, enabling a more coordinated response to future shocks.

Summary

Theories may experience cycles just as economies do. They may be popular at some point in time, then lose their popularity to regain it once again. This seems to have happened to counter-cyclical fiscal policy. The theory became popular in the 1950s and especially in the 1960s. It started to lose some popularity in the 1970s, because of stagflation and the various intellectual attacks on it that came with the Ricardian equivalence, with rational expectation theories, with the implication of the permanent income hypothesis, with technologically based real business cycles, and so on. By the 1980s, that theory seemed to be under retreat. More recently, however, it has made a comeback especially, but not only, at the political level. Political figures have used it to justify more spending, or even cutting taxes, on the grounds that these actions would stimulate growth. In part, the attacks against the Stability and Growth Pact have been justified largely on Keynesian grounds.

The new popularity of this theory is puzzling mainly because it is difficult to find countries where it has clearly worked. In fact, it is easier to find countries where fiscal consolidation seems to have promoted healthier economic performance. Fiscal consolidation may reduce worries and concerns about the future and may stimulate economic decisions that promote growth. However, the promotion of fiscal stimuli, through increases in public spending or cuts in taxes, in situations when the fiscal accounts are already in a precarious state (with high public debts and large fiscal deficits), is likely to produce negative reactions from investors and the public in general. This is especially the case in a world where fiscal policy is continually discussed in the media so that the worries of experts become general worries. This paper has discussed some of these issues. However, the main focus of the paper has been to show that the pursuit of counter-cyclical fiscal policy is, on technical or practical grounds, much more difficult than it is normally assumed, even by economists.

Often, the needed information is not available and the variables often used (potential income, structural balance, fiscal reaction functions, etc.) depend on assumptions that are often wrong. Counter-cyclical fiscal policy should not be abandoned in depressions and it could be tried in milder slowdowns when the fiscal accounts of a country are in good initial conditions (deficit close to balance, debt close to zero). However, there are strong doubts on whether it should be tried by countries that have their fiscal accounts already in precarious conditions. In the view of this writer, fiscal accounts with public debts of 60 percent of GDP and fiscal deficits at three percent of GDP are in a precarious stage. The implications of this conclusion for the Stability and Growth Pact are obvious. But the problem remains of how to introduce more conservative fiscal rules in a situation where the initial conditions are widely divergent and the political decision is to encourage countries to join a monetary union and not wait until their accounts are under control. The paper has concluded that the countries should be given more time to converge rather than relax the long-term standards, as it was done in the March meeting of European ministers. But of course, how to do this needs a lot more thinking.

The outbreak of the COVID-19 pandemic in early 2020 posed an unprecedented challenge to fiscal governance in the European Union (EU), prompting a fundamental re-evaluation of existing fiscal rules and policy frameworks. This study analyzes the EU's fiscal policy response to the crisis, emphasizing the temporary suspension of the Stability and Growth Pact (SGP) under the General Escape Clause and the implementation of large-scale national and supranational fiscal measures. The research explores the implications of this policy shift on public debt levels, fiscal coordination, and economic stabilization across member states. It also evaluates how the pandemic exposed structural limitations in the EU's fiscal architecture, including its capacity to support asymmetric shocks and ensure equitable recovery among

diverse economies. Using comparative case analysis and macroeconomic indicators, the paper demonstrates how fiscal flexibility—combined with strong policy coordination—played a critical role in mitigating the economic fallout of the pandemic. The findings contribute to the broader debate on reforming EU fiscal rules, highlighting the need for a more countercyclical, investment-friendly, and crisis-responsive fiscal framework.

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An Alternative Approach To The Efficient Market Hypothesis: Multifractal Analysis On Hyperliquid Coin Returns

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Abstract: This study examines a cryptocurrency market instrument and uses the Fractal Market Theory (FPT), which holds that investor behavior in financial markets can be modeled without assuming rationality, to examine the fractal characteristics of the Hyperliquid cryptocurrency's returns. In contrast to the Efficient Market Hypothesis (EMH), FPT posits that markets possess long memory and that investor behavior may be inconsistent and fluctuating over time. To facilitate better investing decisions, it is essential to assess if the market structure displays fractal characteristics. This study analyzed Hyperliquid coin, a novel cryptocurrency that has not been previously subjected to similar analyses in the literature. The study employed the Hurst exponent approach to analyze daily returns of the Hyperliquid coin from December 12, 2024, to June 5, 2025. The study yielded a $H(2)$ value of 0.48 and a p-value of 0.000. The proximity of $H(2)$ near, yet beneath, 0.5 signifies that the series exhibits a weak negative autocorrelation, suggesting that the returns are predominantly random. The derived Hurst exponent value and the graphical results from the Multifractal Spectrum study indicate that the Hyperliquid cryptocurrency have a multifractal structure.

Keywords: Multifractal Analysis, Hyperliquid Coin, Fractal Market Theory

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1. INTRODUCTION

The ability to forecast price patterns in stock markets provides several benefits for stock markets, investors, market regulators, and company management alike. Forecasting stock price trends might enhance economic growth by essentially stimulating greater investment influx into the market (Ayyıldız, 2025). This forecast might assist market participants in effectively managing uncertainty and mitigating their risks. Simultaneously, it facilitates the formulation of strategies that are more robust against abrupt market volatility. Consequently, it becomes simpler to safeguard against transient speculative fluctuations and to guarantee enduring stability. It enables investors to make prudent modifications to their portfolios and devise efficient trading methods that will facilitate optimal returns. Furthermore, it can enhance the equitable and effective functioning of the market by offering direction to market regulators for making informed judgments and executing remedial actions. It can also offer company managers the chance to implement appropriate measures to enhance firm value (Mallikarjuna and Rao, 2019). To comprehend stock market operations and formulate investing strategies, price creation mechanisms must be grounded in theoretical principles. Modeling and projecting stock price fluctuations are crucial for investors to make informed financial and investment decisions. The Efficient Market Hypothesis, proposed by E. Fama in 1970, asserts that the value of all assets in the market consistently embodies comprehensive information, hence facilitating the establishment of an efficient market. Similar to the overall economy, in which rational economic agents with complete information do not err, resulting in perpetual market equilibrium, the stock market is characterized as a "efficient" market where prices are consistently aligned with the presumption that they embody complete information (Sönmez, 2021). The Efficient Market Hypothesis, proposed by Fama (1970), posits that, contrary to investors' beliefs, security prices reflect all available information and are inherently unpredictable, rendering technical analysis ineffective. The Fractal Market Hypothesis (FMH), in contrast to the Efficient Market Hypothesis, posits that knowledge will accrue value within the investor's investment horizon. Due to varying investment horizons valuing information differently, the distribution of information will be unequal (Konak and Türkoğlu, 2024). Consequently, as posited by the Efficient Market Hypothesis, prices may not include all available information; rather, they may just represent information pertinent to the specific investment horizon (Peters, 1994). FMH underscores the influence of investors' information and investing horizons on their behavior. The complex characteristics of market structures and investor behaviors enhance the intricacy of financial analysis, necessitating a departure from conventional assumptions. This research investigates if Hyperliquid Coin, present in the cryptocurrency market, exhibits a fractal structure.

2. HYPERLIQUID COIN

Centralized finance (CeFi) denotes the administration and oversight of financial assets inside an organization from a singular hub. CeFi encompasses the orchestration of financial planning and decision-making processes, as well as the development and execution of financial rules and procedures (Beştaş, 2023). Decentralized finance (DeFi) is a financial system that functions on a decentralized network, such as blockchain, utilizing smart contracts to enable transactions

and financial services without middlemen like banks or financial institutions. Hyperliquid Coin is a pioneering cryptocurrency within the decentralized finance (DeFi) sector, enabling trading without gas costs and striving for rapid transaction speeds with its Layer 2 design. The Hyperliquid protocol facilitates high-frequency trading by integrating off-chain execution with on-chain settlement techniques (Hyperliquid, 2025). This framework seeks to mitigate the liquidity, latency, and cost issues encountered by conventional decentralized exchanges. Layer 2 solutions, foundational to Hyperliquid Coin, are sub-chains created to address the capacity constraints of primary networks like Ethereum. These solutions alleviate network congestion by processing transactions off-chain, while ensuring security through the validator mechanism of the primary chain (Buterin, 2021). Hyperliquid enhances the decentralized exchange (DEX) framework by employing these ideas, enabling users to execute seamless transactions. The zero gas cost strategy markedly enhances the efficiency of microtransactions (Kim and Kim, 2024). From a scholarly standpoint, the architecture of Hyperliquid Coin merits analysis from both technical and economic viewpoints. Contemporary DeFi initiatives accomplish sustainability through technology advancements, governance structures, tokenomics, and community engagement (Chen and Bellavitis, 2020).

Cryptocurrencies and digitalization induce profound transformations in conventional financial services. The conventional banking system encounters issues including elevated transaction charges and protracted transaction durations, although cryptocurrencies provide rapid and economical transactions (Huseynli, 2024). Hyperliquid Coin is characterized by its low transaction fees and swift processing powers. Owing to its free gas charge policy, users may engage in more frequent and low-volume transactions, hence removing the significant transaction costs linked to traditional decentralized exchanges. Hyperliquid Coin offers a state-of-the-art and competitive financial instrument for both individual and institutional investors.

3. LITERATURE

In recent years, fractal market theory and the fractal patterns of markets have been rigorously examined. The primary impetus for the rise in research is that markets have deviated from a specific order, particularly in recent years, as a result of the impacts of both the pandemic and cryptocurrency markets. We will discuss markets that analyze fractal markets.

Mulligan (2004) employed five novel fractal analytic techniques to ascertain the Hurst exponent, the Mandelbrot-Levy coefficient, and the fractal dimension to analyze stock price series inside the technology sector. The approaches include rescaled range (R/S) analysis, power spectral density analysis, roughness-length relationship analysis, variogram (or structural function) method, and wavelet-based analysis. The results challenge the weak form of the Efficient Market Hypothesis and demonstrate that market participants are insufficiently equipped to accurately price technology company stocks.

In a 2004 research, Bayraktar et al. analyzed 1.128.360 data points from a dataset comprising minute-by-minute data of the S&P 500 index from 1989 to 2000. The Hurst study yielded evidence of fractal markets. The authors attributed the issue to the rise in online trade. The authors assert that the rise of e-commerce has a tripartite impact, including an increase in the number of small traders, heightened trading activity, and enhanced access of market data.

Norouzzadeh and Jafari (2005) analyzed 2.341 daily returns in their research of the Iran Stock Exchange (TEPIX) from 1995 to 2004. The research, performed using the extended Hurst exponents approach, demonstrates the dependency of $H(q)$ on q , indicating the presence of several fractal processes. Furthermore, according to the generalized Hurst exponents, the authors asserted that the financial market characteristics in Iran do not reflect a mature market.

In Aygören's (2008) study, the daily closing index values of businesses in the ISE-100 Index from 1987 to 2007 were transformed into logarithmic returns, and the 5040-day index returns were analyzed by segmenting them into $N=10$ -day groups. The Fractal Market Theory's validity was assessed utilizing the Hurst exponent. The authors of the study employing the Hurst Exponential analysis approach assert the presence of a fractal structure in the index under examination.

Mensi et al. (2019) investigated the fractal structure of the cryptocurrency market by analyzing the returns of Ethereum and Bitcoin from 2013 to 2018. The studies revealed the presence of a multi-fractal structure in both cryptocurrencies. In a comparable analysis on Bitcoin, Çelik (2020) analyzed the bitcoin returns from 2013 to 2019. Fractal market identification was conducted based on Hurst exponents.

4. DATA AND METHOD

This study utilized the daily returns of Hyperliquid coin from December 12, 2024, to June 5, 2025, to analyze the fractal market structure. Hurst devised a novel statistical coefficient and introduced a methodology to ascertain the Gaussian nature of time series, revealing that several natural phenomena did not conform to a normal distribution (Peters, 1991).

This study will utilize the "H (hurst)" exponent to analyze the fractal structure of hyperliquid currency price fluctuations.

5. FINDINGS

Table 1 presents the categorization material pertaining to the fractal structure of time series. Table 1 indicates that over the Hurst exponent range of $0 < H < 0.5$, the time series exhibits discontinuous behavior, diverges from the mean, and has negative serial correlation, characteristic of the pink noise category. The Hurst exponent $H(2)$ indicates the extent of long-term dependency within the series. The study's findings indicated that $H(2)$ was 0.48 and the P value was 0.000. The proximity of $H(2)$ to 0.5 indicates that the data is predominantly random and lacks a discernible pattern.

Table 1. Classification of Data

Behavior Pattern	Noise Colour	Hurst
Non-permanent, deviating from the mean, negatively correlated	Pink Noise	$0 < H < 0,5$
Normal Distribution (Gaussian Process)	White Noise	$H = 0,5$
Continuous, reinforcing the trend (Hurst Process)	Black Noise	$0,5 < H < 1$

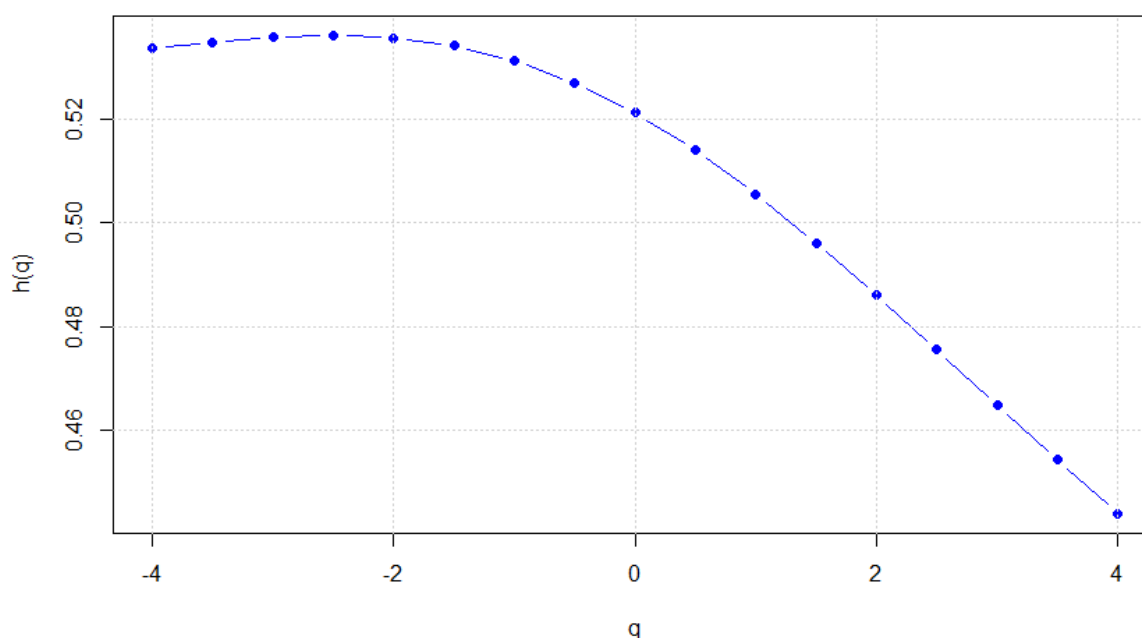


Figure 1. Hurst Exponent

The illustration above depicts the correlation between the generalized Hurst exponent $H(q)$ and the moment degree q . The curve's diminishing shape with increasing degree q indicates that the examined time series possesses multifractal characteristics and demonstrates varying scaling behavior across distinct moments. This indicates that the series has inhomogeneous structures and that variations of varying magnitudes exhibit differing levels of dependency.

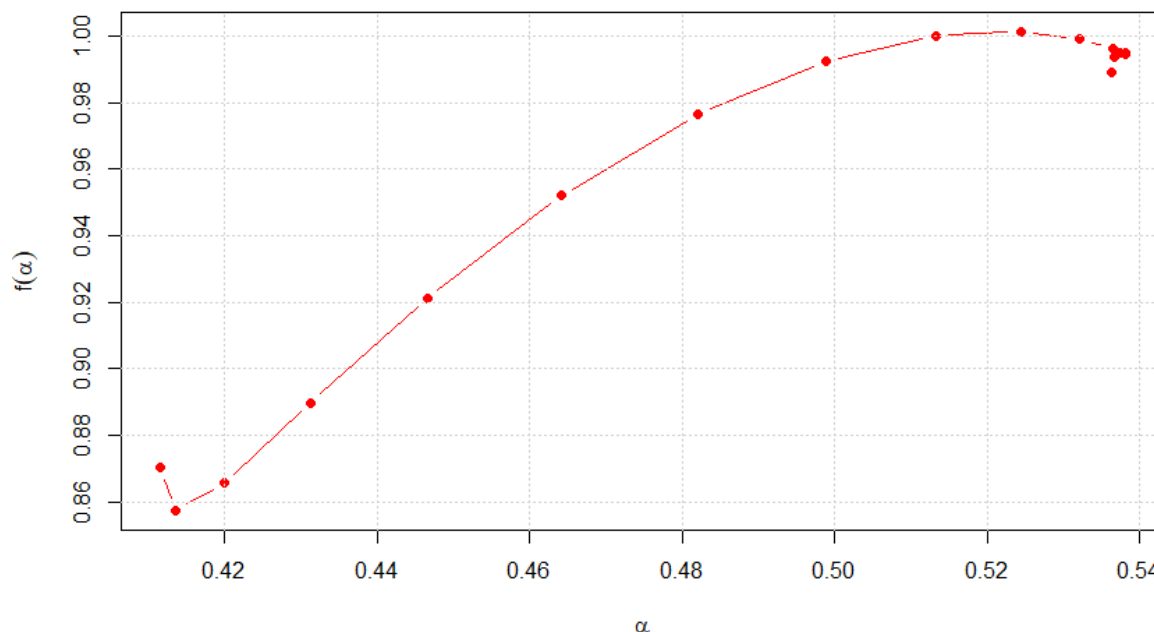


Figure 2. Multifractal Spectrum

The Multifractal Spectrum graph illustrates the Hölder exponent, denoted by α , alongside the associated $f(\alpha)$ values. The convexity of the curve and the peak at $\alpha=0.52$ suggest that the time series exhibits pronounced multifractal characteristics, with the predominant fractal dimension centered in this area. The spectrum's breadth signifies the presence of intricate structures at several scales and shows a high degree of variability.

5. CONCLUSION

Fractal Market Theory, seen as the antithesis of Efficient Market Theory, posits that information derived from the assumption of investor irrationality influences investment behavior. Consequently, to mitigate risk, it is essential for market players to ascertain if the market exhibits long memory, or a fractal structure (Konak and Türkoğlu, 2024).

This study analyzed Hyperliquid coin returns from December 12, 2024, to June 5, 2025, employing the Hurst exponent approach. The study's findings indicated that $H(2)$ was 0.48 and the P value was 0.000. The proximity of $H(2)$ to 0.5 suggests that the data is predominantly random and lacks a discernible trend. The Hurst Exponent and Multifractal Spectrum plots indicate that the analyzed cryptocurrency exhibits a multifractal structure. The volatility of the analyzed cryptocurrency fluctuates over time. This necessitates that investors in this coin use chaotic analysis rather than conventional procedures.

Ethics Committee Approval

As the study does not involve the use of primary data, approval from an ethics committee is not necessary.

Author Contributions

This manuscript was cooperatively authored by all authors, who contributed equally in almost every aspect. A.E., A.A., and E.O. jointly conceptualized the study, developed the methodology, prepared the original draft, and performed an extensive literature review. Together, the authors formulated the research hypotheses and wrote the discussion, implications, limitations, and conclusions. All authors have read and agreed to the published version of the manuscript.

Conflict of Interest

The authors have no conflicts of interest to declare.

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The Relationship Between Usability And Aesthetic in Interaction Design

MIR ALIREZA DARYABEYGI^{1*}, AYIN FAZLOLLAHI¹, SARA MOHAMADZADEH MOGHADAM¹, MIR HOSEIN DARYABEYGI¹

Abstract: This paper has tried to analyze the relationship between usability and aesthetics in the field of Human-Computer Interaction (HCI). This job has been performed by reviewing the recent authentic research papers. Results show that visual aesthetics and its usability play very important roles in determining the success of the product. It may seem difficult to decide which aspect needs to be given more attention when it comes to designing a product as aesthetics is focusing on the 'look' and 'feel' while usability is stressing on its functionalities. Yet, there seems no perfect answer which aspects of the design are more important than the others. In addition, it is also difficult to have a balance between these two seemingly contrary objectives of design. Too much emphasizes of designers on aesthetics can possibly lead to ignoring the usability. The method and tools of this research is document-library and descriptive analytic approach.

Keywords: Aesthetic, Interaction design, Human computer interaction (HCI), Usability, User experience

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INTRODUCTION

This paper investigates the relation between aesthetic and usability in human - computer interaction trying to prove how these two must be considered equally as far as possible. Since recent decades the field of Human-Computer Interaction (HCI) has been searching about this consanguinity and provides some theories. Several of these studies found support for the aesthetic-usability relationship (Hartman, 2008; Lavie and Tractinsky, 2004; Quinn and Tran, 2010). But other studies could not find this relationship (Hassenzahl, 2004; van Schaik and Ling, 2009). Previous studies indicate that aesthetic is an equally significant factor as those already studied in the field of HCI, and its impact on usability has been underestimated. The most HCI researches have attempted to keep a balance between usability and aesthetic considerations (Lavie and Tractinsky, 2004).

As reported by Schenkman and Jansson (2000), the use of web is resolved by three different factors: the provided information, the usability of the website and the given impression to the user. Positive feelings caused by aesthetic can affect on a product's usability. Moreover, considerable attention in the field of HCI and specially in the context of user experience (UX) research, has been paid to the aesthetic of user interface. Numerous studies show the influence of aesthetics on for instance perception of usability (Ben-Bassat, 2006; Thuring and Mahlke, 2007; Tractinsky, 2000) and overall impression (Schenkman and Jonsson, 2000; Tractinsky, 2000; Tuch, 2010).

Aesthetic can be considered one of the most frequently researched dimensions in this field (Bargas-Avila and Hornbaek, 2011).

Kurosu and Kashimura (1995) explored the relationships between a priori perceptions of the ease of use of an automatic teller machine (ATM) which they termed apparent usability and other variables. These variables included factors believed by HCI professionals to enhance usability (termed inherent usability by Kurosu and Kashimura). Another factor included in their study was the perceived beauty of the interface. Tractinsky corroborated Kurosu and Kashimura's findings in a different culture (1997), and removed doubts about potential method bias as an alternative explanation to the high correlation between apparent usability and perceptions of interface aesthetics.

Schenkman and Jonsson (2000), suggested that positive feelings induced by aesthetics can impact how usable a product is. They cite Jordan's (1998) findings for several products, which could engender pleasurable feelings. These products were more usable than those that could not convey some visual attractiveness. Also a high correlation exists between visual aesthetic and a system's perceived usability before, during and after the interaction (Tractinsky 1997). It is also claimed by Norman (2004) that aesthetic design can be even more influential to affect user preference than traditional operational usability. The result obtained by Sara Tung (2012), showed that aesthetic and usability are both important components of good UX design and must play together. Karvonen (2000) mentioned in a paper that simplicity, a key component of usability, could be the connection between aesthetic and usability because simplicity is considered an aesthetic notion as well. As a result, only when all aspects, including aesthetic, usability, goals, business needs, and personals are fully understood, the best user experience can be created.

Human Computer Interaction (HCI)

Human-computer interaction (HCI) researches the design and use of computer technology, focusing particularly on the interfaces between people (users) and computers. Researchers in the field of HCI both observe the ways in which humans interact with computers and design technologies that let humans interact with computers in novel ways. As a field of research, Human-Computer Interaction is situated at the intersection of computer science, behavioral sciences, design, media studies, and several other fields of study. The term was popularized by Stuart K. Card and Allen Newell of Carnegie Mellon University and Thomas P. Moran of IBM Research in their seminal 1983 book, *The Psychology of Human-Computer Interaction*, although the authors first used the term in 1980 and the first known use was in 1975. The term connotes that, unlike other tools with only limited uses (such as a hammer, useful for driving nails, but not much else), a computer has many uses and this takes place as an open-ended dialog between the user and the computer. The notion of dialog likens human-computer interaction to human-to-human interaction, an analogy the discussion of which is crucial to theoretical considerations in the field.

Aesthetic

Aesthetics also known in Greek as Αισθητική, or "Aisthētiké" is a branch of philosophy dealing with the nature of art, beauty, and taste, with the creation and appreciation of beauty. Noam Tractinsky used the term "aesthetics" in its fairly ordinary and common sense as reflected in dictionary definitions such as "an artistically beautiful or pleasing appearance" (The American Heritage Dictionary of the English Language), or as "a pleasing appearance or effect: Beauty" (Merriam-Webster's Collegiate Dictionary). To scholars in the field of HCI at the early 1990's, the idea that aesthetics matter in information technology sounded heretic. Two decades later, in the early 2010s, this thought has conquered a solid place in both academia and industry.

Interaction design

Interaction design, often abbreviated IxD, is "about shaping digital things for people's use", alternately defined as "the practice of designing interactive digital products, environments, systems, and services." Like many other design fields, interaction design also has an interest in form but its main focus is on behavior. What clearly marks interaction design as a design field as opposed to a science or engineering field is that it is synthesis and imagining things as they might be, more so than focusing on how things are. Interaction design is heavily focused on satisfying the needs and desires of the majority of people who will use the product; other disciplines like software engineering have a heavy focus on designing for technical stakeholders of a project.

History of interaction design

The term interaction design was first coined by Bill Moggridge and Bill Verplank in the mid-1980s. It would be another 10 years before other designers rediscovered the term and started using it. To Verplank, it was an adaptation of the computer science term user interface design to the industrial design profession. To Moggridge, it was an improvement over soft-face, which he had coined in 1984 to refer to the application of industrial design to products containing software.

The first academic program officially named as Interaction Design was established at Carnegie Mellon University in 1994 as Master of Design in Interaction Design. When the program started it focused mostly on screen interfaces, but today more on the "big picture" aspects of interaction — people, organizations, culture, service, and system. In 1990, Gillian Crampton Smith founded the Computer-related Design MA at the Royal College of Art (RCA) in London, which changed to Design Interactions in 2005, headed by Professor Anthony Dunne. In 2001, Crampton Smith helped found the Interaction Design Institute Ivrea, a small institute in Northern Italy dedicated solely to interaction design; the institute moved to Milan in October 2005 and merged courses with Domus Academy. In 2007, some of the people originally involved with IDII set up the Copenhagen Institute of Interaction Design (CIID). In 1998, the Swedish Foundation for Strategic Research founded The Interactive Institute - a Swedish research institute in the field of interaction design. Today, interaction design is taught in many schools worldwide. It is also a topic frequently discussed at conferences such as Gamification 2013 held at the University of Waterloo Stratford Campus, where author Stephen P. Anderson discussed Seductive Interaction Design, a fresh approach to designing sites and interactions based on the stages of seduction.

What is interaction design about?

The definition of design from the Oxford English Dictionary captures the essence of design very well: "(design is) a plan or scheme conceived in the mind and intended for subsequent execution." The act of designing therefore involves the development of such a plan or scheme. For the plan or scheme to have a hope of ultimate execution, it has to be informed with knowledge about its use and the target domain, together with practical constraints such as materials, cost, and feasibility. In interaction design, we investigate the artifact's use and target domain by taking a user-centered

approach to development. This means that users' concerns direct the development rather than technical concerns. Design is also about trade-offs, about balancing conflicting requirements. Generating alternatives is a key principle in most design disciplines, and one that should be encouraged in interaction design unlike many design disciplines, interaction designers are not generally trained to generate alternative designs. However, the ability to brainstorm and contribute alternative ideas can be learned, and techniques from other design disciplines can be successfully used in interaction design. For example, Danis and Boies (2000) found that using techniques from graphic design that encouraged the generation of alternative designs stimulated innovative interactive systems design. When users are involved, capturing and expressing a design in a suitable format is especially important since they are unlikely to understand jargon or specialist notations. In fact, a form that users can interact with is most effective, and building prototypes of one form or another is an extremely powerful approach. So interaction design involves developing a plan which is informed by the product's intended use, target domain, and relevant practical considerations. Alternative designs need to be generated, captured, and evaluated by users. For the evaluation to be successful, the design must be expressed in a form suitable for users to interact with. (Jenny Preece, Helen Sharp, Yvonne Rogers, 2002:166-167)

The five challenges of interaction design are as follows:

- **Communication** – The fundamental goal of interaction design is two-way communication between the user and the computer. In this respect, the designers can be thought of as translators, converting the respective languages and modes so they are understandable to both parties. This can often mean more than simple translation in that even the subtleties of communication, such as colloquialisms, must be taken into account.
- **Action and Reaction** – Every instance of communicating involves action and reaction. The action and reaction aspect of interaction design is thought of as the heart of the process. A good designer must anticipate the possible and probable reactions to each action for both sides.
- **Condition** – For communication to be effective, the designer must allow for each party to understand the current condition or state of the other party. When people communicate to each other, part of the communication is assessing the condition of the other, such as emotional state, alertness and readiness to respond. In human-computer relations, the user must understand the condition or state of the device in order to understand if the communication is occurring. In turn, the device must be aware of the condition of the user so it can predict how to reaction to each action or instance of inaction.
- **Flow** – The flow of the communication is mostly centered on the computer side of the interaction. The flow allows the computer to efficiently follow steps and multi-task various operations to make the user experience efficient and easy-to-follow. As a user browses, selects options or activates features, the computer must process the commands and display results while preparing to predict the next possible actions. In most cases, the flow of the computer operation is designed around the flow of human operation.
- **Errors** – All forms of communication inherently involve the risk of miscommunication. The hallmark of effective communication is reducing the risk of miscommunication and efficiently resolving miscommunication that occurs. An interaction designer must predict all forms of miscommunication, mistakes and errors that can occur so they can be effectively handled with minimal disruption in the communication as they occur.

[The Five Dimensions of Interaction Design](#)

Gillian Crampton Smith (in the book *Designing Interaction*) stated that there were four dimensions to an interaction design language. The fifth dimension was added by Kevin Silver.

1D Words

This dimension defines the interactions. Words are the interaction that users use to interact with.

2D Visual Representations

The visual representations are the things that the user interacts with on the interface. These may include but not limited to "typography, diagrams, icons, and other graphics"

3D Physical objects or space

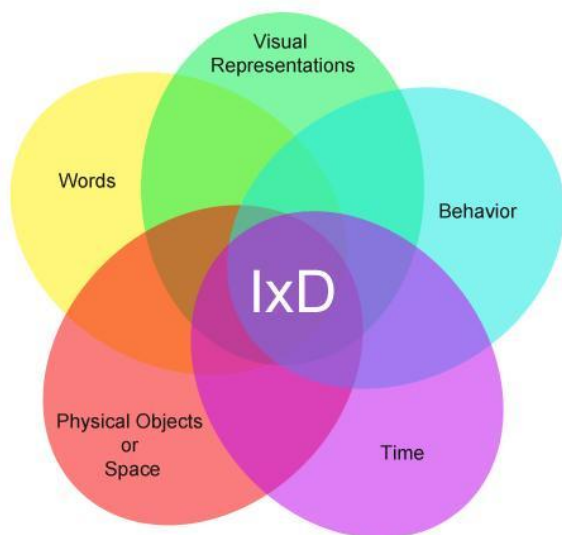
The space with which the user interacts is the third dimension of interaction design. It defines the space or objects "with which or within which users interact"

4D Time

The time the user interacts with the interface. Some examples of this are "content that changes over time such as sound, video, or animation"

5D Behavior

The behavior defines the users' actions reaction to the interface and how they respond to it.



What is usability?

“Is the study of ease of use, of how quickly someone can understand how to use a particular human made object and how easily they can use it”

The Origins of HCI and Usability

Gilbert Cockton (2014) in an article about the origins of HCI and usability stated that HCI and usability have their origins in the falling prices of computers in the 1980s, when for the first time it was feasible for many employees to have their own personal computer (a.k.a PC). For their first three decades of computing, almost all users were highly trained specialists of expensive centralized equipment. A trend towards less well trained users began in the 1960s with the introduction of timesharing and minicomputers. With the use of PCs in the 1980s, computer users increasingly had no, or only basic, training on operating systems and applications software.

However, software design practices continued to implicitly assume knowledgeable and competent users, who would be familiar with technical vocabularies and systems architectures, and also possess an aptitude for solving problems arising from computer usage. Such implicit assumptions rapidly became unacceptable. For the typical user, interactive computing became associated with constant frustrations and consequent anxieties. Computers were obviously too hard to use for most users, and often absolutely unusable. Usability thus became a key goal for the design of any interactive software that would not be used by trained technical computer specialists. Popular terms such as “user-friendly” entered everyday use.

Both usability and user-friendliness were initially understood to be a property of interactive software. Software either was usable or not. Unusable software could be made usable through re-design.

User Experience

Best way to approach UX seems to be from two directions, first from the user’s judgment of their experience and, secondly, from the design perspective to enquire which features or qualities might deliver a high quality user experience (Sutcliffe 2010). Aesthetics is connected to both of these sides. User’s side is about perception and interpretation of beauty and designer’s side is about creating aesthetical interfaces. Conception of UX, when explained from perspective of usage process, has three main components content, the user and context of use.

UX exists when all three parts are present. Interface aesthetics can be described in exactly the same way. Previously mentioned user side is the blue circle which represents human being with all perceptual, cognitive, emotional and affective capabilities. Content (green) represents interactive product with graphical design, interaction logics, information architecture and defined purpose of product. Context (red) means both user profile and conditions of use. Conditions of use depend on displays, input devices, platforms and media but also on surrounding environment (MatiMottus, David Lamas 2013)

What is Our View on the Aesthetics of Interaction?

Caroline Hummels and Kees Overbeeke (2010) have advocated the following points:

1. Design is about our lives, about our being-in-the-world. Fundamental to this is the sensing of the world as an interactive activity in which experiencing the world is primary to any thinking. Therefore, it is necessary to take a scientific and a philosophical stance. As the basis for our stance, we have chosen Gibson's (1986) theory of perception and Merleau Ponty's (2002) view on phenomenology. Both of these claim that the world is inherently meaningful on a sensing or experiential level. Intuition and common sense should therefore be high on the agenda. They should be exploited to the maximum. As Voltaire said, "Le sens commun n'est pas si commun." Common sense is not so common.
2. Reflection comes second: and it is always a reflection on action. A design theory consequently must be a theory of action and the embodied in the first place, and a theory of meaning in the second, not the other way round. Reflection on action is the source of knowledge.
3. Interaction Design nowadays is about interaction with intelligence, i.e., an interaction with the ungraspable. The ungraspable—and here we are talking mainly about the ungraspable quality of many innovations in electronics—has to be made graspable again. Our bodies are mechanical: all interaction is essentially mechanical, or tangible. We have few other ways to interact with the world. Therefore embodiment is essential.
4. Beauty, and thus beauty in interaction, is an experiential and social given. It is not just a quality of an object. It is the way an object speaks to us, calls us, affords us, puts us into contact with others, is meaningful to us, share its inner horizon with us. Thus considered, beauty emanates from our unity with the world. It is pre-reflective.

By taking this radical stance, we hope to reconcile the experiential with the rational, to reconcile feeling with thinking. This may not be the only way, but we believe it is one way to advance Interaction Design towards a truly transformative level, a level that can lead to true innovation—innovation that can contribute to making our lives worth living.

AESTHETICS AND USABILITY

The role of aesthetics in human affairs has been widely documented. Conventional wisdom relates it to our appreciation of, and attitudes towards computer systems as well. However, aesthetics may not always coincide with usability. In fact, the opposite might occur. In one of HCI's most influential books, "The Psychology of Everyday Things", Norman vividly ridicules the tendency of designers to neglect usability in favor of aesthetics. Similarly, others, while acknowledging the role of aesthetics in HCI, warn against a tendency among designers to emphasize the aesthetic elements of the user interface, because these might degrade usability. The contribution of aesthetics to HCI, they argue, should be measured in terms of facilitating information processing, not in terms of engaging the user in a pleasing experience. Perhaps, because aesthetics mainly reflect on the latter, HCI literature in general, and on usability in particular, mostly seem to neglect the aesthetics issue completely.

For example, the indices of 4 prominent HCI textbooks and reading collections do not contain a single entry for "aesthetics" (or synonyms and related concepts such as appearance, attractiveness, beauty or form). Thus, it would appear that mainstream HCI (but, of course, see Laurel for a notable exception) either belittles the importance of aesthetics or ignores it altogether (Noam Tractinsky, 1997).

CONCLUSION

Summing up the results, this study demonstrated once again the tight relationships between users' initial perceptions of interface aesthetics and their perceptions of the system's usability. Relations endure even after actual use of the system. It is believed that these results shed new light on the role of aesthetics in HCI design and its effects on how users experience their interaction with computerized systems. Aesthetic can't be completely ignored as usability experts argue, and can't expect great aesthetic to carry a poor user experience. In a sense the concepts of aesthetics and usability represent two different and related dimensions of HCI. Aesthetics usually refers often to subjective, and affect based experience of system use, whereas usability is commonly measured by relatively objective means and sets efficiency as its foremost criterion. Obviously, more research is needed to assess the possibilities and boundaries of the aesthetics-usability relationships.

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Yeni Nesil Ödeme Yöntemlerinin Vergi Dairesi Vezneleri Üzerindeki Etkisi

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Abstract: With the development of technology, developments and changes are observed in the field of payment methods as in every field. Today, various payment methods have become widespread, from cash payment, which is a traditional payment method, to card payment, from NFC payment to biometric payments. With the developing technology, smartphones, which have been widely used recently, have contributed to the diversification of mobile payment methods. In the literature, there are statements about what new generation payment methods are, the risks that these methods pose, the benefits they provide to their users, and most importantly, their effects on the tax office teller. From this point of view, this study aims to examine the impact of these new generation payment methods on tax office tellers. In this direction, the study discusses the new generation payment methods, the need for these payment methods, the risks and benefits of these payment methods, and ultimately evaluates the relationship between new generation payment methods and tax office tellers.

Keywords: New Generation Payment Methods, Tax Office, Digitalization, Digital Payment Systems, Public Services.

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1. GİRİŞ

Dünya genelinde gelişen ve değişen teknoloji ile ödeme sistemlerinde de değişimler yaşanmaktadır. Söz konusu değişim süreci geleneksel ödeme yöntemlerinden dijital ödeme yöntemlerine geçiş sürecini kapsamaktadır. Bu doğrultuda gelişim gösteren ve kullanımı her geçen gün yaygınlaşan e-para, mobil ödeme, QR kodlu ödeme ve dijital cüzdanlar gibi uygulamalar yeni nesil ödeme sistemlerini oluşturmaktadır. Bahsi geçen ödeme araçları daha kısa zamanda, daha düşük maliyetle ve daha güvenli bir ödeme sistemi meydana getirmekte ve finansal işlemleri kolaylaştırmaktadır.

Dijital dönüşüm süreci, ticari faaliyetlerin elektronik ortama taşınmasına ve dijital yöntemlerinin gelişmesine olanak sağlamıştır. Alınan ürün ve hizmetlerin karşılığının verilebilmesi adına birçok ödeme yöntemi geliştirilmiştir. Geleneksel bir ödeme yöntemi olan nakit kullanımlarından göz tanıma ile yapılan ödemelere kadar birçok ödeme yöntemi ortaya çıkmıştır. Bahsedilen bu ödeme yöntemleri birçok alanda ve sektörde kullanıcılara büyük anlamda kolaylıklar ve faydalar sağlamaktadır. İnsanların ödeme yöntemi tercihleri farklılık gösterebilmektedir. Bazı ödeme yöntemleri fazla tercih edilirken, bazı ödeme yöntemleri daha az tercih edilmektedir. Bu durum da hizmetlerin ve ürünlerin geliştirilmesi aşamasında insanların o teknolojiyi kullanıp kullanmayacaklarının veya kullanmaları durumunda ne tür etkenlerin etki ettiğini belirleyip, hizmetlerin ve ürünlerin ona göre şekil almasını sağlamaktadır.

Vergi dairesi vezneleri ise vergi tahsilatında önemli bir rol oynamaktadır. Fakat yukarıda ifade edilen yeni nesil dijital ödeme araçlarının kullanımının yaygınlaşması ile birlikte vergi dairesi veznelerinin de işlevselliği tartışılan bir konu haline gelmiştir. Vergi dairesinin muhasebe bölümünde yer alan ve ödeme işlemleriyle ilgilenen bu vezneler, yeni nesil ödeme yöntemlerinin yaygınlık kazanmasıyla önemini kaybetmeye başlamıştır. Vezneler, geleneksel bir ödeme yöntemi olan nakit işlemleri ile ilgilenirken, gelişen teknolojiyle insanların yeni nesil ödeme yöntemlerine yönelmesi, bu geleneksel yöntemlerin öneminin giderek azalmasına neden olmuştur. Vergi dairesi vezneleri kavramı, bünyesinde bulundurduğu vergi hukuku kavramını da ortaya çıkarmaktadır. Vergi dairesi veznelerinde, devletin kamu hizmetlerini finansa etmeye yardımcı olan ve kurumlardan alınan vergilerin denetlemelerini yapan bir hukuk dalıdır. Vergi hukuku, devletin gelirini arttırmak ve kamu hizmetlerini finanse etmek açısından büyük öneme sahip bir alandır. Buradan hareketle, yeni nesil ödeme yöntemleri ve vergi dairesi vezneleri üzerindeki etkisini inceleyen bu çalışmada ödeme yöntemlerine yönelik ifadeler ve vergi dairesi vezneleri üzerindeki etkileri ortaya konulmuştur. Çalışmada ilk olarak yeni nesil ödeme yöntemlerinin neler olduğu ile ilgili bilgilere yer verilmiştir. Bu ödeme yöntemlerinin sağladığı yararlar, aynı zamanda oluşturabilecekleri riskler de ortaya konulmuştur. Çalışmanın son bölümünde ise yeni nesil ödeme yöntemlerinin vergi dairesi üzerindeki etkisinin neler olduğuna dair bilgilere yer verilmiştir.

Çalışmanın genel amacı, yeni nesil ödeme araçlarının sektörler üzerindeki etkilerini ortaya koyarken en çok da vergi dairesi vezneleri üzerindeki etkilerini ortaya koymaktır. Bahsedilen ödeme yöntemleri birçok alanda kullanılmaktadır. Bunların kullanılmasındaki amaç, zaman ve maliyet tasarrufu sağlamak, nakit kullanımlarına yönelik talepleri düşürmek, vergi dairesi gibi önemli kamu kurumlarında doğru bilgi aktarımlarının kısa sürede gerçekleştirilmesini sağlamaktır.

2. YENİ NESİL ÖDEME YÖNTEMLERİ VE VERGİ DAİRESİ VEZNELERİ

2.1. Yeni Nesil Ödeme Yöntemleri

Ödeme, bütün taraflar kapsamınca önceden anlaşılmış konu üzerine, anlaşılan oranda hizmet ve mal karşılığında para ya da hizmet aktarımıdır. Takas yolu ile yapılan hizmetler, banka havalesi, kredi kartı, çek, banka kartı ve nakit gibi biçimlerde karşılanabilmektedir. Ödeme, bir hizmet ya da ürün karşılığında para, mal ve hizmet olarak yapılan aktarımdır. Günümüz çağında para sistemleri, ödemelerin para birimleri olarak yapılmasına olanak sağlamaktadır. Ekonomik işlem olanaklarını yalınlaştıran para birimi, ödemelerin yapılabilmesi adına uygun koşulları sağlamakta ve kolay bir biçimde saklayabilmektedir. Ödemeler, taraflar için önemli ya da yarar sağlayan herhangi bir şeyin devredilmesi şeklinde olabilmektedir. Örnek olarak, bir fatura genel olarak bir ödemeden önce gelmektedir. Alacaklılar ödemelerini nasıl kabul edeceklerini önceden belirleyerek ona göre tahsil etmektedirler. Bundan dolayı birçok yasalar, ödeme yapan kişinin, bulunduğu ülkedeki yasaların belirlediği sınıra kadar kabul görmelerini gerektirmektedir. Herhangi bir ödeme aracı, para aktarımını sağlamak amacıyla kullanılagelen elektronik, kâğıt tabanlı ya da diğer şekillerdeki araçlardır. Ödeme araçları, para aktarımı adımlarını ve online ödeme biçimlerini içermektedir (Beck, Pamuk ve Ramrattan, 2018).

Ödeme araçları bir araya gelerek ödeme sistemlerini oluşturmaktadır. Bir ödeme yöntemi, parasal değeri olan bir nesneden ya da kişiden karşı tarafa aktarılmaktan gerçekleştirilen teknolojik işlemlerdir. Ödemeler genellikle hizmetleri, malları ve yasal yükümlülükleri yerine getirmek karşılığında yapılmaktadır. Online ödemeler, kartlar, çek ve nakit gibi farklı ödeme yöntemleri kullanılarak aynı zamanda farklı para birimleri olarak da yapılabilmektedir. Bir ödeme yönteminin özü, değeri aktarmakta olan alacaklı ve borçluları oluşturmak için elektronik mesaj ya da çek gibi nakit unsurları kullanmasıdır. Aktarılmış olunan değer tipik biçimde bankalar ya da diğer finansal kurumlarda saklama hesaplarında saklanmaktadır. Bu noktada bankalar, müşterileri adına ödeme işlemlerini gerçekleştirmek için kullanılan ödeme sistemlerine bağlı kurumlar olarak görev yapmaktadırlar (Klee, 2006).

Ödeme yöntemleri çeşitli kategorilere ayrılmaktadır. Parasal konuda, büyüklük ve küçüklük açısından sınıflandırma yapılması ödeme yöntemlerinin işlem tutarlarına göre farklılık göstermekte ve genel olarak WPS, RPS gibi sınıflarda tanımlanmaktadır. Bu şekilde yapılmış olan bir sınıflandırma, yöntemlerin kullanılma amaçlarını ve hedefe alınan kullanıcı gruplarını belirlemek için önemli bir noktadır. Aynı zamanda, tasarımları yönünden sınıflandırma, ödeme yönteminin teknik olan altyapılarını ve işlem sürecini baz alarak değerlendirmelerde bulunmaktadır. Bu kapsamda RTGS, TDNS ve hibrit biçimindeki yöntemler gibi tasarımlar çeşitli ihtiyaçlara hizmet etmektedir. Parasal büyüklük veya küçüklük konusunda sınıflandırma genellikle daha fazla işlem değerine ve kısa vadeli ihtiyaçları odak noktasına alırken, tasarım temelli sınıflandırma yöntemlerinin risk yönetimlerine, hızlarına ve güvenliklerine odaklanmaktadır. Bahsi geçen her iki sınıflandırma da ödeme yöntemlerinin işleyişlerine dair analitik bir bağlam sunmaktadır.

Günümüz çağında ödeme sistemlerinin dijitalleşmesi, bahsedilen sınıflandırmaları daha da ayrıntılı bir biçimde ele alarak yenilikçi çözümleri bünyesine dahil etmiştir. Büyük meblağdaki ödeme yöntemlerinde gerçek kişilerin dışında daha çok bankalar arası piyasaların gereksinimlerini gidermeye dair faaliyetler gerçekleştirilmektedir. Bu noktada ortaya çıkan ödeme yöntemleri yüksek güvenliğe sahip olmakla beraber, ödeme faaliyetlerinin de zamandan ayrı bir şekilde gerçekleşmesine imkân sağlamaktadır.

Bahsedilen ödeme ile ilgili bilgiler neticesinde ortaya yeni nesil ödeme yöntemleri çıkmıştır. Bu yeni nesil ödeme yöntemleri aşağıdaki gibi belirtilmektedir (Tellez ve Zeadally, 2017):

- **Mobil Ödeme Yöntemleri:** Ödemeleri kolay bir hale getirmek adına mobil cihazların ve bu noktadaki ilgili teknolojilerin kullanılması, mobil ödeme yöntemlerini tamamlayan unsurlardır. Son yıllarda teknolojinin gelişmesiyle birlikte kullanımları artan akıllı telefonlar ile birlikte mobil ödeme yöntemlerinin kullanımı artmıştır. Mobil ödeme yöntemleri kullanımları arttıkça gelişme göstermişlerdir.
- **Kısa Mesaj Servisi (SMS) Yöntemi:** Temel bir bütün olarak SMS kullanılmakta olunan ödeme sistemi, SMS mesajlarının Telekom operatörleri tarafından işlenmesine ve iletilmesine olanak sağlamaktadır. Bu ödeme yönteminde kullanıcılar SMS ile mobil ödeme taleplerinde bulunmaktadır ve gerekli tutar kullanıcıların faturasına ya da mobil cüzdanına yansıtılmaktadır.
- **Biyometrik Teknoloji Yöntemleri:** Biyometrik teknoloji yöntemleri, kişilerin ses, parmak izi, yüz ve iris gibi biyometrik özelliklerinden yararlanmakta olan farklı teknolojileri içine almaktadır. Belirtilmiş olan bu teknolojiler, kullanıcıların kimliklerinin doğrulanmasına imkân sağlayarak ödeme yöntemlerinde yaygın bir biçimde kullanılmaktadır. Bu noktada doğrulama biçimi iki farklı yöntemle sağlanmaktadır. İlk olarak, Ödeme işlemi esnasında kullanıcılar, kullandıkları cihazlarına kayıtlı olan biyometrik özellikleri kullanarak telefonla biyometrik doğrulama işlemini yapabilmektedirler. İkinci olarak da ödeme yöntemleri, kullanıcıların telefonsuz kimlik doğrulamasını gerçekleştiren biyometrik doğrulama cihazlarıyla sağlanmaktadır.

– **Yakın Alan İletişimi (NFC) Teknolojisi Yöntemi:** Cihazlar arasında 4 cm’lik mesafe dahilinde yapılan veri alışverişlerinde NFC teknoloji devreye girmektedir. Bu veri aktarımları NFC teknolojisi sayesinde gerçekleştirilmektedir. NFC teknolojisi yöntemi kullanılarak yapılan ödemeler sırasında, ödemelerin tamamlanabilmesi adına müşterilerin fiziksel olarak POS cihazlarına yakın olmaları ve POS cihazlarının yakınlaştırılması gerekmektedir.

– **Barkod Teknolojisi Yöntemi:** Barkodlar, teknolojik cihazlar sayesinde zahmet içerisine girmeden okunabilen, işlenilebilen, aktarılabilen ve doğrulanabilen bilgilerin görsel biçimlerde saklanabilmesi için geliştirilmiş bir yöntemdir. Teknolojinin gün geçtikçe gelişmesi ve akıllı telefonların kullanımlarının yaygınlaşmaya başlaması ile beraber barkod teknolojisi farklı sektörlerde git gide yaygınlaşmakta olan bir yöntemdir. Barkod yöntemi üç farklı yönteme ayrılmaktadır. Bunlardan ilki işyeri adı, ödeme tutarı gibi bilgileri içeren barkod sistemidir. Bu kodlar okutularak müşteri ödemesini sağlamaktadır. İkinci olarak oluşturulmuş QR kodlar taranır ve müşteri bu bağlamda bir internet sitesine yönlendirilir. Bahsedilen internet sitesi müşterinin alışverişini tamamlayacağı ve ödeme yapabileceği yerdir. Son olarak ise müşteri iş yerinin QR kodunu kullanarak ödeme ayrıntılarını kapsayan kodu tarayarak gerçekleştirilmektedir.

– **Elektronik Fon Transferi Yöntemi (EFT):** EFT, banka çalışanlarının dahil olmadan bir banka hesabından, başka bir banka hesabına elektronik ortam da para aktarımının sağlandığı yöntemdir. Bu aktarım online olarak gerçekleştirildiğinden kâğıt paraya ihtiyaç yoktur. EFT yöntemi, bankadaki hesaplar arasında ya da farklı banka hesapları arasında yapılabilmektedir. EFT yöntemi online olarak gerçekleştirilmesinden dolayı e-ödeme yöntemi olarak da bilinmektedir. EFT olarak görülen farklı işlem biçimleri arasında direkt olarak para yatırma, ATM’ler, bilgisayar bankacılığı gibi alanlarda yer almaktadır.

Gün geçtikçe ve teknoloji ilerledikçe çeşitliliği artan yeni nesil ödemeler yöntemleri genel olarak yukarıda bahsedilen yöntemler olarak görülmektedir. Belirtilmiş olan bu eni nesil ödeme yöntemleri kullanıcılar açısından kolaylıklar sağlamaktadır.

2.2. Yeni Nesil Ödeme Yöntemlerine Duyulan İhtiyaç, Riskler ve Faydaları

Gelişmekte olan dünya ve dünyanın herhangi bir yerinde insanların ihtiyaç duyduğu ve hayatlarını kolaylaştırmaya yönelik yeni ürünler ve tasarlamakta ve üretilmektedir. Ticaret noktasında üretimin oluşturulmasından tüketiciye iletilmesine kadar çeşitli boyutlarda gerçekleşen süreçler de fazla sayıda araçlar bulunmaktadır. Bütün bu araçların birbirlerine yönelik yapmış oldukları ödemelerin güvenli ve hızlı bir biçimde gerçekleştirilmesi önem arz etmektedir. Ödeme süreçleri sırasında meydana gelen eksiklikler bütün alanları ve kişileri etkilemektedir. Sektörlerin bu denli gelişme ve değişme süreçlerinde, ödeme sektörünün de aynı şekilde gelişmelere uyum sağlaması gerekmektedir. İnternet kullanımının yaygınlaşmasıyla beraber dünyanın bir ucundan diğer ucundaki üreticilere taleplerde bulunulmasında ve ürünlerin değerlerinin ne kadar olduğunu diğer tarafa bildirmek noktasında oldukça önemlidir. Uzak bir konumdaki ürünün alım aşamasında hem maddi hem de manevi yönden kayıplar yaşanmaktadır. Ancak yeni nesil ödeme yöntemleri sayesinde bu işlemler daha kolay bir biçimde halledilmektedir. Bu noktada yeni nesil ödeme yöntemlerine duyulan ihtiyaçlar artmaktadır.

Yeni nesil ödeme yöntemlerini kullananların sayıca oranı giderek artmaktadır. Bu nedenle sistemlerin ilerlemesindeki küçük de olsa bir hata, birçok durumu ve kişiyi etkilemektedir. Ödeme yöntemlerinde kısa vadeli planların problemli olmasından, sorumlulukların yerine getirilmemesinden, sistemlerin ilerlemesinden, yönetmelikler veya kanunların uygulanmasında değişikliklerin olması gibi sebeplerden ötürü ortaya çıkabilecek riskler söz konusudur. Oluşabilecek bu riskler aşağıdaki gibi belirtilebilmektedir (TCTB, 2023):

– **Kısa Vadeli Yatırımlar Riski:** Ödeme yöntemi kullanıcılarının vade gününde yerine getirmesi gerektiği sorumluluklar için, gelecekte yapabilecek imkana sahip olsa da yerine getirebilecek fona sahip olmamasıdır. Teknik nedenlerin yanında nakit akışlarında düzensizliklerin olmasından ötürü de bu riskler ortaya çıkabilmektedir. Bunların yanında bazı durumlarda da farklı sorumlulukların yerine getirilmemesine neden olarak kredi riskleri meydana gelmektedir.

– **Kredi Riski:** Sistem içerisindeki iş işleyişini sağlayan görevlilerin hataları, donanım yönünden ya da yazılım yönünden sistemde oluşan hatalar gibi nedenlerden dolayı kredi riskleri oluşmaktadır. Meydana gelen riskler diğer oluşabilecek riskleri de peşinden getirmektedir. Sistemdeki bir katılımcı tarafından oluşan risk, başka bir katılımcının kredi risklerini oluşturabilir ya da ödemelerinin gecikmesine neden olabilir.

– **Yasal Riskler:** Düzenlemelerin veya kanunların beklenilenden farklı olarak yapılması, düzenlemelerden oluşabilecek belirsizlikleri veya ülke dışındaki farklı düzenlemeler ve kanunlardan ötürü meydana gelen risklerdir.

- **Sistemik Riskler:** Bir ya da birden çok katılımcıdan ötürü sistemdeki diğer katılımcıların sorumluluklarını yapamamalarına sebep olması veya buna benzer durumların sistemlerde yer edinmesinden dolayı finansal anlamda risklerin oluşması durumudur.
- **Genel İşletme Riski:** Ödeme sistemleri işleticileri pozisyonunda olan ticari işletmelerin gelir ve gider dengelerinin sağlanamaması meydana çıkan risklerdir.

Yukarıda ifade edildiği gibi bahsedilen risk durumları, ödeme yöntemleri noktasında ortaya çıkabilecek risklerdir. Yeni nesil ödeme yöntemleri kullanıcılarına çeşitli faydalar sağlamaktadır. Mobil ödemeler, QR ödemeleri ve dijital cüzdanlar gibi yöntemler ödeme aşamasında hızlilik ve kolaylık sağlamaktadır. Biyometrik ödeme yöntemleri ise güvenlik yönünden daha güvenilir ödemelerin yapılmasına fayda sağlamaktadır. Aynı zamanda kripto paralar ve düşük maliyetli işlemler, sınır ötesi ticarete maliyet avantajı sağlamaktadır. Yeni nesil ödeme yöntemi, ödemelerin yapılması sırasında pratiklik, zaman tasarrufu, kolaylık, güvenlik, maliyet tasarrufu sağlama gibi yararlarla bulunmaktadır.

2.3. Yeni Nesil Ödeme Yöntemleri ve Vergi Dairesi Vezneleri Arasındaki İlişki

Dijitalleşmenin her alanda gelişmesi ve yaygınlaşmaya başlaması ile birlikte Gelir İdaresi Başkanlığı, vergi ve buna bağlı birçok işlemi dijital ortama taşımaktadır. Bu noktada nakit kullanılmasının azaltılması amacına yönelik ilk adım olarak vergilerin bazı bankalar ile imzalanan anlaşmalar kapsamında anlaşmalı bankalara ödenebilmesi imkanları sağlanmaya başlamıştır.

Gelişen ve değişen ekonomide mükelleflerin istek ve beklentileri de değişmekte, uluslararası faaliyetleri artmakta, yükümlülerin bütün ekonomik faaliyetlerinin kavranabilmesi giderek zorlaşmaktadır. Vergi idaresinin, vergi uygulamalarını daha etkili biçimde yapabilmesi için yeterli teknolojik altyapıların bütüncül bir bakış açısıyla ve bütün kurumlar ile bağlantılı olarak yapılandırılmasına imkân sağlanmaktadır. Güncel dijital teknoloji ve yeni nesil ödeme araçları, vergi güvenliğini sağlayabilen etkili ve hızlı çalışmalar ortaya koyabilen bir gelir idaresi mimarisini oluşturmaktadır. Vergi Dairesi Otomasyon Projesi ile birlikte Türkiye’de 1998 yılından günümüze kadar, kendi içinde sürekli olarak gelişme gösteren teknolojiler ile gün geçtikçe hizmet seçenekleri de gelişen dijital teknolojiler kullanılarak, vergi yönetiminin işleyişi ve vergi mükelleflerinin sorumluluklarını yerine getirebilmeleri imkânı kolaylaştırılmıştır. Bu bağlamda vergi uygulamaları olarak adlandırılan uygulamalar geliştirilmiştir (Vuković, 2018).

Yeni nesil ödeme yöntemleri sayesinde, vergi ödemeleri yalnızca vergi dairesi vezneleri aracılığı ile değil, farklı dijital platformlar üzerinden de yapılabilme şansına sahip olmuştur. Bu platformlar arasında vergi dairesi, e-devlet, dijital bankacılık ve mobil uygulamalar yer almaktadır. Aynı zamanda vergi dairesi vezneleri fiziki ödeme yapmak isteyenlere hizmet vermeye devam etmektedir. Bu nokta da yine kredi kartları ile ödemeleri de sağlamaktadırlar.

Yeni nesil ödeme yöntemlerinin sayesinde vergi ödemelerinin bankalara yapılabilmesinin yanında vergi ödemelerinde nakit kullanımlarının azaltılması hedeflenmiştir. Bu bağlamda kredi kartı kullanmak amacıyla yapılacak olan ödemelerin Gelir İdaresi Başkanlığı’nın internet sistemleri üzerinden sanal POS’lar yardımıyla gerçekleştirilmesi sağlanmıştır (Gökçen, 2005).

Vergi ile ilgili olan ödemelerin doğru ve daha hızlı bir şekilde yapılarak idari birimlere ekonomik kazanımlar sağlanması, vergilerin tahsil edilme oranlarının artmasına ve kayıt dışı ekonomilerin önüne geçilmesi noktasında yeni nesil ödeme yöntemlerinin büyük katkıları olmuştur. Aynı zamanda yeni nesil ödeme yöntemlerinin vergi ödemelerinde kullanılmaya başlanması ile birlikte Gelir İdaresi’nin “Yükümlü Hakları Bildirgesinde” yer alan; güvenilir, açık ve zamanında olması gereken bilgilerin ve hizmetin verilmesi, devamlı olarak yenilenmekte olan hizmet sunmanın arayışı içinde olmak, vergilerle ilgili sorumlulukların yerine getirilmesi noktasında sorumlu kişilere bütün kolaylıkların sağlanabilmesi gibi durumların en iyi şekilde yerine getirilmesi hedeflenmiştir.

Yeni nesil ödeme yöntemlerinin vergi ödeme aracı olarak kullanılabilmesi noktasında teknolojik ve hukuki altyapı çalışmaları gerçekleştirilerek, vergi gelirlerinin kısa zamanda kolay bir şekilde gerçekleştirilmesi sağlanmıştır. Yeni nesil ödeme yöntemlerinin git gide yaygınlaşmaya başlaması küresel anlamda havale, nakit ve kredi kartı ile vergi ödemelerinin gerçekleştirilmesine olanak sağlamıştır. Gelir idaresinin vizyonundaki ilkelere uygun olacak biçimde yükümlülere daha kaliteli hizmetlerin sunulması, daha iyi bilgilendirilmeleri, iş gücü alanında tasarrufun sağlanması, vergi tahsillerindeki oranların artırılması, güvenli ve hızla hizmetlerin sunulması yeni nesil ödeme yöntemleri ile mümkün olmaktadır (Hamdi, 2011).

Dünya genelinde aktif bir biçimde kullanılmakta olan yeni nesil ödeme yöntemleri birçok alanda kolaylık sağlamaktadır. Bu yöntemler sayesinde kullanıcılar hem zamanda hem de maliyetten tasarruf sağlamaktadırlar. Gelişen teknoloji ile birlikte biyometrik güvenlik sistemlerinin ortaya çıkması da ödeme yöntemlerinde güvenliği sağlamaktadır. Bütün bu ifadeler doğrultusunda vergi dairesi vezneleri birimlerinde de aktif olarak yeni nesil ödeme yöntemleri kullanılmaya başlamıştır. Bundan dolayı da nakit kullanımlarının azaltılması, bilgi akışlarının ve teknik gerekliliklerin daha doğru ve kolay bir biçimde yükümlülere aktarılması da sağlanmıştır. Vergi ödemeleri Gelir İdaresinin internet sitesi üzerinden yapılmaktadır. Ancak yeni nesil ödeme yöntemlerinin gelişmesiyle birlikte birçok vergi türü, mobil

bankacılık sistemleri üzerinden de gerçekleştirilmektedir. Aynı zamanda birçok banka da müşterilerine vergi ödeme olanakları sağlamaktadır. Bankaların kullanıcıların hizmetlerine sundukları mobil bankacılık uygulamaları veya internet bankacılıkları güvenli ve hızlı bir biçimde vergi ödemelerinin yapılmasına imkân sağlamaktadır.

Vergi ödemelerinde aynı zamanda e-devlet kapısı da kullanılmaktadır. E-devlet üzerinden vatandaşlar diğer ödeme yöntemlerinde olduğu gibi hızlı ve güvenli bir biçimde vergi ödemelerini gerçekleştirebilmektedirler. Aynı zamanda fiziki pos cihazına sahip kurumlarda kredi kartları ile de vergi ödemeleri gerçekleştirilmektedir.

Yeni nesil ödeme yöntemleri, sadece vergi dairelerinin işleyişini değil, aynı zamanda yükümlülerin vergi ödeme gerekliliklerini de yerine getirme şekillerini, hukuki alanlarını ve kamusal hizmetlere erişimlerine de etki etmektedir. Türkiye’de ve dünyada kamu hizmetlerinin dijitalleşmesiyle birlikte bu süreç, vergi hukuku yönünden de önemli durumları gündeme getirmiştir.

Vergi hukuku, devletin mali faaliyetlerini düzenleyen ve vergilendirme sürecinin hukuk çerçevesini belirleyen bir kamu hukuku dalıdır. Vergi hukuku; vergi türleri, vergi borçları, vergi uyumsuzlukları ve çözüm yolları, vergi mükellefiyeti gibi birçok alanı bünyesinde bulundurmaktadır. Bunlardan dolayı vergi hukuku, devletin finansmanını sağlamak, vergi adaletini ve ekonomik dengeyi korumak, vergi kaçakçılığı ile mücadele etmek ve hukuki güvence sağlamak adına önemlidir.

Vergi ödemeleri ve diğer birçok ödeme noktasında yeni nesil ödeme yöntemleri büyük bir rol oynamaktadır. Ödeme yöntemleri sayesinde vatandaşlar hızlı, güvenilir, düşük maliyetli bir biçimde ödemelerini gerçekleştirirken aynı zamanda gelir idaresi de ekonomik anlamda büyüme sağlamaktadır. Bu bağlamda ele alındığında yeni nesil ödeme yöntemleri birçok alan ve sektör için önem bir yere sahiptir.

3. SONUÇ

Teknolojinin gün geçtikçe gelişmesi ile beraber insan hayatında çeşitli ürün ve hizmetler ortaya çıkmaktadır. Bu noktadaki en önemli sorunlardan birisi olan ürün ve hizmetlerin ortaya çıkmasını sağlayan teknolojilerin kullanıcıları tarafından kabul edilmesi veya kabul edilmemesidir. Bu yüzden yeni teknolojilerle, kullanıcılarına ürün ve hizmet sunmak isteyen kurumlar, kullanıcıların teknolojileri kullanıp kullanmadıklarına göre hizmetler ortaya koymaktadırlar.

Hayatın her alanında yaşanmakta olan gelişmeler ışığında, ödeme sistemleri teknolojilerinde de sürekli bir gelişim yaşanmaktadır. Bu bağlamda zaman içerisinde ödeme yöntemleri meydana gelmiş ve bu ödeme yöntemleri çeşitli cihaz ve ortamlarda hızlı bir biçimde yaygınlık kazanmıştır. Bu çalışmada da yeni nesil ödeme yöntemlerinin vergi dairesi veznesi üzerindeki etkileri ele alınmıştır.

Dijitalleşmenin gelişmeye başlaması ile birlikte ödeme yöntemleri de gelişme göstermiştir. Günümüz çağına geldiği zaman birçok farklı ödeme yöntemleri ortaya çıkmıştır. Bu ödeme yöntemleri birçok alanda ve sektörde kullanılmaya başlanmıştır. Bu yöntemlerin kullanılmasıyla birlikte, kullanıcılar zamandan ve maliyetten tasarruf sağlamışlardır. Aynı zamanda birçok alanda bilgi aktarımları daha doğru bir biçimde sağlanmıştır. Bütün bunların yanında geleneksel bir yöntem olan nakit kullanımları oranları düşürülmüştür. Yeni nesil ödeme yöntemlerinin kullanımları arttıkça gelişimleri de artmaktadır.

Birçok alanda kullanılan ödeme yöntemleri vergi dairesi veznesinde de kullanılmaya başlamıştır. Vergi dairesi veznesinde ödeme yöntemlerinin kullanılmaya başlanması ile birlikte nakit kullanımları düşmüş, vergi tahsilleri oranını da yükseltmiştir. Bu noktada vergi dairesi veznesini bir alanı olan, vergi hukukunun da katkıları fazladır. Devletin vergi gelirlerini arttırmak, kamu hizmetlerini finansal açıdan yönetmek ve vergi yasalarını oluşturmakla görevli olan vergi hukuku, vergi dairesi veznelerine büyük katkıları vardır. Vergi ödemelerinin daha güvenli ve hızlı olmasını dijital teknolojilerle birlikte sağlamaktadır. Vergi hukuku, aynı zamanda vergi adaletini de sağlayarak, vergilendirmelerin daha adil ve eşit şekilde uygulanmasını hedeflemektedir. Bunların yanında vergi dairelerinde vatandaşlara yönelik sağlanan bilgi aktarımları da daha hızlı bir biçimde sağlanmaya başlamıştır. Ödeme yöntemlerinin bu alanda kullanılmaya başlanmasıyla vatandaşlar istedikleri zaman oturdukları yerden ödemelerini yaparak gelir idaresine ekonomik katkılarda bulunmaktadır. Yeni nesil ödeme sistemlerinin başta vergi dairesi veznesi olmak üzere birçok alanda önemli katkıları ve faydaları olmaktadır.

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Attachment Across Developmental Stages

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Abstract: Attachment theory has been one of the most influential and important theory in developmental psychology. John Bowlby conceptualized attachment as an innate human need to create emotional bond between child and caregiver and as an evolutionary mechanism to promote survival. Mary Ainsworth developed the attachment theory through the Strange Situation procedure classifying infant attachment into secure, avoidant, and ambivalent. Later, Bartholomew and Horowitz (1991) expanded attachment theory to adolescence and adulthood, proposing a four-category model (secure, preoccupied, dismissing, fearful) based on internal working models of self and others. The quality of the attachment accompanies child development throughout life, affecting cognitive, social-emotional development. This comparative study examines how attachment is conceptualized in infancy versus adolescence/adulthood, and evaluates the debate around stability versus plasticity of attachment across the lifespan.

Keywords: Attachment theory, developmental psychology, infant and adult attachment, stability versus plasticity

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1. Bowlby

John Bowlby's attachment theory is one of the most important theories in developmental psychology. This theory was developed during the 1950s–1980s and is based on studying the relationship between a child and their primary caregiver (usually the mother). Attachment is the deep and enduring emotional bond that a child forms with their primary caregiver. This bond is biological and instinctive – the child seeks proximity to the caretaker for protection, nourishment, and security. Bowlby believed that survival and emotional development depend on the quality of this attachment.

Attachment's main principles

There are four main principles for the attachment relation during childhood: Proximity maintenance where the child tends to stay close to the attachment figure; Safe haven it means that the caregiver is the place where child turns for comfort when they are afraid or stressed; Secure base is when the caregiver provides the child with security to explore the world; Separation anxiety when child experiences stress and anxiety when separated from the attachment figure.

Stages of attachment

Meanwhile Bowlby defined the main principles of attachment he also described the several stages that attachment develops: 0–2 months: General behavior oriented towards caregivers (laughing, crying, seeking contact); 2–7 months: Recognition of the primary caregiver's face begins.; 7–24 months: Clear attachment is formed (fatigue, separation anxiety); After 2 years: The relationship becomes more complex and the child begins to understand that the parent has independent goals.

Bowlby emphasized that prolonged deprivation of the attachment figure can cause; emotional problems (lack of trust, difficulties in relationships); social problems (isolation, aggressiveness); delays in cognitive development etc.

2. Mary Ainsworth and attachment theory

Attachment theory was enriched and refined by the important contributions of developmental psychologist Mary Ainsworth (1967). While Bowlby emphasized the biological and evolutionary importance of attachment as a survival mechanism, Ainsworth gave the theory an empirical basis through her field research and the development of experimental methods that made it possible to measure and categorize different attachment styles. In the 1950s, during a long-term study in Uganda, Ainsworth observed the relationships between mothers and their infants. She observed that children whose mothers were more sensitive to their needs exhibited stronger and more secure attachments. This research led her to develop the later Strange Situation paradigm (Ainsworth, 1967). The Strange Situation, is widely used method for measuring attachment quality. The experiment involved a series of structured episodes in which a 12–18-month-old child was exposed to situations of separation and reunions with the mother, as well as the presence of a stranger. The child's behaviors at key moments—especially during reunions—were key indicators of attachment type (Ainsworth, Blehar, Waters, & Wall, 1978).

Attachment Styles

Ainsworth identified three main attachment styles based on the Strange Situation:

1. Secure Attachment: Infants explore their peaceful environment with the mother present, protest when she leaves, but calm down immediately when she returns. It is associated with responsive caregivers who are sensitive, predictable, and warm.
2. Insecure–Avoidant Attachment: Children show little or no distress upon separation and exhibit avoidance upon reunion of the mother. This style is often found in children with insensitive or affectively unresponsive caregivers.
3. Insecure–Ambivalent / Resistant Attachment: Children become very distressed when separated from the mother, and on reunion display contradictory behaviors – they seek contact but are angry or resistant to comfort. The style is typical when parents are not synchronized with the needs of the children (sometimes sensitive, sometimes not) during caregiving.

Later Main & Solomon (1990) added a fourth type, termed Disorganized Attachment, characterized by disjointed, contradictory, or frightened behaviors, most associated with trauma, abuse, or insecure parenting.

Mary Ainsworth's work is very important in psychology for several reasons; she established that early relationship quality is the foundation of subsequent emotional and social development; the Strange Situation experiment provided a standardized procedure for attachment study; the typology of attachment styles made possible the subsequent literature on the influence of attachment on romantic and social relationships, parenting, and mental disorder throughout life.

Bartholomew & Horowitz's (1991) model

John Bowlby and Mary Ainsworth focused primarily on early childhood, but later researchers such as Kim Bartholomew extended the theory to adolescent and adult relationships. At this point, attachment is no longer limited to parents, but to peers, romantic partners, and other significant others.

Bartholomew and Horowitz (1991) proposed four models of attachment styles in adulthood/adolescence, derived from two underlying dimensions:

1. Self-model (positive vs. negative) → related to feelings of lovableness and worthiness.
2. Other-model (positive vs. negative) → related to others' availability and trustworthiness.

Combining these two dimensions, Bartholomew identified four main styles:

1. Secure Attachment

Self-Model: Positive & Other-Model: Positive

Characteristics: Feel worthy of love, trust others, and can form intimate and healthy relationships. In adolescence: Enjoy balanced relationships with parents but also form intimate relationships with friends and romantic partners.

2. Dismissing–Avoidant Attachment

Self-Model: Positive & Other-Model: Negative

Characteristics: Confident in themselves but push emotional intimacy away; rely primarily on themselves. In adolescence: May appear to be independent but tend to avoid deep relationships and resist seeking emotional support.

3. Preoccupied Attachment

Self-Model: Negative & Other-Model: Positive

Characteristics: Feel insecure about themselves, need constant approval and closeness; fear of abandonment. In adolescence: tend to be excessively dependent on friends or romantic partners, with a tendency towards jealousy or anxiety.

4. Fearful–Avoidant / Disorganized Attachment

Self-model: negative & Model for others: negative

Characteristics: desire close relationships, but fear rejection or emotional pain; tend to avoid closeness to avoid getting hurt. In adolescence: tend to exhibit relationship conflict, emotional ups and downs, and distrust of others.

The styles described by Bartholomew & Horowitz (1991) influence: intimate relationships; early romantic relationships; development of identity and self-esteem; mental health (anxiety, depression, or resilience).

The importance of attachment in adolescence

Adolescence is a time of change in the way a young person grows physically, cognitively, and psychosocially. The parent relationship is challenged in various ways during the latter part of adolescence. Their physical changes cause emotional experiences. In addition to physical changes, they experience social and emotional development. During childhood, parents or caregivers are the primary attachment figures. The main task of attachment is physical protection, comfort, safety and emotional security. Through this interaction, the child develops an "internal working model" (internal model of relationships) based on the treatment of his needs by the caregiver. Research suggests that attachment does not stop developing but gets reorganized during adolescence. The parents are no longer their main attachment figures. The adolescents enter in more intense social and emotional relationships with same age-peers, thereby the parent relationship becomes less intense. Adolescents begin to form close bonds with friends, dating partners and teachers/mentors. Parents remain the "secure base" but no longer the exclusive source of security. Adolescents crave more independence and often fight with parents. These fights are evidence not of the breakdown in attachment but are part of separation-individuation process (Steinberg, 2001). During adolescence we see the transition of attachment function to emotional support, identity and self-esteem. Secure parent-child relationships are associated with enhanced social competence, stress resistance and healthy psychological development. In adolescence, peer group and romantic partnerships are central providers of comfort and support. Parents remain a strong anchor in times of extreme crisis (Allen & Land, 1999). Longitudinal research (Sroufe et al., 2005) indicates that a secure attachment during childhood is linked with healthier skills in developing good relationships in adolescence. Insecure attachment is linked to a risk of depression, anxiety, and social problems.

In short, childhood attachment is more biological and survival oriented, while in adolescence it is more complex and involves autonomy, identity, and relationships. The biggest shift is that the attachment figure expands to include romantic partners and peers, while its function shifts from physical protection to psychological and emotional support. It is in adolescence that internal working models of attachment come to increasingly get projected into the world outside the family. In conclusion, childhood attachment is more biological and related to survival, in adolescence becomes more complex, being linked to autonomy, identity, and social relationships. The main change is that the figure of attachment extends from parents to friends and romantic partners, while its function shifts from physical protection to emotional and psychological support. Adolescence is the period when internal working models of attachment begin to be more strongly projected into relationships outside the family.

Numerous studies have been realized to explore the influence of attachment relationship in adolescents in the Albanian setting. Healthy attachment and positive self-esteem are found to be negatively correlated with deviant behavior (Xhaferaj & Begorataj, 2019). In another study where the focus were attachment to parents and peers it was confirmed that secure attachment to parents has a positive correlation with good relationships and attachment to parents and peers have a positive impact on high self-esteem in adolescence (Kecaj & Muka, 2022). Insecure patterns of attachment (avoidant, disorganized) are highly correlated with greater vulnerability to eating disorders (Manaj, 2016). Dervishi and Ibrahim (2018) explored with their study that communication and parent attachment have a significant contribution to the type of aggression.

The findings from the Albanian context indicate that a secure attachment to both parents and peers significantly contributes to positive adolescent development by enhancing self-esteem and promoting healthy relationships. Conversely, insecure attachment styles are associated with a heightened risk of engaging in deviant behaviors, developing eating disorders, and exhibiting aggression.

Stability vs. plasticity

Bowlby founder of attachment theory emphasizes that the early relationship with the primary caregiver (usually in the first years of life) forms an "internal working model". This model influences the way the child will relate to others later. So, the foundations of attachment are formed early, but they are not unchangeable. Mary Ainsworth through the Strange Situation (experiment with 1–2-year-old children), distinguished secure, insecure-avoidant, insecure-ambivalent (and later disorganized) attachment. These styles appear early but can change if life conditions and parent-child relationships change. In adolescence, relationships with peers and romantic partners begin to play a major role. Early attachment patterns are reflected in the way friendships and intimate relationships are formed. But this is also a time of flexibility: new positive experiences can help an adolescent develop more security even if early attachment was insecure (Allen, 1999).

Many studies (e.g. Main, Cassidy, Sroufe, Waters) have shown that attachment is relatively stable if the environment does not change much. However, if there are strong events (trauma, divorce, violence, loss, or on the contrary – positive interventions, stable care, therapy), attachment can be transformed. Meta-analyses (Fraley, 2002; Pinquart et al., 2013) show that there is average stability of attachment over time (about 60–70%), but also considerable individual variation. That is, some people remain in the same style throughout life, but others change it depending on experiences. Neurobiological studies show that brain plasticity (neuroplasticity) allows emotional and interpersonal systems to adapt throughout life.

Today, most researchers view attachment as a dynamic process: relatively stable but always open to transformation. Attachment is not fixed, and it can change under the influence of new experiences. A child with an insecure attachment who grows up with unstable caregivers can develop a secure attachment in adolescence if he or she forms strong relationships with a supportive friend or partner. A securely attached individual can become insecure after a traumatic experience, such as emotional abuse or sudden loss.

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How To Reinterpret And Recreate Mythological /Ritual Texts in A Performance Context / Performance Text

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Abstract: Iranian mythological and ritual texts, with their symbolic structure and specific ritual actions, have long been considered a rich source for the performing arts. With the emergence of the concept of “performance text” as an executive text based on the body, space, and audience participation, the need to reread these texts in a lively and multi-sensory format is felt more than ever. The present study, with the aim of providing a theoretical and practical framework for recreating mythological and ritual texts into performance text, has used a combined approach that includes structural and content analysis of ancient texts, examination of contemporary performance works, and application of prominent theories in the field of myth and performance. The results of the study show that Iranian mythological texts have high capacities for creating multilayered and interactive performances, and components such as the body, centrality, spatialization of ritual action, and active audience participation are considered key elements in the structure of performance text. The proposed framework can also be used as an academic guide in the process of creating performance text in Iran.

Keywords: Performance text, Myth, Ritual, Body, Ritual narrative, Re-creation, Bodily figure, Iranian experimental theater, Audience participation

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Introduction

Iranian mythological and ritual texts have long been considered a rich treasure in the literature and culture of this land, especially in the field of dramatic and ritual arts. These texts, with their complex symbolic structure, archetypal characters, and narratives that flow in mythical or ritual times, carry fundamental and identity-giving concepts of Iranian society. However, the passage of time, cultural changes, and aesthetic developments necessitate the rereading and recreating of these texts in a new and contemporary format so that they can continue to attract and influence today's audience in the dramatic and artistic space.

The phenomenon of "Performance Text" as a executive text that is formed by combining words, body, space, and ritual action has attracted the attention of researchers and artists in recent years, especially in the field of experimental and performative performance. Unlike classical playwriting, which focuses mainly on verbal text, this concept attempts to offer the audience a lively and participatory experience by using multi-sensory and physical components. In the meantime, Iranian mythological and ritual texts are considered a very suitable platform for creating performance texts due to their ancient symbolic ritual actions and nonlinear time-space structures.

However, the present study seeks to provide a comprehensive theoretical and practical framework for transforming Iranian mythological and ritual texts into performance texts by utilizing prominent theories in the field of mythology (such as Mircea Eliade Gilbert Duran) and performance studies (such as the theories of Victor Turner and Ernst Fischer-Lichte), as well as examining contemporary performance examples. In addition to analyzing the structure and dramatic and performative components, this framework addresses the stages and techniques of performance recreation and will pave the way for the production of interactive, multi-layered performances and body-centered text.

This article attempts to focus on questions such as ((which components of mythical texts have the potential to be transformed into performance texts?)) , ((What pattern can be presented for creating performance texts?))And ((how can one strike a balance between fidelity to the fundamental text and performance creativity?)) It opens a new window to the rereading and recreating of ancient texts in contemporary performance art and provides a scientific basis for the development of this field in Iran.

The main research questions

1. Which content structural components in Iranian mythological and ritual texts have the capacity to be transformed into textual performance?
2. What pattern can guide the dramaturgical process of rereading and recreating these texts towards producing text performance?
3. How can one strike a balance between fidelity to the fundamental text and performance creativity in the process of bodily ritual adaptation of myth?

4. In mythological texts such as The Death of Siavash, Zahhak, or the Rite of Mehr, which dramatic performative elements, (such as body action, the myth of time,space) have the greatest potential for performance?
5. Can the transformation of myth into performance text lead to the creation of new meanings and the activation of a contemporary audience?

Research hypotheses

1. Iranian mythological ritual texts have a high capacity for transformation into performance texts due to the symbolic structure of the time-based myth narrative and ritual actions.
2. Rereading and recreating myth in the form of performance, text, and storytelling, creates new meanings, rethinks traditional narratives, and creates a participatory, bodily experience.
3. Body and space, as key elements in performance text have the ability to convey ritual concepts of the symbolic cosmos.
4. Techniques such as narrative compression, focusing on action, ritualistic time and place shifting, and eliminating subtextual elements can be effective in the adaptation process.
5. Unlike traditional plays, in performance text the audience plays an active interpretive role in the process of meaning production and recreates a participatory experience out of the myth.
6. Contemporary performance works such as Dr. Mir Alireza Daryabeygi's : (Azhidehak, The Unknown General, Carnival) are successful examples of the use of a specific pattern in transforming myth into performance text.

The theoretical framework of the research

To reinterpret and recreate Iranian mythological and ritual texts in the form of performance text, it is of fundamental importance to utilize theoretical frameworks related to mythology, ritual studies and performance theories. This research is based on a combination of classical and contemporary theories, which are introduced below with an emphasis on their relevance to the topic.

Ritual Structure Theory and Liminality / Victor Turner

Turner, developing a three-stage model of ritual (separation/transition/reunion), shows that rituals have a transitional structure that is suspended in the middle (liminal) stage of the social order and actors are placed in a state of suspension and transition (Turner, 1982). This state provides a platform for the creation of bodily experience and the redefinition of collective identity. In textual performance, this structure can be unraveled through ritual actions such as sacrifice, Throwing, passing and untying.

Image systems and archetypes / Gilbert Durand

Durand, in his book Structures of Imagination (1999), divides the visual systems of culture into two main systems: ascending solar and descending nocturnal. Myths such as the death of Siavash or the story of Arash are placed in the ascending heroic system, where the act of sacrifice or the shooting of an arrow is a kind of break from matter and connection to light. This approach allows for the analysis of the physical visual structures of the text and the extraction of performance components (Durand, 1999).

Return to Sacred Time / Mircea Eliade

Eliade sees myth as "A return to a primordial time"; a sacred time repeated through ritual action (Eliade, 1959). For him, ritual is not just a representation but a recreation of primordial time. In the performance text, the performer can, through the repetition of ritual, for example, (in the ritual of the Mehrgan or the Sade), introduce the audience to the experience of non-linear and mythological time.

Performative theater of the body and the transformation of meaning / Fischer-Lichte

Ernest Fischer-Lichte, in his performative theory, emphasizes the "presence of the body" and its "transformation in the moment of performance" (Fischer 2008, Lichte). He believes that meaning in performative theater is not formed from the text but from the interaction of body/space/audience. In this model, the audience is transformed from a passive spectator to a participant, and the performance text becomes an open structure.

This theory is particularly useful in analyzing contemporary mythological performances such as ((Azhi Dehak)) or ((Ubo Roi)).

Summary of the theoretical framework

This four-fold framework of (Turner, Eliade, Fischer-Lishte) allows us to reread mythical texts not only as literary narratives but also as performative, body-centered, and ritual structures, and ultimately achieve their reproduction in a contemporary context by creating textual performance.

Research method

This qualitative research is based on the method of content analysis and comparative study. The main goal is to reinterpret and recreate Iranian ritual and mythological texts in the form of performance text in order to extract principles and a theoretical and practical framework for creating this type of dramatic works.

1. Data collection

The main sources of research include classical mythological texts such as ((Ferdowsi's Shahnameh, ritual, Zoroastrian, and Iranian folklore texts)), and contemporary performance examples including the works of Dr. Mir Alireza Daryabeygi.

2. Data analysis

Mythological and ritual texts were analyzed using the theoretical framework introduced from the perspective of dramatic structure, symbology of ritual actions and physical elements. In the second stage, performance examples were examined to extract practical re-creation techniques and methods.

3. Deriving the theoretical and practical framework

By combining the results of text analysis and performance examples, the key and structural components of performance text were identified and the process of its creation from study to performance was developed. These frameworks were then detailed in the form of practical suggestions for creating performance text.

4. Validation

To assess the theoretical and practical validity of the findings, feedback from theater experts and researchers related to the discussion was provided and the feedback was used in the final revision of the frameworks.

Analysis and discussion

By examining examples of Iranian mythological and ritual texts, the present study seeks to answer the key question of how these texts can be reinterpreted and recreated in a way that, in the form of contemporary text performance, simultaneously conveys the cultural values of the past and provokes a participatory and critical bodily experience for today's audience. Analyzing the examples from the perspective of the theoretical framework of the study showed that this re-creation requires an interdisciplinary and integrated reading of the body/religion/space/ time/audience.

Siavash's death: from narrative to ritual performance

The narrative of Siavash's death in the Shahnameh, with its symbolic structure of the innocent hero, the act of sacrifice, and the confrontation of good and evil, has liminal and ritualistic features. According to Turner's theory (1982), Siavash is placed in a liminal transitional state after leaving the court order and entering a foreign land; he is sacrificed, but with his death the myth of justice is established. This ritualistic structure in the performance text can move using light and create a physical experience for the audience by recreating Siavash's body at the moment of sacrifice and bloodshed.

According to Duran's (1999) reading, Siavash is in a descending nocturnal system: descent, blood, absence, and return. His performance text can focus not on narrative but on the silence of the void, the dim lights, and the play of the body. From Eliade's (1959) perspective, every ritual performance of Siavash's death is a return to the first moment of the confrontation between innocence and violence; the moment when the myth is born.

Arash Kamangir Body / Sacrifice / Light

The myth of Arash can be analyzed in a heroic ritual model with components such as climbing a mountain, shooting an arrow, a ritual act of demarcation, a symbolic cosmic act, and voluntary death. According to Turner, Arash is a liminal hero; he separates from society, empties his body, and releases the arrow in a ritual act (Turner, 1982). The moment of shooting is the moment of rupture and reconstruction of the world.

According to Duran (1999), Arash is placed in the solar system of light. By shooting an arrow towards the light, he draws the boundary between truth and darkness. From Eliade's perspective, shooting an arrow is a reconstruction of the moment of cosmogenesis, the moment when the boundary between order and disorder emerges (Eliade, 1959).

In the performative performance of Arash, sound and light can be performed with the body, the audience can be on both sides of the border, and the performance text, by creating sensory participation in the shooting of the arrow, makes the audience a participant in the mythical action. Fischer-Lichte (2008) emphasizes that the body, the performer, is the main medium of creating meaning; not dialogue but action and presence.

The Ritual of the Century /The Ritual of Light/ Collective Regeneration

The Centenary celebration, as a living ritual in Zoroastrian culture, is a perfect example of a three-stage ritual structure. According to Turner (1982), the separation from darkness, the passing of winter, at the moment of lighting the fire and returning to the new order with light, has a ritual structure. In this ritual, fire has a symbolic spiritual role: a connecting, purifying, and mediating element.

From the perspective of the Age of Fire, it is the archetype of illumination; the movement towards light, participation in warmth and centrality (Durand 1999). Eliade considers fire an “eternal element” that, by discovering it, man distances himself from ignorance and death (Eliade 1959).

In the performance text, the moment of lighting the fire can be reproduced with the light, music, body movements, and ritual sounds. Fischer-Lichte (2008) considers the audience's participation in the ritual moment as a condition for creating meaning. Therefore, the performance of the Sade must draw the audience to the center of the ritual; not simply as a spectator, but as a ritual actor.

Performance experiences of Mir Alireza Daryabeygi's works

Azhi Dehak (2019, Chaharsu Hall, Teatre Shahr)

Free adaptation of the archetype of Zakhak and the play of Bayzai

In the play Azhi Dehak, Daryabeygi distances himself from the classical performance model by relying on the mythological structure of Zakhak and an anti-narrative approach, and instead substitutes a linear narrative with tormented bodies, repetitive movements, warning lights, and disturbing music.

Following Turner's (1982) framework, he reconstructs the myth of Zakhak in three stages: (rise to power), (liminal collapse), and (fall/reconstruction of order), but without the need for classical dialogue.

In this work, Zakhak becomes a corporeal figure that, with its oppressive bodies, devours the past order and threatens the body of the viewer. The viewer is not in the position of an analyst, but is exposed to the emotional and unconscious experience of mythical violence.

Reading the play from the perspective of Fischer-Lichte (2008) can indicate the play's transition from a central sign to a bodily presence; the actor's body carries a metaphor of mythical tyranny.

Unknown General (1402, Chaharsu Hall)

Based on the play by René de Abaldía with mythological dramaturgy

The Unknown General in the adaptation of the novel becomes an anti-heroic and ritualistic performance. In this play, the concepts of the lack of reproduction of violence and bureaucracy, war, combined with the slow movement of worn-out bodies, still lights, and the presence of the dead, evoke the mythological structure of endless wars.

By eliminating the direct narrative line and creating dramatic fragments in the tradition of performance text, Daryabeygi creates situations in which the audience must produce meaning through their own imagination, experience, and body. According to Durand's theory (1999), the play is placed in a death-centered nocturnal visual system: the stillness, timelessness, destruction.

The representation of the unknown general is also influenced by the model of Siavash's death: Sacrifice, victimization, and the futility of power. Here, the general's body becomes a mummy-object that is suspended in the symbolic space of the performance. As Eliade (1959) believes, the representation of sacred death in performance is a kind of return to the mythological foundation of violence and ritual.

Ubo Roi (2018, Hafez Hall)

Adapted from Alfred Jarry with a mechanical, physical dramaturgy

The performance of King Ubo as a grotesque/absurd performance is a representation of the body as an uber-marionette, a concept that is directly linked to Craig's theory and also to "the elimination of personality psychology" in performance. The exploration of the actors' bodies turns them into inanimate machines full of repetition of violence and mockery of power.

In this performance, the space has become a labyrinth; the corridors of light and darkness are a place for the bodies to pass through. King Wenceslas is seen as a shadowy image on the ceiling; a pretense of power.

This performance is simultaneously a fusion of ritual violence and protest performance. By eliminating any psychology and emphasizing the body of sound, Daryabeygi casts the light of the audience into the place of power performance. From the perspective of Fischer-Lichte (2008), such performances are based on the unstable dynamics of meaning: exposing the viewer to both disgust, laughter, and reflection.

conclusion

In this research, focusing on the rereading and recreating of Iranian ritual and mythological texts in the form of performance text, it was shown that these texts have great potential for becoming performative and multi-sensory texts that highlight the experience of bodily presence and audience interaction in the context of performance art. The use of contemporary theoretical frameworks and the analysis of successful Iranian examples made it possible to form a structural and practical model for creating performance text.

Answers to research questions

1. Which components in Iranian mythological ritual texts have the potential to be transformed into performance texts?

The fundamental structures of mythological texts, such as the opposition of good and evil, death/resurrection, and the hero-sacrifice, have a high capacity for reproduction in the form of performance (Eliade 1959). The presence of ritual actions such as the passage, the throwing over the threshold, and the sacrifice in these texts aligns them with the three-stage structure of ritualization in Victor Turner's theory (1982). Also, the psychological body archetypes in Gilbert Durand's visual system (1999) provide the basis for the bodily and performative recreation of the text.

2. What model can guide the process of recreating myth into textual performance?

The proposed model is a combination of the theories of ritual structure (Turner), bodily semiotics (Fischer-Lichte, 2008), and image systems (Durand). This model includes the following stages:

- Body-centered semiotic study of text
- Extracting liminal actions
- Designing a collaborative executive space
- Physical rewriting
- And ultimately, it is the creation of a living mythological experience in the context of the present.

3. How is the balance achieved between fidelity to the basic text and creativity in performance?

This balance is achieved by being faithful to the ritual essence of myth (Eliade, 1963) rather than the traditional form, and also by considering the capacity for reinterpretation of texts in the process of performance. Fischer-Lichte argues that performance is not a representation but a reproduction of meaning in the moment of presence (Fischer-Lichte, 2008).

4. What is the difference between a mythological narrative and a performance text structure?

Myth has a closed and hierarchical structure, while performance text has an open structure relying on co-creation with a multimedia and bodily audience (Schechner, 2006). Myth relies on the language of narrative, while performance text relies on the language of the body, sound, light, space, and action.

5. What role does performance text play in producing new meanings?

Performance transforms the myth text from a static text into a living and fluid experience that has the ability to psychologically reproduce these fundamental social concepts such as death, liberation, and heroism. The metamorphosis of performance is based on the presence of the body and the participation of the audience. Turner, 1982; Fischer-Lichte, (2008)

This transformation of performance is based on (body presence) and (audience participation).

6. What patterns can be extracted from the Iranian experience in executive works?

Analysis of the works of Mir Alireza Daryabigi (1399 (1402), such as Azhi Dehak, Unknown General and Shah Obo, shows that the dramaturgy of performance texts in Iran can also be formed by focusing on the body of the ritual of space. In these works, the use of traditional structures such as (ta'ziyeh, narrating) alongside contemporary approaches such as working with empty space and the mechanical body of the superpuppet has created a global-indigenous model of myth performance.

Conceptual model/step-by-step process for creating performance text based on mythological and ritual texts

In the absence of written guidelines for writing performance texts in the contemporary Iranian theater education space, this article, based on the analysis of examples and interdisciplinary theories, attempts to present an operational conceptual model for creating performance texts; a model in which the text, the body, the space, and the audience are equally present and co-existent in the creation of meaning. The proposed process is designed in six steps:

The first stage of interpretive/structural reading of the mythical text

The first step is to reread the basic text of the myth or ritual with an interpretive-intertextual approach. This step includes:

- Identifying archetypes/dual structures of light, darkness, good, evil, sacrifice, power.
- Extraction of ritual acts of sacrifice, passage, ascension, throwing, crossing the threshold
- Understanding "Mythos-time" and its distinction from linear time
- Examining physical and visual metaphors in the text
-

A practical example: in Arash's narrative is the arch of the arrow as the arch of the hero's body, which can be extracted and carries a national physical burden.

The second stage of performative text analysis / embodying concepts

In this step, abstract concepts are translated into performative potentials. performative analysis means:

- Redefining narrative from the perspective of sound, movement, space, presence
- Extracting the dramaturgical and ritual capacities of each action
- Designing postures that are situation-oriented rather than dialogue-oriented

Implementation Recommendation: The concept of "passage" in Siavash's ritual of fire can be implemented by moving from light to darkness and back again, without the need for a linear narrative.

The third stage of narrative compression/rearrangement of story elements

In performance writing, narrative text moves away from cause-effect sequences and narrative form is replaced by the ritual of body image and rhythm. This stage includes:

- Removing minor characters and explanatory events
- Focus on ritual moments of Transfiguration
- The arrangement of scenes is not based on the story but on the intensity of the emotions and the physical situation.

Mosaic structure pattern instead of continuous narrative in the play Azhi Dehak

The fourth stage is creating a multifaceted text / performance-oriented writing.

At this stage, writing a performance text is done as a performance design, not simply writing a play. The components are:

- Interior/Abstract Monologues
- Body postures instead of character dialogue
- Incorporating light, sound, and image as executive lines of text
- Moving away from traditional dialogue writing and towards actionable writing

Suggested writing style: Use of semi-open text, director's notes, and executive silences in the text itself.

The fifth stage of space and audience design / interaction-centric

The performance text is written with the adaptive performance space in mind, not the (traditional) Italian stage. This design includes:

- Involving the audience in the action of voice movement, touch selection
- Opening up the space to non-dramatic situations (shopping center, ruins, platform, nature)
- Redefining the distance between audience and performer as inter corporeal

The experience of Daryabeygi in *The Unknown General* places the audience in direct contact with the suffering bodies of the soldiers.

The final stage of rewriting in the textual practice/transformation process

A performance text is a living text that grows and changes in practice. At this stage:

- The text is rewritten based on the actor's body.
- Performance feedback and physical experience influence the text.
- Some scenes are created through rehearsal and improvisation.

The result of the performance text is transformed from a reference text into a lived text; not a rewriting but a reliving of the myth.

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The Decline Of Emotional Intelligence In The Context Of Digital Transformation: New Realities Of Human Emotions

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Abstract: This paper explores the pedagogical implications of digital transformation and artificial intelligence on the emotional and intuitive capacities of human beings. As educational environments become increasingly shaped by technology, concerns have arisen over the decline of socio-emotional competencies and the marginalization of human-centered values. Drawing on interdisciplinary perspectives, the study examines the emergence of “emotionless intelligence” and the “silent human” in digital contexts, where individuals exhibit diminished empathy, weakened emotional expression, and reduced intuitive judgment. The article emphasizes that emotional intelligence and intuition are not merely personal traits but essential components of holistic education. Within this framework, the research advocates for a pedagogical shift that integrates emotional leadership and social-emotional learning (SEL) models. The paper outlines a strategic roadmap to embed SEL into curricula, foster humanistic use of technology, and ensure emotionally safe learning environments. The ultimate goal is to establish a sustainable educational model that supports both academic excellence and the continuity of human values.

Keywords: *Emotional intelligence, intuition, digital pedagogy, social-emotional learning, human values, artificial intelligence in education*

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Introduction

In the modern era, rapid transformations encompassing all areas of society are most vividly felt in our social lives. Unlike temporary social trends, the ethical shifts brought about by these changes are rooted in deeper moral and cultural foundations. These changes are reshaping long-standing social norms and behaviors, making them not only relevant to today but also fundamental in defining the future course of human life.

Within this context, the exponential growth of technology and the uninterrupted expansion of the digital world have begun to exert deep and multidimensional effects on all aspects of human life - including cognitive styles, behavioral patterns, and social interactions. While a digitized lifestyle enhances human adaptability and access to information, its other side - the gradual overshadowing of emotional depth and social sensitivity - is increasingly concerning. Today, humans have reached a new phase of development through their cognitive capabilities, perhaps even a critical threshold. Yet, the entity now confronting them - artificial intelligence - is a form of intelligence created by humans that, in many respects, surpasses them. As American author James Rodman Barrat argues, “Humanity is facing, for the first time, an artificial superintelligence that exceeds our own minds” [1, p.199].

This form of AI is no longer limited to executing mathematical-logical functions. It mimics behaviors similar to emotional intelligence, analyzes human intuition, and even attempts to demonstrate empathy. However, these “emotions” are not genuine - they are algorithmic simulations. As such, we are entering an era dominated by “emotionless intelligence.” Simultaneously, this process is giving rise to the “silent human” - the individual who has lost emotional expression in the noise of technology. The spiritual dimensions of human communication and the intrinsic value of emotions are gradually fading in the digital environment. The famous futurist Ray Kurzweil, in his 2005 book *The Singularity Is Near*, anticipated the impact of technological advancement on human life. He wrote:

“It is expected that AI will pass the Turing Test - establishing natural communication with humans - by the year 2029” [6, p.9].

Kurzweil defines this stage as the “Fifth Epoch” of technological and intellectual evolution. This epoch includes radical transformations across various fields - from social relations to cognitive and decision-making mechanisms - as a result of exponential technological growth. According to Kurzweil, this stage marks the beginning of a transformative period in human evolution, characterized by the fusion of humans and technology and the birth of a new culture. As this synthesis progresses, the boundaries between human nature and artificial systems blur, and technology increasingly becomes the central structural element of human life.

Against the backdrop of such transformation, the marginalization of emotions, empathy, and intuition - core psychological and moral components of human nature - has become a central concern in global research. Numerous

pedagogical and psychological research centers around the world are actively exploring the implications of these shifts on human development and socialization. The emerging models of “emotionless intelligence” and the “silent human,” shaped by the digital age, pose a risk to weakening emotional intelligence, empathy, and intuition-based decision-making. This trend threatens to erode essential human values and may lead to moral and emotional degradation.

Historical and contemporary experiences demonstrate that the intuitive insights of strategic global leaders have often proved more decisive than rational analyses. Intuition is not merely a reflection of individual wisdom; it also serves as a key human value influencing social direction and shaping historical turning points. It plays an irreplaceable role in the processes of socialization, moral refinement, and the development of a humanistic worldview.

The pedagogical environment is particularly sensitive to these changes. The formation of younger generations should not rely solely on technical or theoretical knowledge but must be accompanied by emotional intelligence, empathy, and intuition - essential cultural and moral dimensions. Emotions play a crucial role in understanding oneself and the world, establishing relationships, and shaping personal values. Intuition frequently precedes conscious reasoning and serves as a guiding force in decision-making and behavior.

Therefore, emotion and intuition are not only fundamental to individual growth but also critical in building a humane and value-oriented society. Their potential loss in the era of digital transformation poses a profound threat to both the essence of humanity and its social functions.

This article examines the effects of digital technologies on human emotions and intuition from a pedagogical perspective - highlighting both gains and losses - and argues for the urgent need to develop educational models based on a balanced synthesis of humanistic and technological approaches.

Emotions and Intuition in Education: The Forgotten Human Aspect

Historically, emotions and intuition have been recognized as foundational elements in educational and developmental processes. These components have played a vital role in shaping individual identity, forming social bonds, and fostering moral growth.

Emotion refers to a complex system of internal feelings-such as joy, fear, anger, surprise, sadness, and excitement-that arise in response to the fulfillment or frustration of organic and psychological needs. Beyond being psychological responses, emotions are biologically adaptive mechanisms that help organisms assess their internal states and react to external stimuli. Pedagogically, emotions function as motivational resources that enhance learning engagement, increase retention, and promote meaningful social interactions.

Intuition, on the other hand, is a form of cognition that occurs without deliberate, conscious reasoning. Often described as a “gut feeling,” “inner voice,” or “empathetic insight,” intuition enables individuals to make rapid decisions based on accumulated experience, subconscious cues, and instinctive perceptions. In classroom contexts, a teacher’s intuitive response to complex dynamics often ensures fluidity in instruction and emotional connection with students.

Classical pedagogical theories have long emphasized the importance of emotional intelligence (EQ) and intuition as essential regulatory mechanisms in personal and social development. Emotions foster empathy, guide value formation, and support interpersonal adaptation, while intuition strengthens decision-making and encourages creative, flexible responses to changing educational environments.

In this regard, integrating emotional and intuitive dimensions into the educational process is not only a methodological necessity but also a foundation for humanistic and student-centered pedagogy. As Azerbaijani philosopher Əbu Turxan insightfully noted, “Thought is condensed feeling that has taken form” (Xəlilov, 2012, p. 286). This statement underscores the inseparable connection between emotion and cognition, suggesting that emotional awareness is a precursor to deep, meaningful thinking.

However, in today’s technology-driven classrooms, emotional and intuitive capacities are often sidelined. Excessive emphasis on data processing, performance metrics, and algorithmic systems can displace human interaction and diminish empathy, creativity, and moral discernment. As a result, students risk becoming passive recipients of information, lacking the emotional depth and self-awareness necessary for ethical and responsible citizenship.

In the age of artificial intelligence, cultivating emotional intelligence within education systems demands environments enriched with human values and affective understanding. The development of teachers’ emotional leadership competencies and the integration of emotion- and intuition-based pedagogies should be prioritized alongside the adoption of digital technologies.

Emotionless intelligence and the silent generation: What we gain and what we lose

One of the most critical dilemmas of our time lies in the question: Can humanity preserve its emotional and moral essence in the face of rapid technological advancement? The marginalization of emotional and intuitive capacities in educational practices not only diminishes individual emotional richness but also threatens the cultivation of core human traits such as empathy, ethical reflection, and social responsibility. This concern has given rise to what can be called a “crisis of forgotten humanity.”

Modern education systems, often focused on efficiency, digital access, and cognitive achievement, are increasingly neglecting the inner world of the learner. Yet, education is more than the transmission of knowledge; it is a cultural and moral enterprise that transfers human values across generations. In this light, pedagogy must shift its focus from output-centered goals to the holistic development of individuals. As Gardner (1999) eloquently stated: “Regardless of circumstances, education must find its own justification in enhancing the capacity of people to understand each other. The proper study of humankind is human beings” (p. 252).

This perspective reaffirms that the fundamental purpose of education is to nurture emotional, ethical, and relational capacities alongside intellectual development. The emerging reality, however, suggests that digital environments are increasingly producing archetypes of the “emotionless intelligent” and the “silent human”—individuals highly proficient in using technology but emotionally disengaged and socially disconnected.

While technological innovation has undoubtedly contributed to personalized learning, faster access to information, and flexible educational systems, it has also facilitated a gradual erosion of emotional awareness and moral depth. This imbalance may lead to the formation of a generation that is emotionally fragile, morally indifferent, and lacking in intuitive judgment—what could be called an “emotionally superficial society.”

The consequences of this trend extend beyond individual well-being; they affect the ethical fabric and cultural sustainability of entire communities. As affective connections fade and technocratic thinking prevails, societies may face increasing alienation, weakened trust, and moral disengagement.

Therefore, one of the key responsibilities of contemporary education systems is to restore the emotional and intuitive dimensions of human development. Emotional literacy, empathy training, and intuitive thinking should be integrated into curricula, not as optional additions but as central pillars of pedagogical innovation. As emphasized by OECD (2021),

“Shifting education toward the development of emotional and social competencies—rather than just information delivery—is a fundamental requirement of pedagogical innovation.”

In short, modern pedagogy must transcend the traditional focus on cognitive performance and technical skills. It must invest in nurturing emotionally resilient, ethically grounded, and socially connected individuals—capable of navigating the digital world without losing their humanity.

The teacher as emotional leader in the digital era

Is the teacher merely an instructor, or also an emotional mentor? In the contemporary educational paradigm, the role of the teacher extends far beyond the mere transmission of information. Teachers are expected to act as emotional leaders who guide the socio-emotional development and identity formation of their students. The pervasive integration of digital technologies in education has, paradoxically, weakened the emotional connections between teachers and students, undermining the moral and psychosocial depth of the learning process. In this context, the teacher’s capacity for empathy, intuition-based decision-making, and emotional leadership becomes indispensable.

Emotional leadership is understood as the teacher’s ability to perceive and respond to students’ inner emotional worlds—their feelings, needs, and motivations—through empathetic engagement, adapting pedagogical approaches accordingly. This method enhances not only academic achievement but also social skills, emotional intelligence, and creative potential. Especially in technology-intensive learning environments, emotionally guided pedagogy is essential for preserving the human element and maintaining moral values.

Therefore, teacher professional development must emphasize not only digital competencies but also the cultivation of emotional intelligence and leadership skills. A modern educator should skillfully integrate digital tools while remaining sensitive to the psychological and moral needs of students. Balancing technological proficiency with emotional competence fosters holistic, humanistic learning environments, preparing future generations not only intellectually but also as empathetic and ethically grounded individuals vital for humane and balanced societies.

Psychologist and author Daniel Goleman highlights this perspective, stating:

“This pedagogical approach does more than raise academic outcomes; it cultivates students’ social competence, emotional intelligence, and creative potential” (Goleman, 1995, p. 232).

Pedagogical Roadmap: The Return of Emotions

One of the greatest challenges in contemporary education-especially amid the expanding use of digital and AI tools-is preserving and enhancing human emotional richness. In modern classrooms increasingly dominated by technology, pedagogical strategies must move beyond the mere transmission of technical knowledge to emphasize emotional and social skills development. Consequently, incorporating Emotional Intelligence (EQ) and Social-Emotional Learning (SEL) frameworks into education has become a clear priority.

- Emotional intelligence instruction cultivates students' ability to recognize, manage, and empathize with emotions, key competencies for the 21st century.
- These skills contribute not only to individual well-being but also to fostering healthy social relationships. When integrating educational technologies, safeguarding and promoting human values must remain at the forefront. Digital tools should serve not only as conduits for knowledge transfer but also as enablers of empathy, creative thinking, intuitive cognition, and moral reflection.

Psychological support programs and SEL strategies strengthen teacher-student relationships, create emotionally safe school environments, and mitigate the potentially adverse effects of technology use. Based on these considerations, we propose the following strategic directions for pedagogical practice:

1. **Embedding emotional intelligence in curricula:** Systematically integrate SEL programs into teaching plans to nurture empathy, emotional self-regulation, and social responsibility in students.
2. **Utilizing technology for humanistic purposes:** Employ digital tools as facilitators of human values and moral development rather than ends in themselves.
3. **Strengthening teachers' emotional leadership:** Prioritize the development of emotional intelligence and empathy-based communication skills in teacher training and professional development programs.
4. **Creating emotionally secure learning environments:** Ensure psychological well-being, ethical interactions, and recognition of each student's inner emotional needs within school settings.
5. **Building a holistic, person-centered education model:** Design educational systems that nurture intellectual, moral, emotional, and social dimensions of students as integrated, whole persons.

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The Effect Of The Kahramanmaraş Earthquakes On The Gömükan Dam

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Abstract: This study examines the effects of earthquakes on dams. Earthquakes are natural disasters that occur frequently around the world and whose timing cannot be accurately predicted. Earthquakes can cause significant damage, destruction, and irreparable harm over very large areas.

Dams must be monitored continuously and inspected for safety before and during the construction and throughout their operational life. In the event of extraordinary natural phenomena such as earthquakes, inspections must be conducted immediately without adhering to scheduled intervals.

This study examined how the two separate earthquakes that occurred on February 6, 2023, with epicenters in the districts of Pazarcık (Mw: 7.7) and Elbistan (Mw:7.6) (Kahramanmaraş Earthquakes), affected the body of the Gömükan Dam, which was under construction.

Previously, external reference points in the form of concrete blocks established on the downstream surface of the dam to detect any deformations that might occur during the dam's embankment filling. During the dam construction, measurements taken at these points at regular intervals to collect data. Deformation measurements interpreted by comparing the first and last measurements. In this study, the coordinates obtained from previous measurements at the points established on the downstream surface were accepted as "reference values, reference measurements."

A dual-frequency GNSS receiver was used for the measurements. The static measurement method was applied without being dependent on the base length using the stations of the Turkey National Fixed GNSS Network – Active (TUSAGA-Active) System. The coordinates of the external reference points installed on the body were determined as Datum: ITRF-96, Zone Central Meridian: 39-3 degrees. To detect post-earthquake movements, two Topcon GR-5 GPS/GNSS RTK receivers previously used in measurements were employed to conduct measurements over a 120-minute period with a 1-second recording interval.

According to the data obtained from the measurements taken after the earthquake, it was determined that horizontal displacement (displacement, translation) movement occurred in the dam body, small amounts of subsidence and uplift occurred in the vertical direction, and some rotation occurred. A displacement movement of 1.6 m in the eastward direction and 0.07 m in the northward direction was detected throughout the dam body. The findings were evaluated by comparing them with the deformations identified in the "February 6 Kahramanmaraş Earthquakes Report" published by the Turkish Chamber of Engineers and Architects (TMMOB).

Keywords: Kahramanmaraş Earthquakes, Dams, Embankment Dams, Deformation Measurements, Deformation Measurements in Dams.

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INTRODUCTION

Since the 20th century, the use of dams has increased rapidly, along with concerns about dam safety. For this reason, many countries have begun to take measures to ensure dam safety. Since existing dams were constructed more than 20 years ago, their designs may be based on the knowledge and criteria available at the time, but they have raised serious doubts about dam adequacy due to many changes (Pisaniello et al. 2006: 84).

Dams are generally built to last 50-100 years, or even longer. Just as much care must be taken in the design of these structures, so too must care be taken in safety and control during and after construction. Safety and inspections in dams begin during the construction phase and continue throughout the operational phase and the life of the dam. There are three main reasons for keeping dams under control in this way. These are: to ensure the structural and functional safety of the dam, to ensure the safety of people and property, and to provide data for similar projects in the future. Dams are not only exposed to the effects of the water in their reservoirs. They are also exposed to many external influences and forces. It is very important to know whether these forces affect the stability and performance of the dam. If the dam is

kept under control, it is possible to check whether the dam is functioning as intended against the forces affecting it (Aşık, 2016: 34).

In order for dams to safely perform their functions such as irrigation, transportation, and energy production, it is important that they are continuously monitored and their safety is ensured before construction, after construction, and throughout their entire operating life. Therefore, it is necessary to present the current status of dams and their behavior against loads affecting the dam within the logic of an information system. The possibility of dam accidents that have occurred in the past recurring in the future poses a significant threat to the safety of life and property. Necessary measures must be taken to prevent accidents at a dam or minimize the damage that may occur. For this reason, dams must be continuously monitored and inspected for safety before construction, during construction, and during operation. It is particularly important to monitor large dams and their surroundings using technological and advanced methods such as GNSS systems. Within the scope of this research, measurement points were established at a specific elevation on the dam body. Horizontal and vertical position changes in the dam were detected using GNSS measurements taken after the earthquake.

CLASSIFICATION OF DAMS

Dams, which are among the largest man-made structures, are classified in various ways according to their purpose, construction method, body type, materials used in construction, or size.

Dams are designed for purposes such as irrigation, electricity generation, water supply, flood protection, recreation, inland waterway transportation, and fishing. A dam can be built for a single purpose or for multiple purposes at the same time.

Dams are classified into two categories based on their body types: concrete dams and embankment dams (Çarhoğlu, 2012:31)

Dams are classified as “large dams” or “small dams” based on their size. The International Commission on Large Dams (ICOLD) has established the following classification for large dams:

Dams with a height difference between the crest and the foundation >15 m,

Dams with a height between 10 and 15 m, but additionally:

The maximum flood discharge > 2000 m³/s,

The reservoir volume $> 1,000,000$ m³, and

The crest length > 500 m,

Dams with at least one of the above characteristics are considered “large dams.” Reservoirs or small dams are defined as structures constructed according to simpler and faster criteria, outside the scope of the aforementioned definition (Emiroğlu, 1999: 41).

FILLED DAMS

Filled dams, which are named according to the material used, such as rock-filled dams and earth-filled dams, are mostly large water storage structures made of rock, soil, or other natural materials. This type of dam is used to store and manage water and is widely preferred in many regions of the world. Embankment dams are considered advantageous due to the use of local materials during construction and their high durability. Their basic components include drainage systems, a waterproofing layer, embankment material, and the dam body (Topçu, 2017: 11).

Embankment dams are structures made mostly of natural materials such as silt, rock, and soil, and the dam body generally consists of a central impermeable core and permeable fill materials surrounding the core. Drainage systems contribute to the safe discharge of water (Çarhoğlu, 2012: 34).

Despite being constructed with solid structures, embankment dams may face issues such as water leakage, earthquake effects, stability problems, and erosion. Water leakage can occur in the dam's fill materials or core section. Erosion can cause the fill materials to wear away due to water flow, weakening the dam. Stability problems are related to soil conditions and construction materials. Earthquake effects carry the risk of structural damage (Topçu, 2017: 11).

Embankment dams can be affected by environmental factors. The operation and construction of dams can have a significant impact on the surrounding ecosystem. Differences in water levels can affect aquatic life and river ecosystems. In addition, the destruction of natural habitats can have negative effects on local fauna and flora (Turan, 2007: 25).

There are different types of embankment dams. These can be classified as zoned embankment dams, rockfill dams, and homogeneous embankment dams. Homogeneous embankment dams are constructed using a single type of embankment material and are generally considered suitable for small-scale projects. Zoned embankment dams, on the other hand, are constructed using embankment materials divided into zones with varying degrees of strength and permeability, and are effective in preventing water leakage. Finally, rock-fill dams are constructed using large rock fragments and are typically preferred for large-scale projects requiring high stability and durability (Çarhoğlu, 2012: 34).

MEASUREMENT SYSTEMS AND FILLED DAMS

When considered in terms of their environmental and socio-economic impacts, dam structures occupy a unique position among other engineering structures. For this reason, it is essential to develop designs that meet engineering standards for all dam projects. It is known that in our time, dams utilize a very large area of suitable valleys. Therefore, in regions with more complex environmental and geological structures and higher risks, there is a necessity to construct dams using different materials (Çetin and Bilge, 2004: 1-10).

The safety of dams is ensured by identifying elements that could cause damage to the dam structure during construction, based on differences between the conditions during construction and the design conditions. Dam measurement systems are used to compare the design and implementation phases of dam safety and to identify problems that could cause damage during implementation (Çetin and Bilge, 2004: 1-10).

These systems provide information on the timely identification of problems in dam structures, the necessary measures to be taken, and the issues to be considered in monitoring project performance and conducting similar studies. During the construction of dam structures, during water retention, and during operation, various measurement tools are used for all types of dams to monitor and examine the behavior that may occur due to external influences and material behavior (Çetin and Bilge, 2004: 1-10).

The use of dam measurement tools to monitor the performance levels of embankment dams has indirectly led to the creation of more reliable and economical projects. Measurements conducted using dam measurement systems have increased confidence in constructing longer dams in narrow valleys with steep slopes, demonstrating that well-designed dam structures can continue to operate safely despite valuable stress accumulations caused by various settlements (Dunncliff, 1993: 51).

The key factors that need to be monitored in embankment dam structures are: water levels, seismic forces, seepage, temperature, total stress distribution, deformations, and pore water pressure. These factors and their importance levels vary depending on the characteristics of the main body and foundation materials for all dam projects. For this reason, the design of dam measuring instruments must be carried out by expert engineers for all dam projects.

DEFORMATION MEASUREMENTS IN FILL DAMS

Deformations in embankment dams are detected using two different methods. The first method involves detecting deformations using measuring instruments installed in the dam foundation or body. The second method involves monitoring deformations at specific times and detecting the overall movement of the body using geodetic measurement methods applied to external reference points installed on the downstream surface and crest.

WORK PERFORMED

Gömükan Dam:

The Gömükan Dam is located in the region affected by two separate earthquakes (Kahramanmaraş Earthquakes) that occurred on February 6, 2023, with epicenters in the districts of Pazarcık (Mw 7.7) and Elbistan (Mw 7.6). The dam is being constructed on the Han River within the borders of Adıyaman Province, 25 km from the provincial center. It is a “concrete-faced rockfill dam.” Its height from the foundation is 80.50 m, and its water storage capacity is 57.46 million cubic meters. At the time of the earthquake, the dam was still under construction, and the elevation of the dam body fill was a few meters above 810.00 meters. (Figure 1.)



Figure 1. Gömükan Dam View from the Downstream Side (Completed Condition)

External Benchmark Points:

In embankment dams, external benchmark points are established on the downstream surface during construction to detect horizontal and vertical displacements of the dam body. The initial measurement values obtained at these points, established in accordance with the project specifications, are accepted as “reference values,” and subsequent measurements are compared with these values to determine the displacements of the points.

Within the scope of this study, the initial measurement values (initial coordinates) taken on November 1, 2022, at the external reference points numbered R37, R38, R40, R41, R42, and R43, established at the 800.00 m elevation as specified in the project while the dam body filling works were ongoing, were taken as “reference values.” After the earthquake, the coordinates of the same points were measured and compared with the reference values. No measurements were taken at point R39 as it was damaged. (Figure 1.)



Figure 1. External Benchmark Points Layout Plan

External reference points were established in accordance with the project specifications, with an upper surface width of 25 cm x 25 cm, a base width of 40 cm x 40 cm, and a height of 60 cm, made of C-30 class concrete in the shape of a truncated pyramid. (Figure 2.)

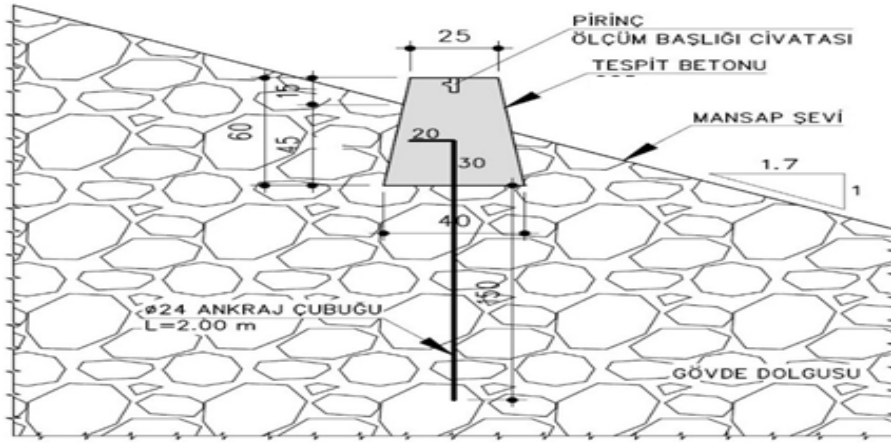


Figure 2. External Control Point Details

Measurements Taken at External Benchmark Points:

In this study, data was collected by taking measurements at regular intervals at external benchmark points R37, R38, R40, R41, R42, and R43, which were established at an elevation of 800.00 m during the dam construction. (Figures 2-a, 2-b).



Figure 2.a-b: GPS readings at external benchmark points

The first measurements were taken at points R37, R38, R40, R41, R42, and R43, established at an elevation of 800.00 m, when the dam body fill reached an elevation of 802.00 m, in order to determine the deformations that occurred during the dam body fill. The coordinates obtained from these initial measurements were accepted as the “Reference Value (Y0; X0; H0)” to determine post-earthquake movements.

To determine the horizontal and vertical position changes of the points, the static measurement method was applied in accordance with the principles of the Large-Scale Map and Map Information Production Regulation (BÖHHBÜY, 2018). In the static measurement method, measurements must be taken simultaneously at least at three points with known coordinates, in addition to the point whose coordinates are to be determined. The data from the measurements taken at each point are transferred to the evaluation software. The evaluation software will determine the uncertainty value by creating bases between all points. Additionally, it will create triangles between all points to ensure control between the values and balance the geometric relationships between the triangles. This will result in more reliable and accurate results.

In the static measurements, two Topcon GR-5 GPS/GNSS RTK receivers with 226 tracking channels and a length measurement standard deviation of $\pm(2 \text{ mm} + 2 \text{ ppm})$ were used. The same instruments were used to determine post-earthquake movements as were used to determine body deformations, with measurements taken over a 120-minute period at 1-second intervals.

On February 6, 2023, two separate earthquakes with magnitudes of 7.7 and 7.6 occurred in the Pazarcık and Elbistan districts of Kahramanmaraş. The earthquakes caused extensive damage in Kahramanmaraş and 11 surrounding provinces. This earthquake directly or indirectly affected the entire country negatively, and the Gömükan Dam, located near the epicenters of the earthquake, was also affected by the earthquake.

Two separate measurements were taken after the earthquakes to determine how they affected the dam body and how the positions of the measurement points changed. The first measurement was taken after the earthquake when the body fill height was at an elevation of 823.00 m. The second measurement was taken at an elevation of 849.70 m when the dam embankment was completed. The second measurement was conducted both to identify deformations at the points caused by the rise in the embankment after the earthquake and to confirm the findings obtained from the first measurements taken after the earthquake.

According to this plan, measurements taken at the following body elevation values:

- First Measurement (Reference Measurement): November 1, 2022, at an elevation of 802.00 m,
- Second Measurement (first measurement after the earthquake): June 20, 2023, at an elevation of 823.00 m,
- Third Measurement (second measurement after the earthquake); on January 18, 2024, at an elevation of 849.70 m is crest elevation.

Evaluation of Measurements:

For the evaluation of the measurements, points with known coordinates were used, which surround the study area and can form regular triangles; Malatya (MLY1), Siverek (SIV1), Şanlıurfa (SURF), Gaziantep (ANTE), Kahramanmaraş (MAR1), and Ekinözü (EKZ1). (Figure 3.)

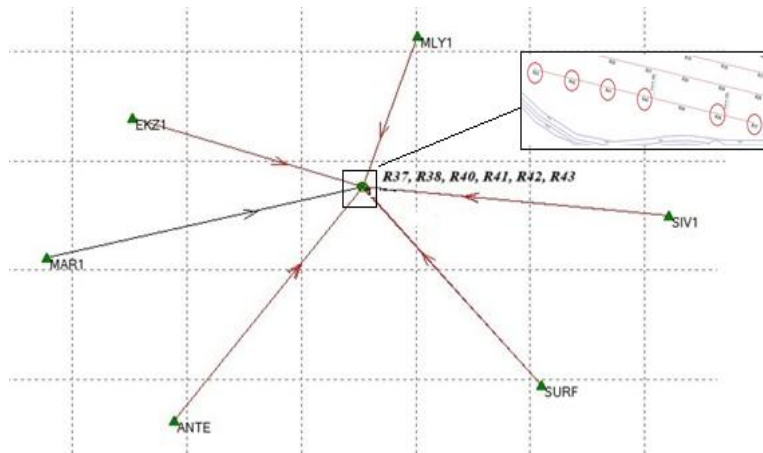


Figure 3. Location of TUSAGA-Active Stations and External Control Points

Leica Geo Office software was used to evaluate the static measurements taken to determine the location of the measurement points installed on the dam body. To perform the evaluation using the commercial software Leica Geo Office, the following data were required:

- Measurement values obtained at the measurement point,
- Simultaneous measurements from the point with known coordinates on the measurement day and time,
- Coordinate values of points with known coordinates,
- Precise ephemeris data of GNSS satellites from which signals were received on the measurement day.

The coordinate values, solution parameters, antenna values, and precise ephemeris data of the TUSAGA-Active stations were loaded into the Leica Geo Office program, and the balancing process was performed. This process was carried out separately for each reference point, and the coordinates of the points were obtained. The location information of the station points, the measurement values taken simultaneously, and the velocity information indicating the annual changes due to tectonic movements at these points were obtained from the address (<https://www.tusaga-aktif.gov.tr/Web/IstasyonKonumBilgileri.pdf>). Additionally, these processes were repeated for each session, and the data for each session were calculated separately. The Datum of the coordinates for the control points was obtained as ITRF-96 Zone Central Meridian: 39-3 Degrees. The elevation values obtained from the measurements were reduced to orthometric height (H).

FINDINGS

In the evaluation, the initial coordinates (Y₀; X₀; H₀) obtained from the initial measurements taken when the body height was at 802.00 elevation were accepted as reference values. The differences between the coordinates obtained from the second and third measurements and the coordinates obtained from the initial measurements were compared. After the earthquake, the coordinate differences between the coordinates obtained from the second and third measurements and the reference values (initial values) were identified. The initial coordinates (Y₀; X₀; H₀), the coordinates obtained from subsequent measurements (Y_i; X_i; H_i), and the coordinate differences (Δy ; Δx ; Δh) are shown in the tables below. The findings and evaluations based on the coordinate differences are also listed in the continuation of the tables.

Table 1: Coordinate Differences Obtained from the Second and First Measurements

POINT NO	FIRST COORDINATES			2. SESSION COORDINATES			DIFFERENCES (6th-1st)		
	Y ₀	X ₀	H ₀	Y ₂	X ₂	H ₂	$\Delta y(m)$	$\Delta x(m)$	$\Delta h(m)$
R37	421674,351	4190370,577	799,921	421675,899	4190370,634	799,984	+1,548	+0,057	+0,063
R38	421615,139	4190380,930	800,126	421616,697	4190381,001	800,130	+1,557	+0,071	+0,004
R40	421496,874	4190401,588	800,566	421498,425	4190401,622	800,462	+1,551	+0,034	-0,104
R41	421437,912	4190411,875	800,350	421439,466	4190411,870	800,249	+1,554	-0,005	-0,101
R42	421378,752	4190422,183	800,360	421380,354	4190422,228	800,302	+1,602	+0,045	-0,058
R43	421319,712	4190432,502	799,990	421321,318	4190432,572	799,969	+1,606	+0,070	-0,021

A comparison of the coordinates obtained from the second measurements taken after the earthquake (the first measurement after the earthquake) with the initial coordinates revealed significant changes in the coordinates of the points:

- *Horizontal movement detected in the RIGHT (Y) direction between +1.606 m and +1.548 m in the RIGHT (Y) direction,*
- *In the UP (X) direction between +0.071 m and - 0.005 m. movements detected.*
- *In the vertical (H) direction, rises and subsidence ranging from +63 mm to -101 mm observed.*
- *The evaluation of the measurements revealed that the earthquake's impact was clearly evident, with significant displacement occurring in the dam body. The differences between the displacement values in the Y direction (Δy) and the displacement values in the X direction (Δx) are not equal. These differences may be due to the dam body being filled, in other words, filled dams not being as rigid as concrete dams.*
- *According to the first measurements taken after the earthquake, the greatest horizontal movement was observed at point R43, with a displacement of +1.606 m to the RIGHT (Y) and +0.070 m UP (X). In the vertical direction, the maximum settlement of -104 mm was observed at point R40, and the maximum uplift of +63 mm was observed at point R37.*

According to the measurement results, approximately 1.6 m of displacement in the east direction and 0.07 m in the north direction were detected across the entire dam body after the earthquake. Accordingly, it can be said that there was very little rotational movement in the body. The absence of water in the reservoir may have contributed to the movements remaining at this level.

Table 2: Coordinate Differences Obtained from the 3rd and Initial Measurements

POINT NO	1ST SESSION (FIRST) COORDINATES			3. COORDINATES			DIFFERENCES (7th-1st)		
	Y ₀	X ₀	H ₀	Y ₃	X ₃	H ₃	Δy(m)	Δx(m)	Δh(m)
R37	421674,351	4190370,577	799,921	421675,908	4190370,626	800,000	+1,557	+0,049	+0,079
R38	421615,139	4190380,930	800,126	421616,709	4190381,007	800,126	+1,570	+0,077	0,000
R40	421496,874	4190401,588	800,566	421498,437	4190401,626	800,477	+1,563	+0,038	-0,089
R41	421437,912	4190411,875	800,350	421439,475	4190411,882	800,253	+1,563	+0,007	-0,097
R42	421378,752	4190422,183	800,360	421380,364	4190422,216	800,318	+1,612	+0,033	-0,042
R43	421319,712	4190432,502	799,990	421321,329	4190432,566	799,983	+1,617	+0,064	-0,007

Following the earthquake, the third measurements (second post-earthquake measurement) conducted after the body fill was completed, revealed changes in the coordinates of the points compared with the initial measurements. A comparison of the coordinates obtained from the third measurements with the initial coordinates confirmed that there were significant changes in the coordinates of the points. Following the third measurements:

- Horizontal movement detected between +1.617 m and +1.557 m in the RIGHT (Y) direction and between +0.077 m and +0.007 m in the UP (X) direction.
- The greatest horizontal movement observed at point R43, with a movement of +1.617 m in the RIGHT (Y) direction and +0.064 m in the UP (X) direction.
- In the vertical direction, the maximum settlement of - 97 mm observed at point R41, and the maximum heave of + 79 mm observed at point R37.
- The greatest settlement of - 97 mm observed at point R41, and the greatest uplift of +79 mm observed at point R37. The findings obtained here are consistent with the previous findings (Table.1).

As can be seen from the table, the comparison of the coordinates obtained from the third measurements taken after the earthquake with the first coordinates once again revealed significant changes in the coordinates of the points. The coordinate differences detected confirm the findings of the second measurements.

Table 3. Comparison of the two measurements taken after the earthquake

POINT NO	2. COORDINATES (first after earthquake)			3. KOORDINATLAR (second after earthquake)			DIFFERENCES (3-2)		
	Y ₂	X ₂	H ₂	Y ₃	X ₃	H ₃	Δy(m)	Δx(m)	Δh(m)
R37	421675,899	4190370,634	799,984	421675,908	4190370,626	800,000	+0,009	-0,008	+0,016
R38	421616,697	4190381,001	800,130	421616,709	4190381,007	800,126	+0,012	+0,006	-0,004
R40	421498,425	4190401,622	800,462	421498,437	4190401,626	800,477	+0,012	+0,004	+0,015
R41	421439,466	4190411,870	800,249	421439,475	4190411,882	800,253	+0,009	+0,012	+0,004
R42	421380,354	4190422,228	800,302	421380,364	4190422,216	800,318	+0,010	-0,012	+0,016
R43	421321,318	4190432,572	799,969	421321,329	4190432,566	799,983	+0,011	-0,006	+0,014

When the second measurements taken after the earthquake were compared with the third measurements taken when the body filling completed and the crest level was reached, the following findings were obtained:

- Horizontal position changes detected ranging from +12 mm to +9 mm in the RIGHT (Y) direction and from +12 mm to -12 mm in the UP (X) direction.
- In the H direction, height changes detected between -4 mm and +16 mm.
- The greatest horizontal change observed at point R42 with a movement of +0.010 m in the RIGHT (Y) direction and -0.012 m in the UP (X) direction.
- In the vertical direction, a rise of +16 mm observed at point R37.

Graphical representation of coordinate changes:

To determine the movements of the dam body after the earthquake, horizontal and vertical position change graphs were obtained by calculating the differences between the coordinates (Y_i ; X_i ; H_i) obtained from the second and third measurements conducted at the external reference points marked on the downstream surface of the dam body and the "Reference Value (Y_0 ; X_0 ; H_0)."

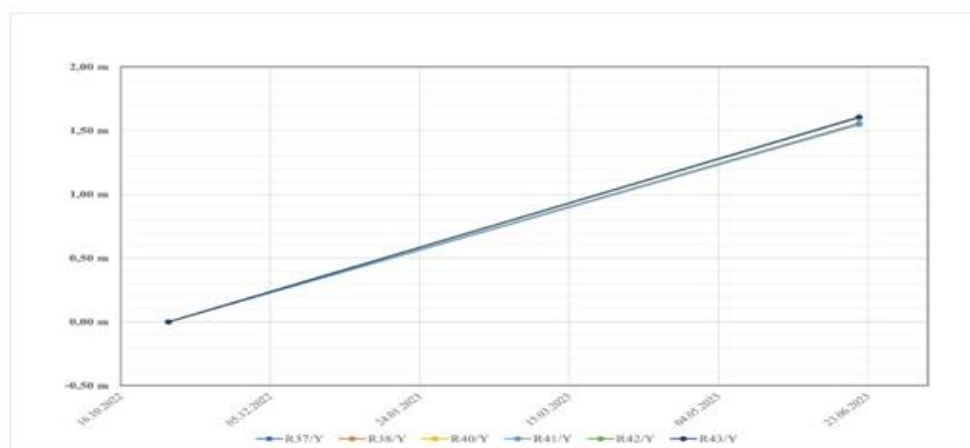


Figure 4. Movement Graph of External Benchmark Points in the Y (RIGHT) Direction

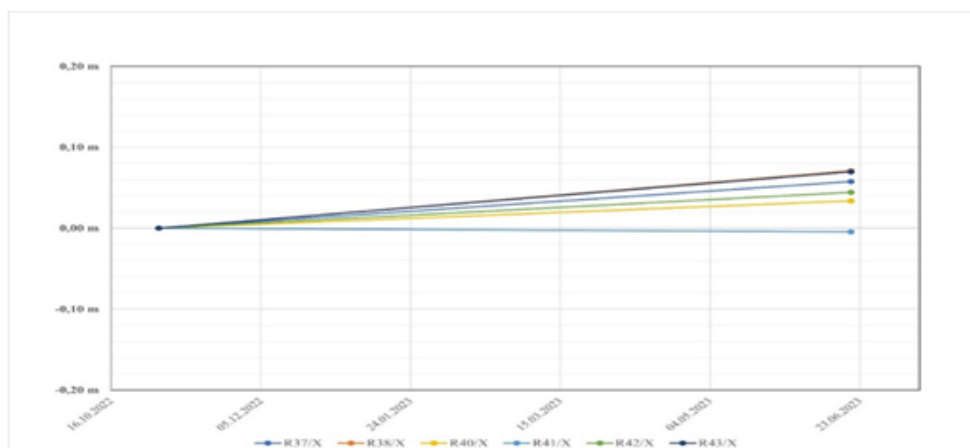


Figure 5. Movement Graph of External Benchmark Points in the X (UP) Direction

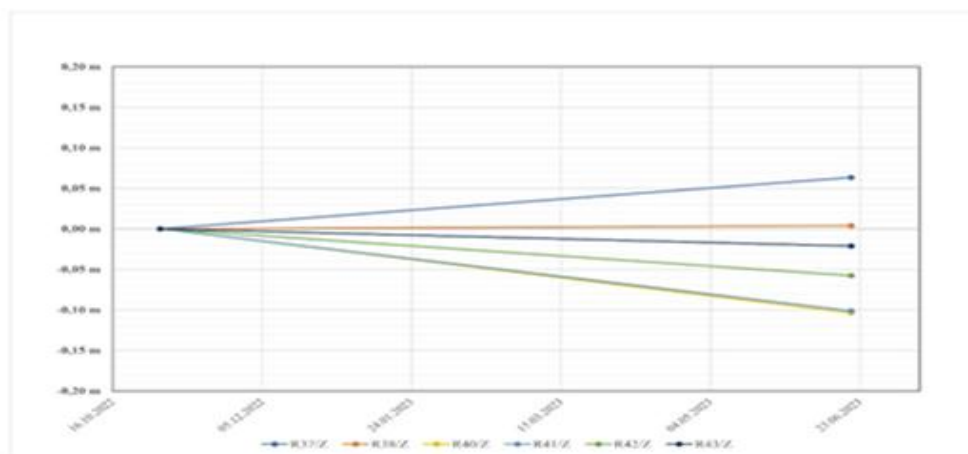


Figure 6. Movement Graph of External Benchmark Points in the Z (H) Direction

CONCLUSION

The earthquakes that occurred on February 6, 2023, in the Pazarcık and Elbistan districts of Kahramanmaraş caused significant destruction and loss of life in 11 provinces. According to the TUSAGA-Active data published by TKGM following the earthquakes, deformations occurred at the locations of the points. It was determined that the earthquake produced deformations consistent with the characteristic structure of the East Anatolian Fault Zone, which includes left-lateral displacement. The largest movement recorded was 4.5 m at the Ekinözü station (EKZ1), which is closer to the epicenter of the second earthquake.

When the findings obtained from the evaluation of measurements taken after the earthquake were analysed; The earthquake's impact on the dam body was clearly observed, with significant displacement recorded in the dam body. Horizontal movement occurred throughout the entire body. Displacement of approximately 1.6 m in the eastward direction and 0.07 m in the northward direction was detected. Based on these data, a rotation of up to 2.5^0 (2.78 gon) toward the north was observed in the dam body.

In the vertical direction, the maximum settlement of -104 mm was observed at point R40, and the maximum uplift of +63 mm was observed at point R37. According to the dam body project parameters, a maximum settlement (subsidence) of 81 cm in the vertical direction at the crest points was anticipated upon completion of the dam body filling. The results obtained from the measurements were found to be consistent with and acceptable within the project parameters. The fact that the detected deformations were less than the expected values has yielded important implications for dam safety.

Considering that the dam body is located within the borders of Adıyaman Province and its proximity to the Ekinözü station, it has been determined that these displacements are consistent with the Kahramanmaraş Earthquakes Report prepared by TMMOB.

On the other hand, according to the statements of the responsible personnel working on the dam construction, no cracks, fissures, local collapses, or other deformations were observed in the dam body during the visual observations and inspections conducted after the earthquake.

RECOMMENDATIONS

Measurements taken after the earthquake revealed significant ground displacement across a wide area. Most importantly, this displacement was observed in different directions and to varying degrees at every point of the project site in large-scale projects. This situation makes it difficult to construct the interconnected units of important structures such as dams in a coordinated manner. Although efforts have been made to align the points by obtaining transformation parameters from measurements taken before and after the earthquake, certain errors may still be observed. To minimize such errors, the reference points established at the project site should be densified, ensuring that each unit has at least two reference points for coordinated operation. This will ensure compatibility between units and result in more reliable transformation parameters.

Due to the inadequacies that may arise as a result of problems occurring in dam structures, dams may be at risk of collapse. As a result of dam collapse, the large volume of water in the dam reservoir can move rapidly and uncontrollably in a very short time, causing material and moral losses on the downstream side of the dam. In order to

identify deficiencies that could lead to collapse in dam structures in advance and take the necessary precautions in a timely manner, the planned performance of dam structures must be continuously monitored throughout their operational life, starting from the construction process.

Dams are important large engineering structures in terms of their size and many characteristics. To avoid adverse consequences, the safety of the dam must be ensured. The safety of dams is of great importance not only in terms of structural strength but also in terms of environmental sustainability. The collapse of dams can also lead to economic and environmental consequences. Dams are important large-scale engineering structures in terms of their size and many other characteristics. Ensuring the safety of a dam, verifying that it functions as intended according to its design, and identifying any potential issues in advance are crucial. For these and similar reasons, dams must be periodically monitored throughout their lifespan, both during construction and operation.

Measurements and observations should be carried out continuously, and any potential issues should be identified in advance so that necessary precautions can be taken. However, in the event of extraordinary natural phenomena such as earthquakes, landslides, or floods, measurements should be taken immediately without adhering to scheduled intervals to determine whether any deformation has occurred in the dam.

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Cognitive Load Theory in Education: An Evidence-Based Framework for Effective Learning

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Abstract: Cognitive Load Theory (CLT) has become increasingly relevant in addressing the instructional challenges posed by today's dynamic, digital, and lifelong learning environments. This literature review explores the theoretical foundations, empirical research, and practical applications of Cognitive Load Theory, with particular emphasis on how its principles can be applied to improve instructional design and support the acquisition of biologically secondary knowledge. The review draws on contemporary sources to examine key concepts such as intrinsic, extraneous, and germane cognitive load. It highlights evidence-based strategies such as worked examples, the split-attention effect, and redundancy reduction. It also considers insights from evolutionary psychology to contextualize CLT within broader cognitive frameworks. Findings suggest that aligning instructional design with human cognitive architecture can significantly enhance learner performance, particularly in digitally and lifelong learning environments.

Keywords: cognitive load theory, instructional design, intrinsic cognitive load, extraneous cognitive load, lifelong learning

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1. INTRODUCTION

In today's rapidly changing educational landscape, especially with the growing role of digital learning, cognitive load has become a key factor influencing success in education. Since it relates to the mental effort needed to process and manage information, cognitive load theory, rooted in our understanding of working memory and its limitations, has become especially relevant to educational improvement and reform.

Since Sweller introduced Cognitive Load Theory (CTL) in 1988, the context of learning has evolved dramatically. With rapid technological developments, learning has shifted from a fixed, classroom-bound process to a dynamic, lifelong experience. This transformation offers both opportunities and challenges. On one hand, learners are increasingly exposed to an overwhelming amount of information, making it difficult to focus on relevant content (Baddeley, 1992, 2020). On the other hand, a deeper understanding of cognitive architecture, including limitations like working memory constraints and strengths such as embodied learning (Barsalou, 2008, 2020), can help instructional designers craft more effective learning environments. As Ouwehand (2025) emphasized, aligning instructional design with these cognitive principles can significantly enhance learning efficiency.

This study aims to explore the theoretical foundations, empirical findings, and practical applications of Cognitive Load Theory in educational settings, with a focus on how its principles can be used to enhance instructional design, support learner performance, and address the cognitive challenges of today's digital learning environments.

Research questions:

1. How does the application of Cognitive Load Theory principles impact learner performance and engagement in educational environments?
2. In what ways can instructional design informed by Cognitive Load Theory optimize the acquisition of biologically secondary knowledge across diverse learning contexts?

2. LITERATURE REVIEW

Cognitive Load Theory (CLT) was first developed by John Sweller and colleagues in the 1980s and has since become one of the most influential theories in educational psychology (Humble, N., & Mozeliros, P., 2024). Originally, Cognitive Load Theory defined two types of cognitive load: Intrinsic cognitive load: the mental effort caused by the inherent difficulty of the learning materials and the complexity of the task (Chandler & Sweller, 1991). Extraneous cognitive load: the load imposed by information or instructional design elements not directly needed to master the task (Sweller et al., 1998). Later, a third type, germane cognitive load, was introduced (Leppink et al., 2014; Sweller et al., 1998). Germane load arises from learning activities that support the development of knowledge structures in long-term memory, such as applying learning strategies (Timothy, V., 2023).

Moreno and Park (2010), as cited in Timothy (2023), note that intrinsic, extraneous, and germane cognitive loads contribute to the total cognitive load only if the working memory capacity is not exceeded. Intrinsic and extraneous loads are associated with different aspects of learning material and are assumed to be uncorrelated. Intrinsic and germane loads share a theoretical background and should be interdependent, whereas extraneous and germane loads differ in nature: germane load is active, while extraneous load is passive.

Insights from evolutionary psychology have enriched the understanding of human cognitive architecture within Cognitive Load Theory. According to Geary (2002, 2005, 2008, 2012) and Geary and Berch (2016), human knowledge can be categorized into biologically primary knowledge, which develops naturally through evolution (e.g., language or facial recognition), and biologically secondary knowledge, which requires explicit instruction, such as reading or mathematics. Biologically primary knowledge, such as language acquisition or general problem-solving, is acquired easily and unconsciously through immersion in an appropriate environment. By contrast, biologically secondary knowledge like reading, writing, or mathematics is culturally important knowledge that humans have not evolved to acquire instinctively. CLT is primarily concerned with how we acquire this secondary knowledge, based on the cognitive architecture associated with it (Sweller, J., 2023).

Cognitive Load Theory emphasizes the importance of working memory in learning (Van Merriënboer & Sweller, 2005). Since working memory has limited capacity, learners must manage multiple information elements simultaneously and connect them to understand new material. This can lead to cognitive overload, which must be avoided by designing learning experiences within these limitations. Research shows instructional methods aligned with cognitive architecture yield the best results (Houichi & Samou, 2020).

3. MATERIAL AND METHOD

This study employs a literature review design to analyze existing research related to Cognitive Load Theory and its impact on educational background. The literature review approach involved identifying, selecting, and synthesizing relevant sources from recent peer-reviewed journals. The procedure involved defining key concepts, establishing criteria, and organizing the literature thematically to identify patterns and theoretical developments. Literature review contributes to the field by consolidating fragmented research findings, informing future empirical studies, and offering a theoretical framework for understanding the framework of Cognitive Load Theory more deeply.

4. RESULTS

Theme 1: Intrinsic Load and the Learning Environment

Intrinsic cognitive load refers to the mental effort required to understand the material itself, based on its complexity and the interactivity of its components. This load is closely tied to the learning task and generally cannot be changed once learning objectives are set. However, learners' prior knowledge can reduce intrinsic load by allowing them to recognize patterns or schemas stored in long-term memory, thus freeing working memory resources (Müller & Wulf, 2023).

Theme 2: Worked examples

An important early insight of Cognitive Load Theory was the role of long-term memory in reducing working memory load. Skilled problem-solving relies heavily on domain-specific knowledge structures stored in long-term memory, which reduces cognitive burden (Sweller & Cooper, 1985). When prior knowledge is absent, worked examples, fully worked-out solutions provided by experts, can effectively substitute for guiding novice learners (Hanham et al., 2023). Only recently have educational psychology textbooks shifted focus from simply explaining information processing to applying understandings of working and long-term memory to real teaching scenarios, with Cognitive Load Theory as a major framework (Hanham et al., 2023).

Theme 3: Split attention

Attention plays a critical role in how cognitive load is managed during learning. According to Sweller, Ayres, and Kalyuga (2011), attention serves as a gatekeeper of working memory, determining which information is processed and which is filtered out. When instructional materials are poorly designed, they can overload attention by presenting too many competing stimuli, leading to increased extraneous cognitive load and reduced learning efficacy. This is particularly problematic in digital learning environments, where learners must divide attention between visual, audio and text (Mayer & Moreno, 2003). Effective instructional design should guide attention toward essential elements and eliminate distractions to ensure that cognitive resources are directed toward meaningful learning (Choi, Van Merriënboer, & Paas, 2014).

Theme 4: Instructional design

Cognitive Load Theory has important implications for instructional design, especially in educational technology and e-learning. To optimize learning, it is essential to minimize extraneous cognitive load by employing clear and well-structured instructional materials that reduce unnecessary distractions. Managing intrinsic cognitive load involves breaking down complex topics into smaller, sequential steps, making the content more manageable for learners. Additionally, enhancing germane cognitive load can be achieved by encouraging active learner engagement through interactive exercises, self-explanation, and problem-solving activities, which foster deeper understanding (Amhimid, 2025).

Extensive research supports the core principles of Cognitive Load Theory and highlights several key effects. The split-attention effect demonstrates that learning outcomes improve when multiple sources of information are integrated cohesively, thereby reducing extraneous cognitive load (Amhimid, 2025). The worked-example effect indicates that novice learners benefit more from studying step-by-step solutions prepared by experts than from independently solving similar problems, as unguided problem-solving can overload working memory and hinder learning (Sweller & Cooper, 1985; Paas & Van Merriënboer, 1994; Paas & Merriënboer, 2020). Finally, the redundancy effect reveals that providing learners with extraneous information irrelevant to the learning goals can impose an unnecessary cognitive burden, thereby impairing learning effectiveness (Diao & Sweller, 2007; Houichi & Sarnou, 2020).

5. DISCUSSION AND CONCLUSIONS

Cognitive Load Theory offers a critical framework for understanding how learners process information and how instructional design can either facilitate or hinder effective learning. The increasing complexity of educational environments, especially with the rapid integration of digital tools and lifelong learning models, makes it essential for educators and curriculum designers to consider Cognitive Load Theory when developing teaching strategies.

One of the foremost reasons to integrate Cognitive Load Theory in education is the recognition of inherent limitations of human cognitive architecture, particularly the limited capacity of working memory. Since working memory can only hold a small amount of information at one time, instructional material and learning activities that overwhelm this capacity can lead to cognitive overload, resulting in reduced learning efficiency or even failure to acquire new knowledge. By applying Cognitive Load principles, educators can create learning experiences that respect these cognitive limits, ensuring that learners are neither overwhelmed nor underchallenged.

Moreover, Cognitive Load theory's insights are particularly relevant in today's digital learning environments when learners are bombarded with vast amounts of information from multiple sources. Without careful instructional design, these environments risk overwhelming learners' working memory. Empirical evidence of research underscores the benefits of Cognitive Load Theory-informed practices. Effects like working examples demonstrate how guiding novices reduces unnecessary problem-solving demands. Similarly, understanding the redundancy effect alerts educators to the dangers of overloading learners with irrelevant information, which can hinder rather than help learning.

Ultimately, embracing Cognitive Load Theory within education equips educators with a scientifically grounded framework to design more effective, learner-centered environments. This is particularly important as education evolves towards more personalized, technology-enhanced, and lifelong learning paradigms.

Cognitive Load Theory offers a powerful lens through which to understand and improve learning in today's complex education system. By aligning instructional design with the limitations and strengths of human cognition, educators can create more effective and engaging learning experiences. As education continues to evolve in response to digitalization and lifelong learning demands, integrating Cognitive Load Theory principles is not only relevant but essential for fostering meaningful learning outcomes.

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I have contributed to several papers in psychology and education, with a strong focus on emerging perspectives.

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N/A

Peer-review

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Author Contributions

Conceptualization, S.D. Material and Methodology: S.D. Supervision: S. D. Visualization: S. D. Writing-Original Draft: S.D. Writing-review & Editing: S. D. Other: I have read and agreed to the published version of manuscript.

Conflict of Interest

I have no conflicts of interest to declare.

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Online Reputation as a Digital Indicator of Destination Image and Quality: The Case of Budva

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Abstract: Online reputation has become one of the key factors influencing potential visitors' decision-making when choosing a tourist destination. Therefore, it is essential to consider it within the framework of strategic destination management. Considering the growing importance of digital platforms and electronic word-of-mouth (e-WOM), this study aims to examine how online reviews shape the image of Budva as a tourist destination. The analysis is based on publicly available data from Booking.com, TripAdvisor, and Google Reviews. A total of 81,522 user reviews referring to accommodation, attractions, restaurants, beaches, and other aspects of the tourist offer were included in the research. Particular attention was given to the quantitative analysis of average ratings, as well as to differences in user perceptions across various platforms and service categories. The findings suggest that Budva enjoys a predominantly positive online reputation, especially in areas related to accommodation, natural resources, and cultural attractions. The main weaknesses identified include traffic infrastructure and parking. The results also highlight the need to improve service quality, particularly in high-end hotels, to ensure a better match between visitor expectations, service value, and price. Ultimately, the study confirms the relevance of online reputation as a meaningful digital indicator of destination image and a valuable tool for strategic management and promotion within the tourism sector.

Keywords: Tourism, Destination management, Online reviews, Online reputation, Budva.

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1. INTRODUCTION

Tourism is an economic sector that is rapidly evolving and adapting to modern trends. One of the main drivers of transformation in the tourism industry is digitization and the application of new technologies. Today, the competitiveness and visibility of tourist destinations in the global market increasingly depend on their digital presence and the quality of online communication. The online reputation of a destination, shaped by users' perceptions, evaluations, and comments on various digital platforms, has become a key factor in gaining competitive advantage and maintaining the tourist image.

This study focuses on analyzing the online image of Budva as a tourist destination. The relevance and timeliness of the topic lie in the growing influence and widespread use of electronic word-of-mouth (e-WOM) in travel decision-making.

Budva is the leading tourist destination in Montenegro, with a dominant share in the total number of tourist arrivals and overnight stays. According to MONSTAT data for 2024, Budva recorded 803,011 arrivals and 5,412,910 overnight stays, accounting for 32.5% of all arrivals and 34.7% of all overnight stays in the country. As a destination with a long-standing tourism heritage, Budva is increasingly subject to the influence of digital trends and changes in traveler behavior.

In light of the increasing significance of online reputation, this paper aims to explore how online reviews influence the perception of Budva as a tourist destination. The analysis draws on user-generated content from platforms including Booking.com, TripAdvisor, and Google Reviews, with a focus on identifying dominant themes and evaluating their role in shaping the destination's digital image. The study offers a comprehensive insight into Budva's online reputation through the perspective of authentic visitor experiences and electronic word-of-mouth (e-WOM) communication.

2. LITERATURE REVIEW

The image of a destination plays a crucial role in influencing the decisions of potential tourists regarding which location to visit. Contemporary processes of digital transformation in the tourism sector have increasingly emphasized the importance of building a destination's online image, shaped by its presence on digital platforms and interaction with users. Within this framework, digital marketing plays a significant role in fostering a positive perception of a destination, thereby directly impacting visitor behavior and travel intentions (Rodrigues et al., 2023).

Travel blogs, social networks such as Facebook, Instagram, and YouTube, as well as specialized platforms like Booking.com and TripAdvisor, play a significant role in shaping a destination's image. Increasingly, various mobile applications are being utilized to provide tourists with quick and convenient access to information about destinations

and available tourism services. In this context, search engine marketing has emerged as one of the fastest-growing segments of digital tourism, enabling destinations to better understand the needs of contemporary travelers and to identify the most effective promotional channels. Today, search engines are among the primary tools travelers use to search for and filter information, while also serving as essential promotional platforms for tourism and hospitality providers striving to reach their target audiences (Khan et al., 2022).

Online sources of information about the quality of services at the destination represent one of the most important elements in the decision-making process of modern tourists. Among them, online travel reviews stand out, as they have a significant impact on the choice of destination. Tourists often give them a high level of trust because they come from the personal experiences of previous visitors, and in most cases they are not under the direct control of the destination's marketing experts. Based on such reviews, potential tourists form their image of the destination and decide whether to visit it. Therefore, it is extremely important to understand the role and power of online reviews in shaping the image of a destination (Guo and Pesonen, 2022).

The decision-making process regarding the choice of a tourist destination typically begins with the identification of a tourist's personal needs and desires. Depending on the type of experience sought, whether it involves nature, cultural attractions, or recreational activities, tourists begin researching destinations that align with their individual preferences. During this information-gathering phase, online platforms play a central role, offering access to relevant data on attractions, accommodation, transportation, safety, and other essential aspects of the destination. The online reputation of a destination, shaped by the reviews and ratings of previous visitors, has a significant impact on the perceived strengths and weaknesses of a given location. Based on this information, along with personal preferences, budget, and expectations, tourists make their final decision on which destination to visit. Following the trip, tourists form their overall judgment of the destination by comparing the actual experience with their initial expectations. This post-decision phase often culminates in the submission of an online review, which, in turn, influences the choices of future travelers (Pagaldiviti, 2025).

Electronic word-of-mouth (e-WOM) represents a form of informal communication among consumers via the Internet, and is perceived as more credible than traditional face-to-face communication. Tourists increasingly rely on e-WOM sources, such as reviews on specialized websites and social media platforms, considering them reliable and easily accessible channels for making travel-related decisions. Due to its accessibility and perceived impartiality, e-WOM plays a crucial role in shaping the image of a destination, both during the trip-planning phase and after the visit itself (Prayogo et al., 2016).

The most common form of e-WOM content is found on community-based platforms such as forums, review websites, and feedback-sharing portals. These platforms allow users not only to read others' comments, but also to share their own, which gives them a high degree of relevance and influence in the decision-making process. e-WOM content can be either positive or negative, and its impact is particularly significant when it comes to experiential products such as tourism services, where users cannot fully assess quality in advance. In this context, platforms like Booking.com, TripAdvisor, and similar channels play a crucial role in shaping perceptions of destinations, accommodation, and related services (Doosti et al., 2016).

Compared to traditional word-of-mouth, electronic word-of-mouth (e-WOM) generated through online reviews is perceived as more credible and trustworthy. As a result, tourists increasingly rely on online reviews as a key source of information when making travel decisions. The perceived trustworthiness of reviews directly affects the extent to which they influence the final decision. For this reason, internationally recognized platforms that specialize in particular tourism services, such as accommodation, are often regarded as relevant and credible sources of information (Su et al., 2021).

In line with accelerated digitalization and global trends in tourism, the way destinations are promoted and perceived is undergoing significant change. Destination marketing is no longer based solely on traditional promotional tools but increasingly relies on digital technologies and automated systems. One of the most recent developments in this context is the application of artificial intelligence (AI) in tourism, which enables travelers to access relevant information about destinations, services, and user experiences more quickly and efficiently.

In today's digital environment, where information circulates at high speed, a destination's online reputation has become a key form of its visibility and recognition among potential tourists. In the past, reputation developed gradually, through personal experiences and traditional media. Today, artificial intelligence and the algorithms of digital platforms significantly influence which information reaches users. Tourists often rely on recommendations that are pre-filtered according to their previous searches and interests, creating a personalized perception of the destination. However, this carries the risk that users may not receive a complete picture of the destination's overall reputation. This interaction between digital channels and real experiences shapes a destination's online reputation, which directly affects tourists' decisions and their willingness to leave reviews or make recommendations.

3. MATERIAL AND METHOD

For the purposes of this research, data available on digital platforms TripAdvisor, Booking.com, and Google Reviews were analyzed. The aim of the study was to assess the online reputation and image of Budva as a tourist destination based on user reviews, taking into account various aspects of the visitor experience, such as accommodation, attractions, services, and infrastructure. The selected platforms are among the most widely used sources of electronic word-of-mouth (e-WOM) in contemporary tourism and are considered relevant indicators of online reputation.

The research is based on a quantitative analysis of publicly available reviews, with the aim of interpreting user ratings as indicators of service quality and gaining insight into the overall perception of the destination.

The Booking.com platform was primarily used to analyze the quality of accommodation facilities, while TripAdvisor and Google Reviews were examined to collect information on other segments of the destination's tourism offer, including attractions, gastronomy, transportation, and additional services. The research encompassed a total of 81,522 user reviews related to the destination of Budva. The structure of the reviews by platform is presented in Table 1.

Table 1. Structure of user reviews by platform

Review Platform	Number of Reviews
Booking.com	34,497
TripAdvisor	22,211
Google Reviews	24,814
Total	81,522

Source: Author

For the purpose of analyzing the quality of accommodation facilities on the Booking.com platform, four accommodation categories were considered. These are presented in Table 2, along with the number of reviews collected for each type.

Table 2. Number of reviews per accommodation type analyzed on Booking.com

Accommodation Category	Number of Reviews	Number of Properties
5 star hotel	8,077	10
4 star hotel	19,268	25
Villas	489	9
Apartments	6,663	21
Total	34,497	65

Source: Author

In addition to the quantitative analysis, the content of selected user comments was reviewed to gain a qualitative insight into the dominant themes and aspects of tourist satisfaction. The data were collected in July 2025, ensuring the relevance and timeliness of the information presented.

On the TripAdvisor platform, reviews related to attractions within the Old Town, beaches, restaurants, and sports activities were analyzed. On Google Reviews, in addition to these categories, reviews concerning parking, the bus station, and shopping centers were also included, in order to obtain a broader picture of overall visitor satisfaction with the destination.

The analysis of reviews from all platforms was conducted based on users' average ratings, expressed in numerical form (ratings from 1 to 10 on Booking.com, and from 1 to 5 on Google Reviews and TripAdvisor). These ratings were used as quantitative indicators of user satisfaction with various segments of Budva's tourism offer.

The collected data were systematized and processed using Microsoft Excel, through tabular representation of the number of reviews by category and platform, as well as the calculation and presentation of average values.

Although digital platforms such as Booking.com, TripAdvisor, and Google Reviews include a large number of user reviews, this research has certain methodological limitations. Primarily, the limitation lies in the inability to cover all existing reviews, as this would require several months of analysis and the use of advanced software tools for automatic data collection and processing. Therefore, the sample was limited to a relevant number of publicly available and representative reviews at the time of data collection. Additionally, user ratings are subjective and depend on individual expectations and previous experiences, which may affect the consistency of the data. Although the research included the most popular platforms that cover a wide range of services, certain segments of Budva's tourism offer, such as cultural events, excursions, and similar, may be underrepresented or not included at all. Despite these limitations, the sample of

more than 80,000 reviews provides a credible insight into the dominant perceptions and the online reputation of Budva as a tourist destination in the digital environment.

4. RESULTS

In order to assess Budva's online reputation as a digital indicator of destination quality and image, an analysis was conducted of publicly available reviews on leading digital platforms in the field of tourism services. The results of the analysis, presented as quantitative indicators in the form of average ratings, are structured by platform and by key segments of the tourism offer: accommodation facilities, beaches, major attractions, transport infrastructure, and other supporting services. A comparative analysis of data from all three platforms was used to calculate an overall average rating of the destination, providing an estimated value of Budva's online reputation as a tourist destination.

4.1. Booking.com – Quality of Accommodation Facilities

In order to assess the quality of the accommodation offer, a total of 34,497 tourist reviews were analyzed. The data covers tourist experiences across different categories of accommodation: 4 and 5 star hotels, villas, and rental apartments. The overall average rating of accommodation facilities on the Booking.com platform is 9.08, indicating a high level of tourist satisfaction with the accommodation offer in Budva. Ratings for individual categories, including staff, comfort, Wi-Fi, facilities, value for money, cleanliness, and location, are presented through diagrams according to the accommodation type.

Accommodation facilities in Budva received an average rating of 9.08. The highest ratings were recorded for villas and 5 star hotels, while 4 star hotels and individually rented apartments received similar, slightly lower scores.

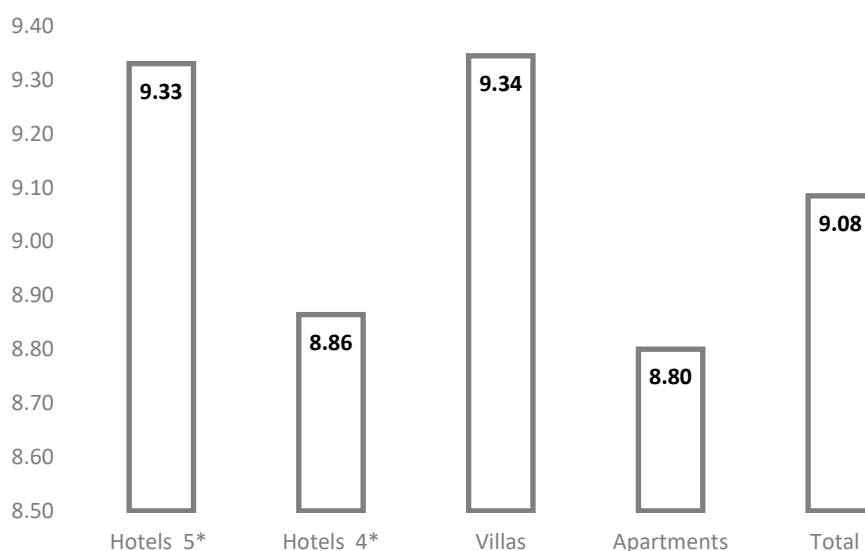


Figure 1. Quality of accommodation facilities in Budva – Booking.com

Source: Author

Guests staying in villas expressed the highest level of satisfaction with staff. Satisfaction with staff in villas, as one of the segments of the accommodation offer, significantly differs from other types of accommodation included in the analysis. Among the four observed categories, guests in 5 star hotels reported the lowest level of satisfaction with staff, indicating both a notable area for improvement and potentially higher expectations from guests, which is understandable given the category of accommodation they chose for their stay.

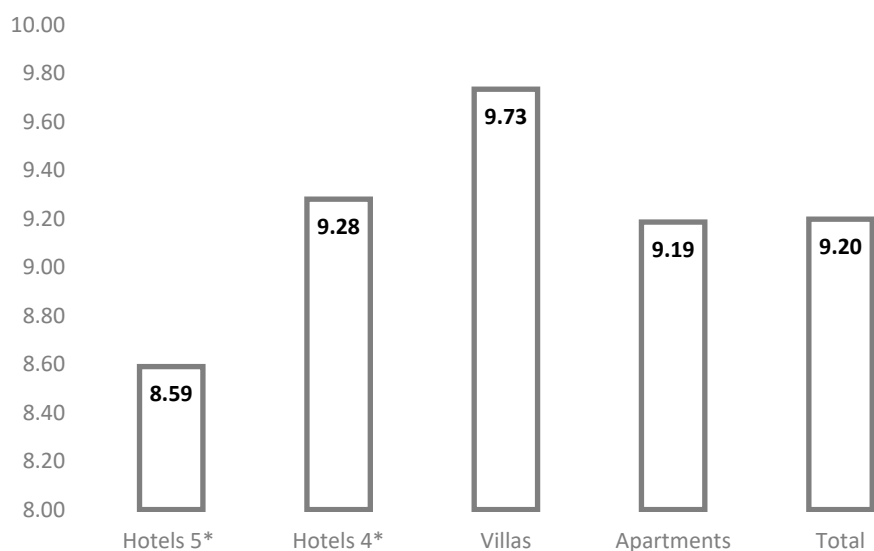


Figure 2. Staff – Quality of accommodation facilities in Budva
Source: Author

Comfort received the lowest average ratings in apartments and 4 star hotels. In contrast, 5 star hotels recorded the highest average score of 9.62, followed by villas with a slightly lower rating of 9.3. These findings highlight a clear differentiation in guest-perceived comfort across accommodation categories, suggesting that higher-standard properties are more successful in meeting expectations in this aspect.

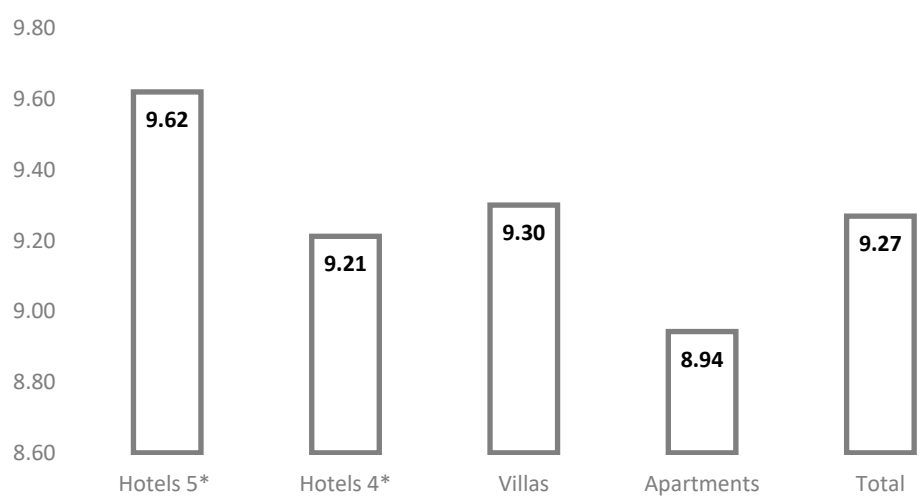


Figure 3. Comfort – Quality of accommodation facilities in Budva
Source: Author

The availability and perceived quality of internet services received an average score of 8.89, suggesting there is room for improvement in all accommodation types, especially in four-star hotels, apartments, and villas.

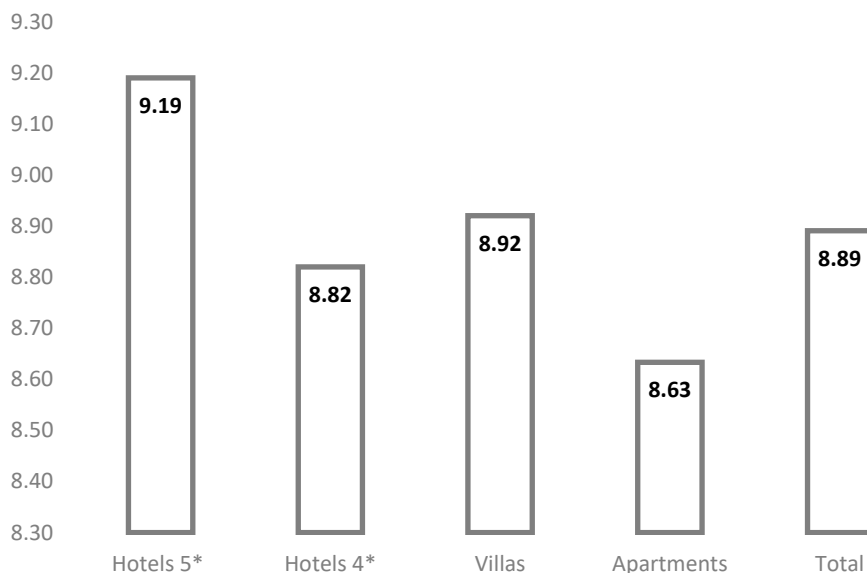


Figure 4. Wi-fi - Quality of accommodation facilities in Budva
Source: Author

Among all accommodation types, amenities were rated highest in 5 star hotels and villas. The overall average rating for amenities in Budva's accommodation sector was 9.08. In contrast, 4 star hotels and apartments received below-average ratings of 8.84 and 8.79, respectively.

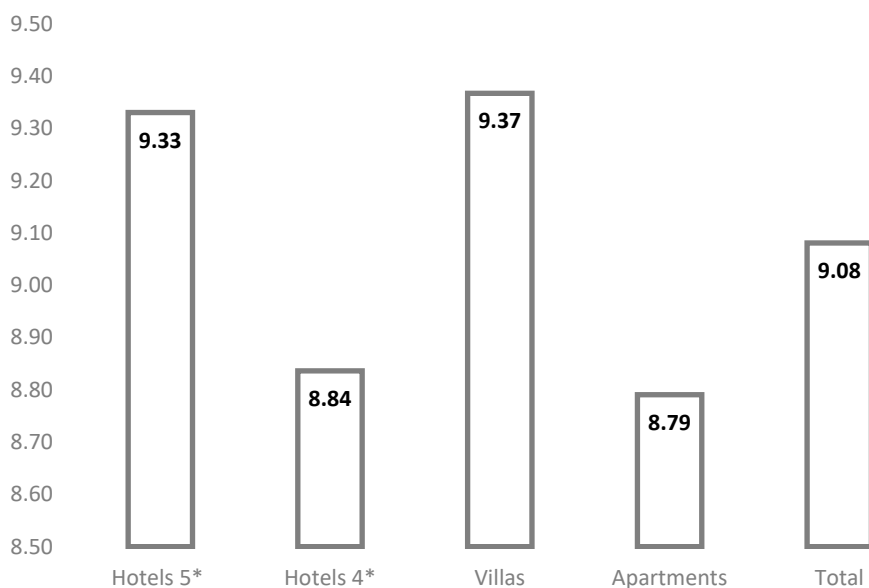


Figure 5. Amenities - Quality of accommodation facilities in Budva
Source: Author

Cleanliness levels across all analyzed accommodation categories were generally high. Five star hotels and villas received excellent ratings in this category, while the overall average cleanliness score for all accommodation types in Budva was a very good 9.32

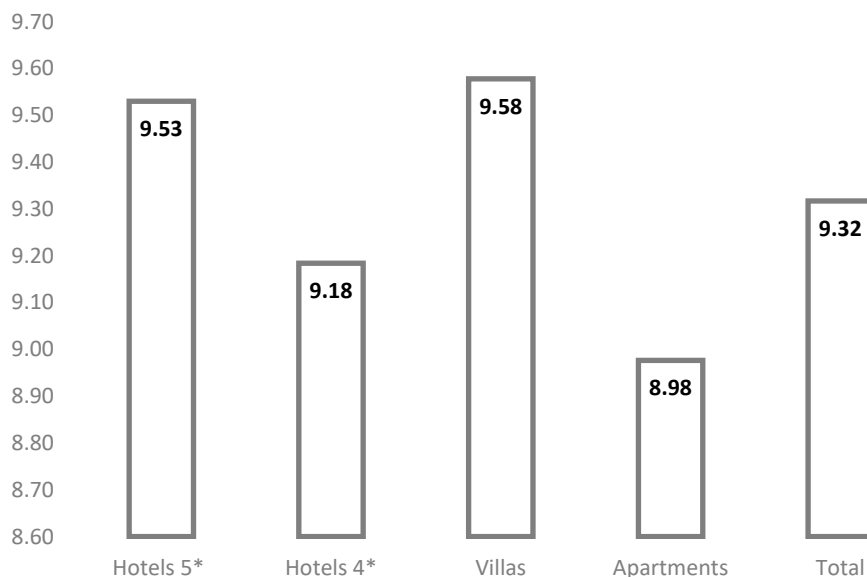


Figure 6. Cleanliness - Quality of accommodation facilities in Budva
Source: Author

Although the analysis included accommodation facilities across the broader area of the Budva municipality, not limited to the town center, the location of the properties received a high average score of 9.08. The best-rated locations were found among 5 star hotels.

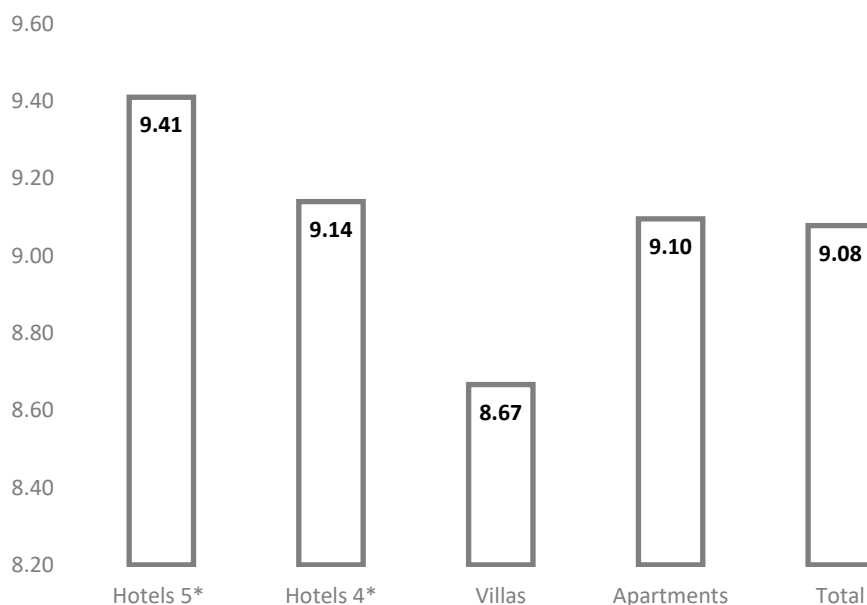


Figure 7. Location - Quality of accommodation facilities in Budva
Source: Author

The price-to-quality ratio received an average score of 8.91, indicating that there is room for improvement in the overall service quality of hotels in Budva. In this category, villas were rated the highest. Five star hotels received a score of 8.9, suggesting that guests perceive the prices as relatively high in comparison to the quality and range of services provided in these establishments.

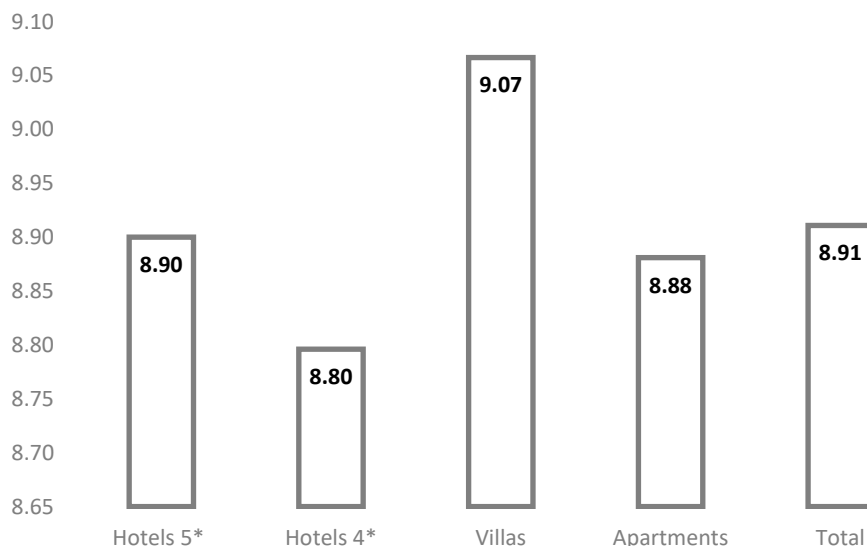


Figure 8. Price-to-Quality Ratio - Quality of accommodation facilities in Budva

Source: Author

Based on the comprehensive analysis of reviews available on the Booking.com platform, it can be concluded that Budva offers a relatively high level of service quality in its accommodation sector. Cleanliness, comfort, and staff performance are particularly influential in shaping guest satisfaction. However, improvements in content and overall service quality are necessary to justify the established pricing. Five star hotels need to enhance the professionalism and hospitality of their staff, while villas and four star hotels should improve the quality of their Wi-Fi service.

4.2. TripAdvisor – Evaluation of Attractions and Hospitality Service Quality

In order to assess tourist satisfaction with Budva's main attractions, beaches, and restaurants, reviews available on the TripAdvisor platform were analyzed. The research included a total of 22,211 reviews. The number of reviews by service segment and their average ratings are presented in Table 3.

Table 3. TripAdvisor – Number of Reviews and Average Ratings by Service Segment

Segment	Number of Reviews	Average Rating
Old Town	5,953	4.1
Beaches	3,180	4
Sport Activities	407	4.9
Restaurants	12,671	4.2
Total	22,211	4.3

Source: Author's compilation based on data from TripAdvisor

According to the data from TripAdvisor, the average rating of overall tourist satisfaction with Budva as a destination is 4.31. The main attractions and the Old Town received an average rating of 4.1, beaches were rated 4.0, restaurants 4.21, and sports activities 4.92. These results indicate opportunities for improvement in specific segments of the offer to enhance overall tourist satisfaction. Since beaches represent one of Budva's core tourism resources, further analysis and development efforts should be directed toward improving this aspect of the offer in order to better meet the needs and expectations of visitors.

4.3. Google Reviews – Evaluation of Attractions and Infrastructure

The analysis of the Google Reviews platform includes a total of 24,814 reviews. In addition to beaches and major attractions, this part of the analysis also covers elements of infrastructure (parking, bus station) and shopping centers. The lowest ratings were recorded for the bus station (2.55) and parking services (3.7), indicating certain weaknesses in the transportation infrastructure. In contrast, beaches and tourist attractions received relatively high average ratings. The number of reviews and corresponding average ratings for each category are presented in Table 4.

Table 4. Google Reviews – Number of Reviews and Average Ratings by Service Segment

Category	Number of Reviews	Average Rating
Attractions – Old Town and surrounding	6,968	4.6
Beaches	13,403	4.4
Parking services	228	3.7
Bus station	814	2.5
Shopping centers	3,401	4
Total	24,814	3.8

Source: Author's compilation based on data from Google Reviews

Given that beaches represent a particularly important segment of Budva's tourism offer, visitor satisfaction with individual beaches is presented in Table 5. Based on the number of reviews and the average rating, it can be concluded that the beach at Sveti Stefan plays a particularly significant role in guest satisfaction and in shaping the overall image of Budva as a tourist destination. Beaches received an overall average rating of 4.44, indicating higher satisfaction with this segment compared to the TripAdvisor platform. This difference can be attributed to the larger number of user comments on Google Reviews, suggesting a broader base of satisfied visitors and greater accessibility and appeal of the beach offerings.

Table 5. Number of Reviews - Average Rating

Beach	Number of Reviews	Average Rating
Mogren	1,530	4.3
Jaz	4,122	4.5
Bečići	912	4.4
Kamenovo	1,253	4.5
Sveti Stefan	1,200	4.6
Budva Riviera	1,400	4.5
Miločer	691	4.3
Queen's Beach	847	4.5
Drobni pijesak	744	4.5
Hawaii Beach	704	4.3
Total	13,403	4.4

Source: Author's compilation based on data from Google Reviews

4.4. Comparative Analysis – The Online Image of Budva as a Tourist Destination

A comparative analysis of a total of 81,522 reviews across all three platforms indicates that Budva holds a relatively high average rating, reflecting a notably positive online reputation. The average ratings by platform are presented in Table 6.

Table 6. Average user ratings by platform

Platform	Average Rating
Booking.com	9.08
TripAdvisor	4.31
Google reviews	3.86
Total	4.25

Source: Author

Since the platforms use different rating scales (Booking.com 1–10, TripAdvisor and Google 1–5), a conversion was performed to unify all results on a common 1–5 scale. Based on this, a weighted average rating of 4.25 was calculated. This value provides a summarized representation of Budva's digital reputation, indicating predominantly positive tourist experiences, with certain variations in quality perception depending on the type of service and the platform used.

5. DISCUSSION AND CONCLUSIONS

The research findings indicate that Budva demonstrates a distinctly positive online reputation, with an overall average rating of 4.25. This result reflects a generally high level of tourist satisfaction, while also highlighting areas for improvement, particularly when examining individual aspects of the destination's tourism offer.

The Booking.com platform, which focuses on accommodation, shows the highest average rating (9.08), confirming that Budva offers high-quality lodging facilities. Particularly high ratings were recorded in the categories of staff and location, while the 'value for money' segment received slightly lower scores. This suggests that certain properties should

further improve their services to ensure pricing aligns with guest expectations. Notably, five-star hotels received somewhat lower staff ratings compared to lower-category hotels, which may indicate either higher guest expectations at this level or actual challenges related to service standards and staff competence.

Based on the reviews from TripAdvisor, it can be concluded that visitors are particularly satisfied with the beaches, attractions, and hospitality venues in Budva, which confirms the destination's competitive advantages in terms of natural resources and culinary offerings. However, the analysis of comments from Google Reviews highlights the need for improvements in transport infrastructure, especially in terms of parking facilities and the availability of public transportation.

Overall, the findings confirm that Budva holds a stable and recognizable online reputation, which aligns with its actual positioning in Montenegro's tourism market, as a destination that continues to record growth in tourist arrivals and overnight stays year after year. Nevertheless, the analysis of user reviews points to clear directions for improvement: the need for further investment in service quality within the high-end accommodation segment, enrichment of available content and activities, and a systematic approach to addressing infrastructural challenges.

At the global level, online reputation is increasingly recognized as a key tool in destination management. Thanks to electronic word-of-mouth (e-WOM) and digital platforms, the perception of a destination is often formed before tourists even arrive. As a result, reputation is shaped not only through traditional promotional activities, but also through authentic user experiences. It is therefore essential that tourism stakeholders, including both the public and private sectors—actively monitor, analyze, and manage online reviews.

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The Impact Of Overtourism On The Quality Of Life Of The Local Population In The Tourist Destination Of Budva

MILAN LIJEŠEVIĆ*¹

Abstract: Tourism is one of the most important economic activities of a large number of countries, including Montenegro and Budva as the central point of the Montenegrin tourist offer. Despite the fact that tourism contributes to economic development, intensive tourist growth during the summer months often causes numerous problems, which significantly burdens the local community and infrastructure. The aforementioned phenomena contribute to numerous challenges in terms of traffic jam, the burden on public resources, and therefore in the final reduction of the quality of life of the local population. Overtourism has become an increasingly present problem of Budva as a tourist destination, disrupting the balance between tourist development and the quality of life of the local population. The subject of this paper is the investigation of the impact of overtourism on the quality of life of the local population of Budva, with special reference to the key challenges that the local population of Budva faces during the summer tourist season. This paper aims to explore the relationship between overtourism and the quality of life of the local population, particularly focusing on how residents of Budva perceive these impacts. On the basis of this research, it is possible to gain a better insight into the key challenges and propose recommendations for the establishment of a model of sustainable tourism development. In addition, the research aims to contribute to a better understanding of the impact of overtourism and to emphasize the need for strategic planning of tourism development in accordance with the principles of sustainability.

Keywords: overtourism, sustainability, tourism.

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1. INTRODUCTION

Tourism in Montenegro has the status of a strategic economic activity. Of course, Budva, as the central place of Montenegrin tourism, represents the epicenter of tourist movements at the national level. The dynamic development of tourism, especially in the summer period, brings significant economic benefits, but at the same time generates a number of challenges that directly affect the daily lives of the local population. In this context, overtourism is becoming an increasingly pronounced phenomenon, especially in urban areas such as Budva, where physical, infrastructural and social capacities are increasingly overloaded.

The research problem of this paper concerns the analysis of the impact of overtourism on the quality of life of the inhabitants of Budva. Special emphasis is placed on the perception of the local community in terms of traffic congestion, accessibility of infrastructure, increase in the cost of living and general satisfaction with living conditions during the tourist season.

The aim of the research is to contribute to a better understanding of the consequences of overtourism through the analysis of local perceptions and to encourage the development of sustainable policies that will ensure a balance between economic development and the interests of the local population.

In methodological terms, the research combines secondary and primary data sources. Secondary data include relevant scientific literature, statistical reports and previous research on the phenomenon of overtourism, while primary data were collected through a survey questionnaire distributed among the local population of Budva. Using a quantitative research approach and tools such as regression analysis and the Kruskal-Wallis test, data processing and testing of the hypotheses were enabled.

The structure of the paper is organized so that, after the introductory part, there is a theoretical framework in which the concept of overtourism and its implications are defined in detail. Then, the research hypotheses, methodology and results of the analysis of the obtained data are presented. Finally, through the discussion, the basis is provided for obtaining concluding considerations containing recommendations for improving tourism management in Budva from the aspect of sustainability and quality of life of the local community.

2. LITERATURE REVIEW

Tourism has a strong impact on the economic development of both a specific destination and the overall economic environment of a country. The problem arises when tourism begins to generate serious negative effects, which are

reflected in the devastation of the environment and the dissatisfaction of the local population. According to UNWTO, overtourism is the impact of tourism on a destination or its parts, which has an excessive negative effect on the perception of the quality of life of the local population, as well as the quality of the overall experience of visitors to the tourist destination (UNWTO, 2018). The definition of the concept of overtourism has been the subject of research by numerous authors, and the phenomenon of overtourism itself on the Google Scholar platform shows that the database contains more than 25 thousand different sources on the topic of overtourism. In addition to the UNWTO definition, a whole range of interpretations of the concept of overtourism by various authors is available, and certainly thanks to them we can get to know the phenomenon of overtourism itself more closely. For the needs of the Committee on Transport and Tourism (TRAN) of the European Parliament, a study on overtourism was conducted, where the authors, Peeters et al., defined overtourism as a situation in which tourism, at a certain time and in certain locations, exceeds the limits of physical, ecological, social, economic, psychological and/or political capacity (Peeters et al., 2018). Godwin also states that overtourism is a situation in which the local population, tourists and visitors to a destination believe that the number of tourists is too high and that the quality of life in that area has been impaired or the quality of the visitor experience has been unacceptably reduced (Godwin, 2019). One of the segments of destination management that is conducive to the increasing growth of overtourism refers to the long-term focus of the destination exclusively on physical indicators, rather than on overall development, so it can be said that many destinations have succumbed to the problem of overtourism, which can be considered a direct consequence of strategies focused exclusively on growth. Establishing sustainable tourism development is on the agenda of all developed countries in the world, and UNWTO, as a specialized international organization for tourism, has been working for decades to establish the concept of sustainable tourism. Sustainable tourism should optimally use ecological resources, respect the socio-cultural authenticity of host communities and provide socio-economic benefits for all stakeholders (UNWTO, 2004).

Looking at tourism from a political economy perspective, it is noticeable that overtourism occurs through pressures from multinational tourism corporations and other affiliates, which advocate a pro-growth approach to tourism development. The main flaw observed in this approach is the lack of concern for the limits of the carrying capacity of a particular destination (Higgins-Desbiolles et al., 2019).

The problem of overtourism is present in almost all developed countries where tourism plays a significant role in economic development. For example, destinations such as Venice, Ibiza and Barcelona have become particularly attractive to tourists around the world, which directly affects the growth of the volume of annual tourist arrivals, which causes problems in sustainable tourism development and the carrying capacity of the destination itself. The aforementioned places are highly dependent on tourism and due to their popularity, they have reached their social and ecological carrying capacities, which causes a decrease in the satisfaction of the local population and generates the impact of high tourist density on their quality of life and way of life and therefore on the environment that surrounds them. In addition to the harmful impact of overtourism on the quality of life of the local population, it is evident that overtourism also has its implications on the satisfaction of tourists and their loyalty to the destination itself (Papadopoulou et al., 2023). Another current issue, when we talk about overtourism, is the relationship between the rights of travelers and the local population. The rights of travelers are more clearly defined and legally more strongly protected than the rights of the local population, which are often broadly formulated and less well operationalized. In this regard, overtourism stems from an imbalance in legal protection, whereby the rights of tourists, who come for recreation and consumption, are not in balance with the rights of residents, including immigrants who are permanently settled in those areas (Perkumiene et al., 2019). According to Spangenberg, sustainable tourism development is based on three dimensions: economic, socio-cultural and ecological (Spangenberg et al., 2002). One of the main problems is identified in the process of establishing a balance between the three classic dimensions of sustainable tourism without an institutional perspective towards governance, mediation and facilitation of growth.

It is evident that overtourism has recently led to an increase in the number of protests and riots in tourist destinations that face constant crowds. In order to protect themselves from the devastation of cultural heritage and avoid overcrowding, many cities have decided to establish new rules and boundaries. In this regard, a measure was adopted in Rome to prohibit staying or sitting at the famous attraction of Fontana di Frevi and the Spanish Steps, in such a way that tourists can be fined if they do not respect the aforementioned measure. In addition to the example in Rome, a similar practice is also applied in other famous tourist destinations such as Amsterdam, Bruges and others (Hristov, et al., 2021).

The increase in the number of tourists in a destination and the creation of an environment of overtourism contribute to a decrease in the motivation of local residents to engage in tourism. Very often, the threat to the quality of life of local residents, caused by overtourism, contributes to a decrease in hospitality in their behavior towards tourists. Overtourism affects the quality of life of local residents, which is confirmed through radical changes in the attitudes of local residents about tourism in destinations that have exceeded the limits of carrying capacity, as a result of which mass tourism has turned into a local political issue (Turker et al., 2024). Overtourism can have both positive and negative consequences for the local population, depending on the balance between the benefits it brings and the costs imposed by its development and presence. Mihalić et al (2020) point out that economic benefits from tourism can mitigate the perception of negative impacts on the environment, thereby reducing the feeling of irritation among the local population

and reducing the intensity of the negative assessment of overtourism in the context of quality of life. Modern tourism has reached a point in the current circumstances where we have dissatisfaction on one, and sometimes on both sides, since the dissatisfaction of hosts and/or guests is recognized. Due to the above developments, tour operators strive to find, i.e. discover new destinations such as Finland, Northern Cyprus, Moldova or the Tatra Mountains in Poland. The challenge for the management structures of tourist destinations is to make the destination sustainable and avoid the spread of the problem of endangered sustainability (Godwin, 2017).

It has been stated several times before that tourism can have a strong impact on the satisfaction and quality of life of the local population. Stakeholders, i.e. interested parties, have an obligation to take care of the general well-being of the local population from an economic, sociological, ecological and cultural point of view, with the aim of providing better prospects for a quality life (Kim et al., 2020). Due to the fact that tourism has become quite accessible to almost everyone, tourist destinations are recording an increasing number of visitors and an increasing threat to the quality of life of the local population, which causes an increase in the number of activities against tourists, which ultimately has an impact on the growth of tourist arrivals to the destination itself. Based on this, in tourist destinations, the need for the local population to defend the right to enjoy their peaceful everyday life and ensure a quality life is growing (Godwin et al., 2019).

2. HYPOTHESIS AND METHODOLOGY

2.1. Hypothesis

The paper sets out one main and one auxiliary hypothesis, which are:

Hypothesis 1: Overtourism has a negative impact on the quality of life of the local population in Budva.

Explanation: This hypothesis was set up in order to investigate the impact of overtourism on the quality of life of the local population in Budva. Overtourism contributes to numerous economic benefits for the destination itself, but it also causes a large number of negative effects, which are identified through overcrowding, environmental problems, stress, noise and pollution. All of the above negative effects affect the quality of life of the local population and therefore their overall satisfaction.

Hypothesis 2: Overtourism has a direct negative impact on the ability of the local population of Budva to use and access the transport infrastructure.

Explanation: The above hypothesis examines the relationship between the respondents' views on the quality of transport and communal infrastructure and their impact on the perception of the local population about overtourism. Budva is the focal point of Montenegrin tourism, since the largest part of tourist traffic is generated in this municipality. However, overtourism in Budva generates numerous negative effects, which is first noticed through evident problems in traffic and communal order of the city during the summer tourist season.

2.1. Methodology

The research part of the work is based on data collected through a survey, which was implemented via the Google Forms platform, while the processing of the collected data was carried out through the IBM SPSS program. This research used a quantitative research approach through a survey questionnaire, in order to examine the perception of the local population of Budva about the impact of overtourism on their quality of life as well as on the availability of transport and other infrastructure in a broader sense. The application of this research method allows for the collection of representative and standardized data, which is crucial for drawing objective conclusions regarding the research hypotheses set.

The data were collected through a structured online questionnaire created and distributed via the Google Forms online platform. The questionnaire was distributed electronically, using social networks and communication channels with the aim of including a diverse population of local residents of Budva. The aforementioned method was chosen for practical reasons and time efficiency because it could provide faster feedback.

The survey contained a total of 16 questions, divided into two main sections:

- Socio-demographic data: gender, age, level of education and occupation,
- Attitudes on the impact of overtourism: closed questions with a five-point Likert scale, with which respondents assessed the impact of tourism on the availability of transport infrastructure, environmental, socio-cultural and economic aspects of life.

A total of 52 respondents participated in the survey, which is a satisfactory number to obtain basic insights into the perception of the local population on the impact of overtourism. Although the sample size can be considered modest, the diversity of respondents in terms of socio-demographic characteristics contributes to the credibility of the survey. It took about 7 minutes to complete the survey.

Table 7. Profile table

Gender of the respondent (%)	Male	42.3
	Female	57.7
Educational structure of the respondent (%)	Secondary education	30.8
	High school	21.2
	Higher education	48.1
Structure of respondents according to place of employment (%)	Educational institution	13.5
	Local self-government	25.0
	Public administration	11.5
	Tourist organization	3.8
	Tourism economy	15.4
	Other	30.8
Age of respondents	Minimum	18
	Maximum	70
	Standard deviation	11.389
	Mean value	33.54

Source: Author

Based on the profile table, it was observed that a slightly higher number of women participated in the research than men. Almost half of the respondents have a high level of education, and according to their place of employment, most of them are in other sectors such as trade, entrepreneurship, banking, construction and geodesy. It is also noticeable that a significant number of respondents stated that they are employed in local government. The average age of the respondents is 33.54 years with a standard deviation of 11.389 from the mean value. The primary statistical methods used in this paper are descriptive statistics, based on which the characteristics of the sample itself are described, and for the purposes of research and testing the hypotheses set, various statistical methods were used, such as: regression analysis and the Kruskal-Wallis test. The research results were interpreted in the context of the theoretical framework and the hypotheses set. Ethical principles were respected during the research, such as the anonymity of the respondents and the protection of data privacy. The respondents were informed about the purpose of the research and voluntarily agreed to participate in it. In addition, the results collected in the research were compared with previous research dealing with the impact of overtourism on the quality of life of local residents.

3. RESULTS

In the second part of the survey, respondents had the opportunity to express their views on the impact of overtourism in the form of closed-ended questions with a five-point Likert scale. Also, one of the questions referred to the identification of one of the aspects of overtourism that has the greatest impact on the quality of life of the local population.

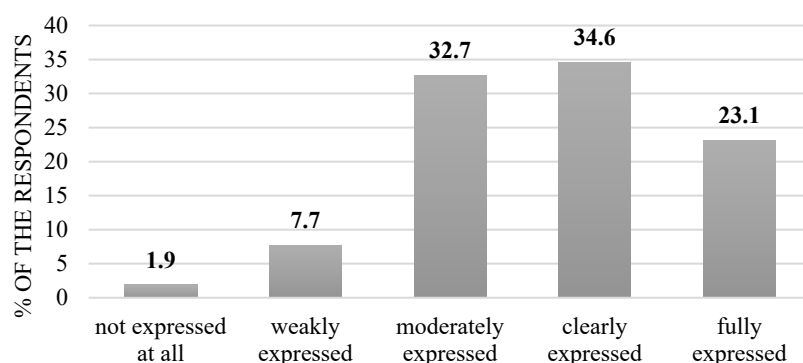


Figure 9. Distribution of answers to the question of the severity of the problem of overtourism

Source: Author

Respondents gave high marks to the question of the severity of the problem of overtourism in Budva, which indicates that the local population recognizes the said problem to a significant extent.

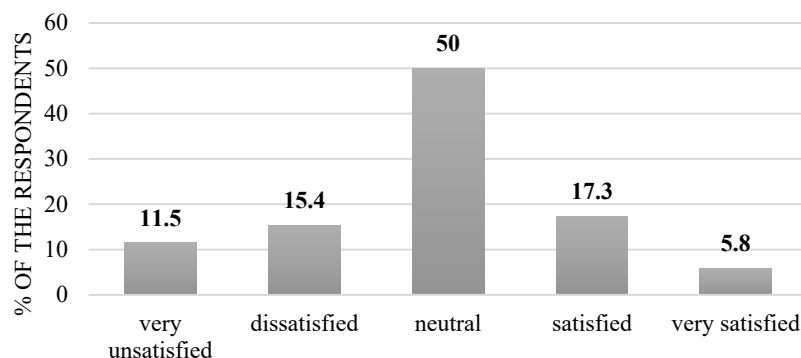


Figure 10. Distribution of answers to the question about satisfaction with the quality of life in Budva
Source: Author

More than half of the respondents have a negative or very negative attitude about the impact of overtourism on the quality of life of the local population, which indicates that the mentioned problem is significantly pronounced.

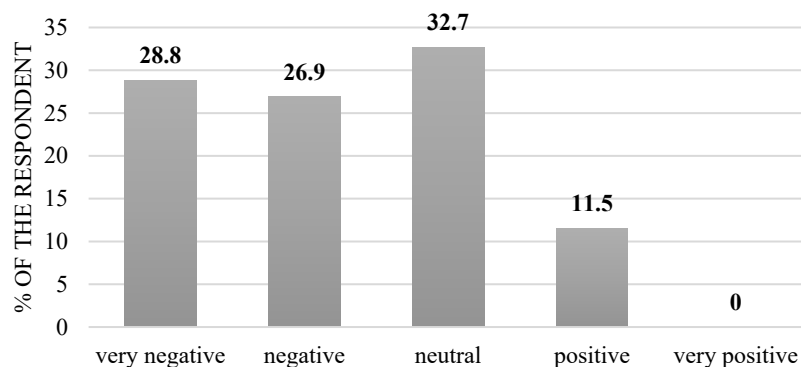


Figure 11. Distribution of answers to the question about the assessment of the impact of overtourism on the quality of life
Source: Author

More than half of the respondents have a negative or very negative attitude about the impact of overtourism on the quality of life of the local population, which indicates that the mentioned problem is significantly pronounced.

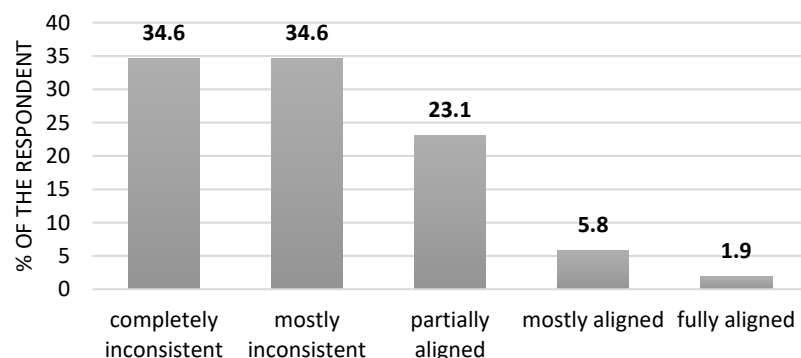


Figure 12. Distribution of answers on the assessment of the compliance of current development in relation to sustainable tourism
Source: Author

More than half of the respondents have the opinion that the current development of tourism in Budva is not in accordance with the principles of sustainable development, while a very small percentage of respondents stated that they had a positive attitude about the sustainability of the current development of tourism in Budva. The data indicate recognition of the problem of sustainability of tourism development by the local population.

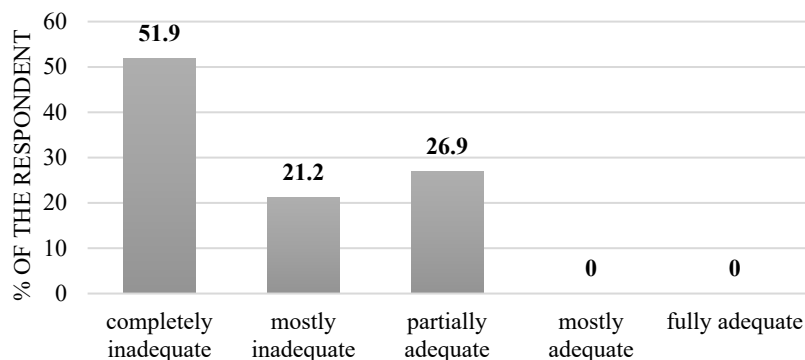


Figure 13. Distribution of responses on the evaluation of infrastructure capacities in Budva
Source: Author

More than half of the respondents express an extremely negative attitude towards the assessment of infrastructure capacities in Budva, while slightly more than a fifth of respondents believe that the existing infrastructure capacities partially meet the needs of the local population and tourists. There were no answers expressing a positive or extremely positive attitude on this issue, which indicates challenges related to the state of infrastructure capacities in Budva.

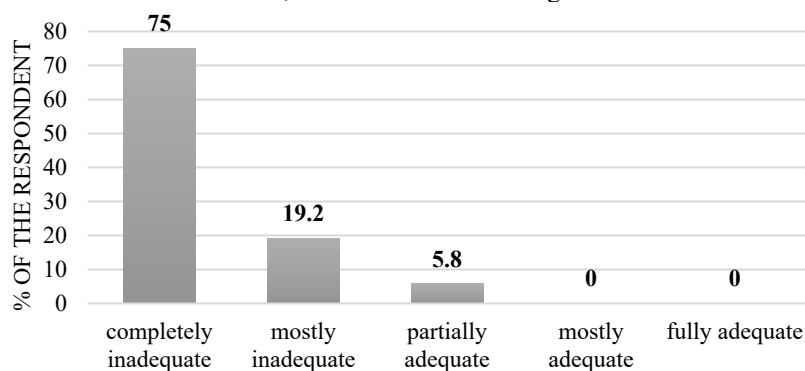


Figure 14. Distribution of responses on the evaluation of parking facilities in Budva
Source: Author

For the most part, the respondents expressed a very negative attitude towards the assessment of parking facilities in Budva. A very small percentage of respondents stated that they were partially satisfied with the parking facilities, and there were no answers expressing a positive attitude on this issue.

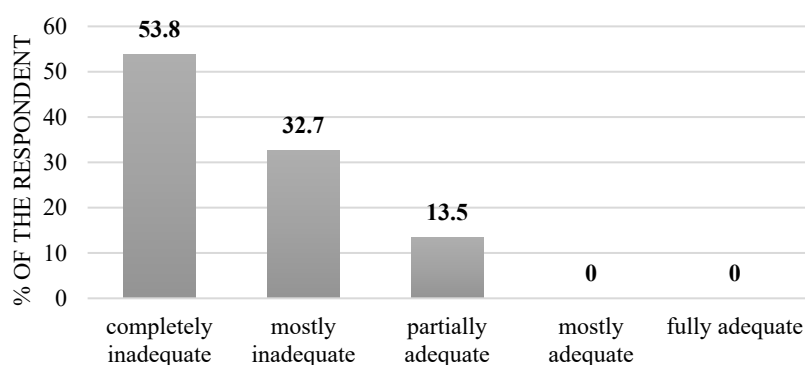


Figure 15. Distribution of responses on the assessment of traffic infrastructure in Budva
Source: Author

More than half of the respondents have an extremely negative opinion about the evaluation of the traffic infrastructure in Budva. A significantly smaller percentage of respondents believe that the existing transport infrastructure partially meets the needs of the local population and tourists during the season.

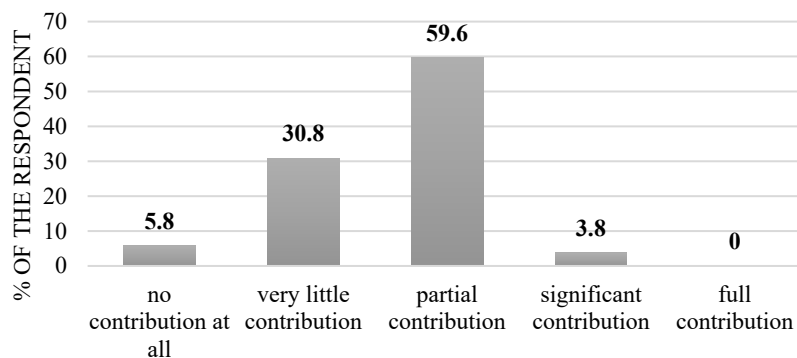


Figure 16. Distribution of answers about the assessment of the contribution of overtourism to the local community
Source: Author

When asked about the assessment of the contribution of overtourism to the local community, the largest number of respondents gave an average rating, that is, they believe that overtourism has a partial contribution. It is important to note that almost a third of respondents have a negative attitude about the contribution of overtourism to the local community.

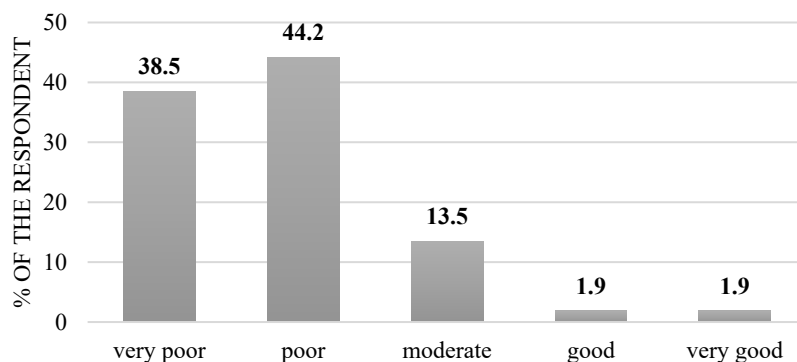


Figure 17. Distribution of answers on the assessment of the quality of management of overtourism in Budva
Source: Author

Respondents expressed a negative attitude to the question about the assessment of the quality of management of overtourism in Budva. Very few respondents expressed a positive attitude on this issue.

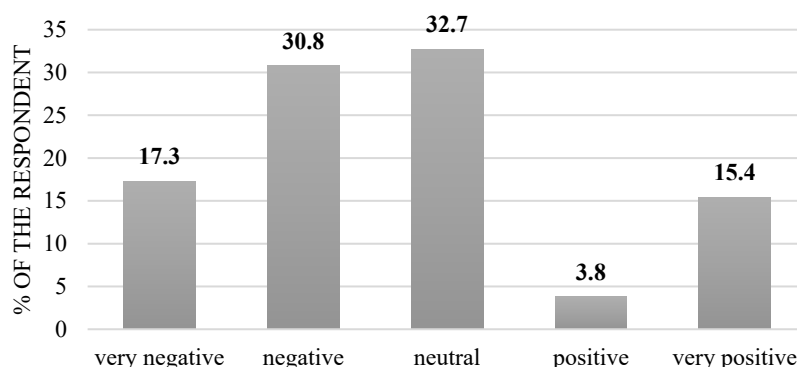


Figure 18. Distribution of responses on the impact and implementation of initiatives for sustainable tourism
Source: Author

The question about the assessment of the impact of the implementation of initiatives for sustainable tourism in the context of overcoming the problem of overtourism indicated that the majority of respondents have a negative or neutral attitude, which may indicate that the survey question was asked in a confusing manner, so the results are not at the expected level.

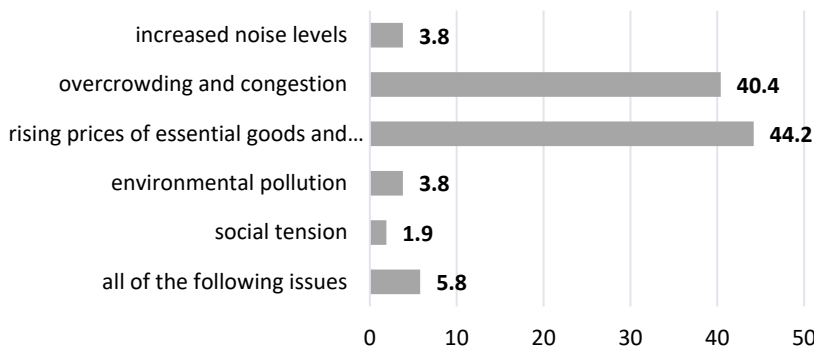


Figure 19. Distribution of responses on the aspects of overtourism with the greatest impact on the quality of life of the local population

Source: Author

Almost half of the respondents identified the increase in the prices of products and services as well as overcrowding and crowding as aspects of overtourism with the greatest impact on the quality of life. The distribution of the answers indicates that the two mentioned aspects represent the most pronounced problems related to overtourism in Budva.

4. DISCUSSION

Hypothesis 1 (H1): Overtourism has a negative impact on the quality of life of the local population in Budva.

Testing of the main hypothesis was carried out using regression analysis, through which the impact of the problem of overtourism on the quality of life of the local population of Budva was examined. Analysis the results of a regression analysis, where the relationship between the severity of the problem of overtourism (independent variable) and satisfaction with the quality of life in Budva (dependent variable) is examined.

Table 8. Correlation coefficient and coefficient of determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.286 ^a	.082	.064	.982

a. Predictors: (Constant), The severity of the problem of overtourism

Source: Author

Based on the previous table, it should first be noted that the correlation coefficient (R: 0.286) indicates a weak negative correlation between the dependent and independent variables, which tells us that as the severity of the problem of overtourism increases, satisfaction with the quality of life in Budva tends to decrease slightly. In addition, we note that the coefficient of determination shows that only 8.2% of the variance in satisfaction with the quality of life can be explained by the severity of the problem of overtourism ($R^2 = 0.082$).

Table 9. Regression analyzes

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.998	.535		7.470	.000
	The severity of the problem of overtourism	-.296	.140	-.286	-2.113	.040

a. Dependent Variable: Satisfaction with the quality of life in Budva

Source: Author

The statistical significance of the model ($p = 0.04$) confirms that this negative relationship is statistically significant. Based on the above, we can accept the hypothesis. The results of the regression analysis indicate **that H1 is accepted**, that is, that overtourism has a negative impact on the quality of life of the local population of Budva. Despite the fact that the stated impact is relatively weak ($R^2 = 8.2\%$), it is significant and negative.

Hypothesis 2 (H2): Overtourism has a direct negative impact on the ability of the local population of Budva to use and access the transport infrastructure.

To test the auxiliary hypothesis (H2), regression analysis was again applied to examine the relationship between the assessment of the severity of the problem of overtourism and satisfaction with transport infrastructure during the summer tourist season. Regression analysis is appropriate because both variables are measured on an ordinal scale.

Table 10. Correlation coefficient and coefficient of determination

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	.043 ^a	.002	-.018	.728

a. Predictors: (Constant), The severity of the problem of overtourism

Source: Author

The correlation coefficient ($R = 0.043$) indicates a very weak relationship between the dependent and independent variables. Also, the determination coefficient ($R^2 = 0.002$) shows that the model explains only 0.2% of the variance of the dependent variable. Based on this, we can say that the severity of the problem of overtourism practically does not contribute to the explanation of the assessment of transport infrastructure.

Table 11. Regression analyzes

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.480	.397		3.733	.000
	The severity of the problem of overtourism	.031	.104	.043	.302	.764

a. Dependent Variable: Assessment of traffic infrastructure

Source: Author

The positive coefficient for the independent variable ($B = 0.031$) indicates that an increase in the severity of the problem of overtourism by 1 unit slightly increases the assessment of transport infrastructure by 0.031. However, it should be noted that the stated effect is weak. On the other hand, the statistical significance of the model ($p = 0.764$) indicates that the impact of the severity of the problem of overtourism on the assessment of infrastructure is not statistically significant. Based on the results obtained, **we reject H2**, i.e. the severity of the problem of overtourism has no statistically significant impact on the assessment of satisfaction with transport infrastructure.

Kocoglu, Turker and Sarac focused their research on the views of local residents in the city of Safranbolu, Turkey, on the impact of overtourism on the quality of life of the local population. The survey included a sample of 361 respondents, and within the framework of the research, the respondents were able to assess the impact of tourism on various aspects of the lives of the local population. The research assessed certain aspects on which overtourism has an impact, which allows for a comparison of the results from the aforementioned research with the research applied in this paper.

The mean value of the impact of overtourism on traffic congestion in Safranbolu was 4.11 with a standard deviation of 0.85981. On the other hand, within the framework of the research on the impact of overtourism on the quality of life of the local population of Budva, respondents assessed the extent to which the transport infrastructure meets the needs of the local population in Budva. The mean value of the satisfaction rating with the transport infrastructure in Budva is 1.60 with a standard deviation of 0.721. The above data indicate that in both surveys, respondents pointed out the severity of the problem of the impact of overtourism on the transport infrastructure.

Also, both surveys assessed the impact of overtourism on the quality of life of the local population of the tourist destination. Comparing the mean values of the respondents' opinions on the quality of life of the local population in the destination, we will come to the conclusion that the mean values are approximately equal, where in the survey related to Safranbolu the mean value was 2.49 (Std. Deviation = 1.08588), while in this survey the mean score was 2.90 (Std. Deviation = 1.015).

Comparison of the results of the regression analysis of the impact of overtourism on the quality of life indicated statistical significance in both mentioned studies, given that $p=0.000$ (Safranbolu) and $p=0.04$ (Budva). Also, in the observed study, the regression analysis determined the statistical significance of the impact of overtourism on traffic infrastructure, i.e. traffic congestion ($p=0.11$), which was not determined in the case of the study related to Budva (0.764).

Finally, it is noticeable that the comparison of the obtained results indicates that certain aspects of the impact of overtourism are similarly assessed, such as the impact on the quality of life and traffic infrastructure. In addition, the regression analysis that examined H1 in this paper indicated statistical significance, which was also the case with other observed studies.

The validity of the study could have been affected by various factors, which indicates the need to explain the validity indicators of the study. The research process implies the existence of certain limitations that may ultimately affect the reliability of the obtained results.

When we talk about external validity of a study, it is actually about the degree to which the results can be generalized to the wider population. In this section, one of the main challenges or limitations is the sample size. Considering that a total of 52 respondents participated in this study, we can say that the sample size could have affected the possibility of generalizing the results to the wider population. The sample provided enough information for analysis, but it should be noted that a larger sample could improve the precision and statistical power of the study.

Internal validity is based on the accuracy of the conclusions drawn from the data. In this area, possible sources of error are observed through potential response bias, and there is also the possibility of constructing confounding variables.

5. CONCLUSIONS

The results of the research indicated that overtourism has a negative effect on the quality of life of the local population in Budva. Although Hypothesis 2 was not statistically confirmed, the findings clearly suggest that overtourism negatively affects the availability and functionality of transport infrastructure. This conclusion is further supported by the responses and evaluations of local residents within the survey, where traffic infrastructure and parking facilities received predominantly negative ratings. To enhance the validity and reliability of future research, it is recommended to expand the sample size and revise potentially confusing survey questions, as such ambiguities may influence both participant responses and the outcomes of the statistical analysis.

In this context, it becomes evident that there is an urgent need to rethink tourism development in Budva, placing greater emphasis on strategic planning that incorporates the needs and rights of local residents. Implementing sustainable mobility plans, decentralizing tourist flows, improving infrastructure, and fostering participatory governance are among the necessary measures that could restore balance between tourism and local quality of life. Implementation of sustainable development strategies would contribute to Budva becoming more competitive in the tourism market by addressing some of the key shortcomings of the current tourism development.

This research contributes to the growing body of literature on overtourism by providing local insights from one of Montenegro's most visited destinations. It underscores the importance of integrating social sustainability into tourism policy and provides a foundation for further studies aimed at exploring long-term solutions that benefit both tourists and the communities they visit.

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Ethics Committee Approval

N/A

Peer-review

Externally peer-reviewed.

Author Contributions

Conceptualization: H.S.; Investigation: H.S.; Material and Methodology: H.S., S.Ö.; Supervision: H.S., E.T.E.; Visualization: S.Ö.; Writing-Original Draft: H.S., D.A.; Writing-review & Editing: D.A., S.Ö.; Other: All authors have read and agreed to the published version of manuscript.

Conflict of Interest

The authors have no conflicts of interest to declare.

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Green Central Banking

AYŞE DURGUN KAYGISIZ

Abstract: Although global economic growth has accelerated in recent decades, it cannot be considered sustainable due to its negative impact on the environment. Industrialization has contributed to economic expansion while simultaneously causing environmental degradation and excessive resource consumption. The increasing frequency of natural disasters such as heatwaves, droughts, and floods highlights the urgent need for sustainability-oriented policies. Within this context, the role of central banks in addressing climate-related financial risks has gained significant attention. As climate change affects price stability and financial stability through various channels, central banks are increasingly expected to integrate environmental and sustainability considerations into their policy frameworks. This study examines the concept of green central banking, defined as the inclusion of sustainability and climate goals in central banks' traditional mandates of price and financial stability. The paper compares the green practices of major central banks such as the ECB, BoE, FED, PBoC, and TCMB, focusing on tools such as green quantitative easing, preferential refinancing for green projects, climate stress testing, and green taxonomy development. The findings indicate that especially emerging economies' central banks are more proactive in promoting green finance instruments and addressing climate-related risks. However, the expansion of central banks' responsibilities to include sustainability objectives raises institutional and legal challenges. Therefore, it is essential to clearly define the legal boundaries of green central banking while maintaining its alignment with monetary and financial stability goals.

Keywords: Green central bank, green finance, climate change, financial stability.

Yeşil Merkez Bankacılığı

Özet: Küresel ekonomik büyüme son yıllarda hız kazanmış olsa da, çevre üzerindeki olumsuz etkileri nedeniyle sürdürülebilir olarak değerlendirilememektedir. Sanayileşme ekonomik büyümeye katkı sağlarken, aynı zamanda çevre kirliliğine ve doğal kaynakların aşırı tüketimine yol açmıştır. Artan sıcaklıklar, kuraklıklar ve seller gibi doğal afetlerin sıklığı, sürdürülebilirlik odaklı politikaların aciliyetini ortaya koymaktadır. Bu bağlamda, iklim kaynaklı finansal risklerle mücadelede merkez bankalarının rolü giderek önem kazanmaktadır. İklim değişikliğinin fiyat istikrarı ve finansal istikrar üzerindeki etkileri, merkez bankalarının politika çerçevelerine çevresel ve sürdürülebilirlik unsurlarını entegre etmelerini gerekli kılmaktadır. Bu çalışma, merkez bankalarının fiyat ve finansal istikrar görevleriyle birlikte sürdürülebilirlik ve iklim hedeflerini ele almasını ifade eden **yeşil merkez bankacılığı** kavramını incelemektedir. Çalışmada Avrupa Merkez Bankası, İngiltere Merkez Bankası, FED, Çin Merkez Bankası ve Türkiye Cumhuriyet Merkez Bankası'nın yeşil merkez bankacılığı uygulamaları karşılaştırmalı olarak ele alınmıştır. Yeşil tahvil alımları, yeşil projelere düşük faizli krediler, iklim stres testleri ve yeşil taksonomi çalışmaları gibi araçların kullanımına odaklanılmıştır. Bulgular, özellikle gelişmekte olan ülke merkez bankalarının yeşil finansı teşvik etmede ve iklim risklerini dikkate almada daha aktif olduklarını göstermektedir. Ancak merkez bankalarının görev tanımlarının sürdürülebilirlik hedefleriyle genişletilmesi kurumsal ve hukuki bazı tartışmaları da beraberinde getirmektedir. Bu nedenle, yeşil merkez bankacılığının yasal çerçevesinin net bir biçimde tanımlanması ve para politikası ile finansal istikrar hedefleriyle uyumlu hale getirilmesi gerekmektedir.

Anahtar Kelimeler: Yeşil merkez bankası, yeşil finans, iklim değişikliği, finansal istikrar.

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GİRİŞ

Küresel ekonomik büyüme artış gösterse de bu durum sürdürülebilir olarak görülmemektedir. Yüzyıllık süreçlerde geniş çaplı ele alındığında küresel büyümenin çevreye zarar veren bir yapısı olduğu ortadadır. Sanayileşmenin artması ekonomik büyümeyi sağlarken bir yandan da çevre kirliliği ve kaynakların bilinçsiz tüketimine de yol açmıştır. Bunlara ek olarak son yıllarda giderek artan sıcaklık, kuraklık, sel vb. afetler doğanın dengesini daha da bozmuştur. Yaşanılan bu iklim değişikliği nedeniyle küresel boyutta oluşan olumsuz durumlar sürdürülebilirlik kavramını ön plana çıkarmaktadır. Birçok ülke iklim değişikliği ile mücadele ve yeşil dönüşüm hamleleri başlatmıştır. Buna karşın gerekli hazırlıklar yapılmadan düşük karbon salımlı ekonomiye geçiş de yeni risklerde oluşturabilmektedir.

İklim krizini dikkate almadan yapılan kalkınma adımlarının eksik sonuçlar doğuracağı nedeniyle birçok ekonomik aktör bu süreçte dahil edilmeye çalışılmıştır. Çünkü önümüzdeki süreçlerde iklim değişikliği fiyat istikrarı, finansal sistem

istikrarsızlığı ve finansal piyasaların yapısal dengesizlikleri üzerinde olumsuz etkileri olacağı gibi merkez bankalarının bilançolarını bile bozabilme gücü bulunmaktadır (Keskin, 2023:128). İklim krizinin ciddiyetinin artması ve bunun finansman ile bağlantısının olması merkez bankalarının da bu duruma kayıtsız kalmaması gerekliliğini ortaya çıkarmıştır. Yeşil dönüşüm hamlelerinden birisi de merkez bankalarında görülmektedir. Son dönemlerde birçok merkez bankası yasal zorunlulukları olmamasına rağmen, yeşil finans politikalarını ve klavuzlarını benimsemiş ve makro ihtiyati çerçevelerine dahil etmeye başlamışlardır. Fakat merkez bankalarının yeşil finansa teşvik edilmesi ve desteklenmesinde ne kadar yer alması gerektiği konusu hala tartışmalıdır. Merkez bankasının asli görevi fiyat istikrarını sağlamaktır. Zamanla gelişen ekonomik durumlar merkez bankalarının amaçlarında ve hedeflerinde bazı değişimlere ve eklentilere uğramalarına neden olmuştur. Örneğin 2008 krizi sonrasında merkez bankalarının rolü fiyat istikrarına ek olarak finansal istikrarı da sağlaması konusunda değişime uğramıştır. Son dönemde ise hükümetlerin önemle üzerinde durduğu iklim değişikliği ve küresel ısınma merkez bankalarının bu alanda sorumluluk alması tartışmalarını gündeme getirmiştir (TCMB, 2021:18).

Bu çerçeve de merkez bankalarının yeşil finansın yaygınlaştırılması konusunda nasıl bir çerçeve çizeceği yasal yetki alanı ile doğru orantılı olacaktır. Buradan yola çıkarak bazı merkez bankaları yasal prosedürlerinin içine sürdürülebilirlik kavramını da eklemiştir. Lakin merkez bankaları var olan asli hedeflerini yürütürken çevresel riskleri herhangi bir “sürdürülebilirlik gündemi” takip etmeden ekleyebilmeleri gerekmektedir (Demirel, 2023:23). Diğer bir değişle merkez bankaları fiyat istikrarını sağlamak veya finansal istikrarı korumak için, çevresel ve sürdürülebilirlik hedefleri, merkez bankalarının açık yetkilerinin bir parçası olmasa bile, sürdürülebilirlik faktörlerinin araçsal olarak politikalara dâhil edilmesi uygun olabilmektedir (Yılmaz ve Çakaloğlu, 2022: 136).

1. Yeşil Merkez Bankası Ne Demek?

Yeşil merkez bankası, merkez bankalarının **sürdürülebilirlik** ve **iklim değişikliğiyle mücadele** hedeflerini, fiyat istikrarı ve finansal istikrar görevleriyle birlikte ele almasına denir. Diğer bir tanımla, finans sektörünün ve makroekonominin kısa ve uzun vadeli istikrarı ve gelişimi üzerinde önemli bir etkiye sahip olabilecek iklim değişikliğinden kaynaklanan riskler de dahil olmak üzere çevresel riskleri dikkate alan merkez bankacılığı olarak tanımlanmaktadır (Dikou ve Volz, 2018:1). Son dönemlerde iklim değişikliği ve çevresel sorunlardaki artışa paralel olarak ekonomik tehditler de oluşmaktadır. Küresel iklim değişikliği iktisadi faaliyet, enflasyon ve işgücü verimliliğine ilişkin etkileri aracılığıyla ekonominin genelini ve oluşturduğu finansal riskler aracılığıyla da finansal sistemi etkilemektedir (TCMB, 2021:10). Hem fiyat istikrarını hem de finansal istikrarı etkileyen iklim değişikliği, merkez bankalarını çevresel faktörleri ekonomik politika kararlarına dahil etmeye sürüklemiştir (Demirel, 2023:18). Özellikle gelişmiş ülkelerin merkez bankaları iklim riskini en önemli finansal risklerden birisi olarak görmektedir. Artan çevresel bilinç ve Paris anlaşması ile somut adımların atılmış olması, merkez bankalarının da yeşil adımlar atması konusundaki çalışmaları başlatmıştır (Volz vd., 2015; Batten vd., 2016; Volz, 2017). Merkez bankaları bunu yaparken sel, kuraklık, karbon salınımı vb. gibi iklimsel riskleri politikalarının içerisine dahil etmektedir. Merkez bankaları, banka ve finansal kurumlara yenilenebilir enerji, düşük karbon teknolojileri gibi iklimi destekleyen düzenlemelerinde destek vererek ya da tam tersi çevreyi kirlletici yatırımlarında yüksek sermaye yükümlülüğü getirerek yeşil merkez bankacılığını üstlenmiş olabilir. Buna ek olarak merkez bankaları kendi portföylerinde **düşük karbonlu, çevre dostu varlıklara yönelebilir. Merkez bankalarının buradaki amacı çevresel sürdürülebilirliği teşvik etmektir.**

Merkez bankalarının yeşilleştirilmeye çalışılmasının altında yatan asıl neden iklim değişikliğinin fiyat istikrarını çeşitli kanallardan (doğrudan veya dolaylı olarak) etkilemesidir. Merkez bankaları iklim değişikliği kaynaklı fiyat dalgalanmalarını dikkate almadan enflasyon karşıtı politikalar uygulamasının büyük çıktı kayıplarına yol açacağı öne sürülmektedir (Mckibbin vd. 2017). Özellikle gelişmekte olan ülkelerde iklim değişikliği neticesinde yaşanan doğa olaylarının gıda fiyatlarını yukarı çektiği bilinmektedir. İlk olarak iklim değişikliği neticesinde ortaya çıkan aşırı sıcaklık, kuraklık ya da sel gibi olağan üstü hava olaylarının tarımsal üretim üzerinde olumsuz etki ortaya koymaktadır. Buna bağlı olarak üretimin azalması, yaşanan negatif arz şokunun gıda fiyatlarını arttırması oradan da üretici fiyat endeksinin yükselmesine yol açmaktadır. Bahsedilen bu durum yani iklim değişikliğinin fiyatlar üzerindeki doğrudan etkisi, merkez bankası için dikkate alınması gereken ilk durumdur. İkinci durum ise merkez bankaları için önem arz eden iklim değişikliği ile mücadele politikalarının enflasyonu nasıl etkileyeceğidir. Çünkü İklim değişikliğini azaltmaya yönelik politikalar enerji üretimi ve fiyatları üzerinde etki yaratabilir (Volz 2017). Örneğin karbon vergisi veya benzer düzenleyici önlemler mevcut üretimin azalmasına ve fiyatların artmasına sebep olabilmektedir (Dikou ve Volz, 2018:3)

Buraya kadarki kısım fiyat istikrarına yönelik oluşabilecek risklerdi. Bunun yanı sıra iklim değişikliği finansal piyasa aktörleri üzerinde de risk oluşturabilmektedir. İklim krizinin ve düşük karbonlu ekonomiye geçişin plansız bir şekilde yapılması finansal istikrarı da tehdit etmektedir (Ünüvar ve Yelden, 2022: 16). Bankalar sigorta şirketleri vb. finansal piyasanın bileşenleri istikrarsızlığı uğrarsa bu da finansal istikrarı bozabilir. Bu durumda merkez bankasının bu yönüyle de çevresel riskleri dikkate almasını gerekli kılmaktadır. Nitekim iklim değişikliğinin geçiş, fiziksel ve sorumluluk riski ile finansal piyasaları etkileyebileceği öne sürülmektedir (Batten vd., 2016: 5). Aşırı hava olaylarının sebep olduğu risklere fiziksel riskler denilmektedir. Bu riskler ekonomiyi hem arz hem de talep kaynaklı etkilemektedir. Oluşan risklerin etkisini azaltmak için politika değişikliği, teknolojik yenilikler vb. alınan tedbirler ile yeşil dönüşüme hızlı geçiş aşamasında ortaya çıkan risklere de geçiş riskleri denilmektedir. Son olarak iklimle ilgili zarara uğrayan kişilerin

zarardan sorumlu tuttıkları karşı kişilerden zararı tanzim etmesi aşamasında ortaya çıkan riske sorumluluk riski denilmektedir (Ülkü, 2023:10-14).

Yeşil merkez bankacılığı, sürdürülebilir kalkınma hedeflerine ulaşmak için çok önemlidir. Bu nedenle günümüzde birçok merkez bankası yeşil merkez bankacılık kapsamında bazı uygulamalar yapmaya başlamıştır. Merkez bankalarının buradaki amacı, finansal sistemin sürdürülebilirliğini temel alarak, çevresel, sosyal ve ekonomik sürdürülebilirliği de sağlamaktır (Demirel, 2023:25) . Tablo 1, farklı merkez bankalarının yeşil merkez bankacılığı kapsamında attıkları adımları ve amaçlarını karşılaştırmalı olarak göstermektedir.

Tablo 1: Merkez Bankalarının Yeşil Merkez Bankacılığı Uygulamaları

Merkez Bankası	Uygulamalar	Amaç
Avrupa Merkez Bankası (ECB)	<ul style="list-style-type: none">- Şirket tahvil alımlarında iklim dostu firmaları tercih ediyor. 2022 yılından itibaren kurumsal varlık tahvillerini kademeli olarak karbondan arındırmaya başlamıştır.- İklim riskleri için stres testleri yapıyor.- Bankalara şeffaf raporlama şartı getiriyor.- Şirketler ve ihracatçılara İklim Puanlaması	Finansal sistemin iklim risklerine dayanıklılığını artırmak.
İngiltere Merkez Bankası (BoE)	<ul style="list-style-type: none">- Dünyada ilk iklim stres testi uygulayanlardan.- Bankaların iklim risk yönetimini denetliyor.- Net sıfır hedefiyle uyumlu finansal sistem için çalışıyor. Bu kapsamda, finansal sistemin risklere karşı duyarlılığını arttırmak, net sıfır emisyonu düzenli geçişi sağlamak, iklim çalışmalarını teşvik etmek ve alandaki uluslararası yaklaşıma katkıda bulunmak ile banka politikalarında iklimi önceliklendirme gibi 5 temel hedef belirlemiştir (Ülkü, 2023: 49).	Finans sektörünü iklim değişikliğine hazırlamak.
Amerikan Merkez Bankası FED	<ul style="list-style-type: none">- 2023 yılında iklim Senaryo analizi ve stres testi uygulamalarını gerçekleştirmiştir (Kömürçüoğlu ve Artan, 2025:80).- Bankalar için pilot iklim senaryosu analizleri hazırlamıştır.- 2020'de NGSF ye üye olmuştur.	İklim krizinin finansal sistem üzerindeki etkisini azaltmak
Çin Merkez Bankası (PBoC)	<ul style="list-style-type: none">- Yeşil yatırımlara özel düşük faizli krediler sağlıyor.- Yeşil tahvil standartları geliştirdi.- Bankalara yeşil yatırım raporlama zorunluluğu getirdi.- İklim stresi uygulamalarını yürüten ilk merkez bankasıdır (Keskin, 2023:139).- Yeşil taksonomiye düzenlemiştir.	Yeşil finans piyasasını büyütmek ve düşük karbon ekonomisine geçişi hızlandırmak.
Türkiye Cumhuriyet Merkez Bankası (TCMB)	<ul style="list-style-type: none">- 2021'de Yeşil Finans Çalışma Grubu kurdu (TCMB, 2022; 2023).- 2021'de yeşil ekonomi ve iklim değişikliği müdürlüğünü kurdu. Bu müdürlük ulusal taksonomi, emisyon ticaret sistemi ve ulusal karbon piyasası çalışmalarına katkı sağlamaktadır.- NGFS ağına üye oldu.- Yeşil finans politikaları geliştirmeye başladı.	Türkiye'de yeşil finansman altyapısını güçlendirmek.

Kaynak: Yazar tarafından hazırlanmıştır.

Genel olarak incelendiğinde gelişmekte olana ekonomilerin merkez bankalarının çevresel riskleri dikkate alarak yeşil yatırımları teşvik etme konusunda daha fazla enstrümana sahip oldukları görülmektedir. Özellikle gelişmekte olan ülkelerde ve Asya'da, merkez bankalarının çevresel riskleri ele almak ve yeşil yatırımları teşvik etmek için geniş bir araç yelpazesi kullandığı görülmektedir (Voltz, 2018; Dikau ve Ryan-Collins 2017). İklim değişikliğiyle ilgili risklerin ekonomik ve finansal sistem açısından olumsuz sonuçları olabileceğini vurgulayan ilk merkez bankası İngiltere Merkez Bankasıdır. İngiltere Merkez Bankası Başkanı 2015 yılında iklim değişikliği ve finansal risklerini ele alarak bu alanda daha çok araştırma yapılmasını teşvik etmiştir. İngiltere merkez bankası eski başkanı Carney (2015), para politikası ve iklim değişikliğini finansal istikrar ile ilişkilendirmiş ve konunun görünürlüğünü arttırmıştır. Aynı zamanda iklim değişikliğini merkez bankalarının temel hedefleri arasına dahil etme koşulunda proaktif bir yaklaşım izlemiştir (Kömürçüoğlu ve Artan, 2025:79). Akçakanat ve Aksoy'un (2023) Positive Money ve Green Central Banking'in hazırlamış olduğu Yeşil Merkez Bankacılığı Puan Kartını dikkate alarak yapmış oldukları çalışmalarında G20 ülkelerinin merkez bankalarını benimsedikleri yeşil politika girişimlerine göre sıralandırmışlardır. Çalışmaya göre göre en iyi performansı gösteren ülkeler; Fransa, Brezilya, Çin ve Birleşik Krallık iken Türkiye G 20 ülkeleri arasında 17. sırada yer almıştır.

2. Yeşil Merkez Bankalarının Kullandığı Araçlar

Merkez bankaları uyguladıkları para politikaları ile para, kredi ve finansal sistem üzerinde düzenleyici bir role sahiptir. Bu nedenle uyguladıkları politikalar ile kaynakları karbon yoğun sektörler yerine yeşil yatırım alanlarına yönlendirebilmektedirler. Tablo 2 merkez bankasının geleneksel politika araçlarının yeşil finansa uyarlanmış halini göstermektedir.

Tablo 2: Yeşil Merkez Bankası Araçlarının Yeşil Uyarlaması

Geleneksel Araç	Yeşil Uyarlama	Amaç
Açık Piyasa İşlemleri (Varlık Alımları)	Yeşil tahvil ve sürdürülebilir yatırım fonlarının alımı (Green QE)	Piyasalara likidite sağlarken yeşil yatırımları teşvik etmek
Reeskont Kredileri	Çevre dostu yatırımlara verilen kredilerin düşük faizle reeskonta kabulü	Bankaları yeşil projelere kredi açmaya yönlendirmek
Teminat Politikası	Yeşil varlıklara düşük iskonto, karbon yoğun varlıklara yüksek iskonto	Bankaların bilançolarını yeşil yatırımlara kaydırmak
Zorunlu Karşılıklar / Rezerv Politikası	Yeşil krediler veren bankalara düşük zorunlu karşılık oranı	Bankaların yeşil kredi vermesini cazip hale getirmek
Sermaye Yeterliliği Düzenlemeleri	Yeşil krediler için düşük risk ağırlığı, karbon yoğun krediler için yüksek risk ağırlığı	Finansal istikrarı sağlarken çevresel riskleri içselleştirmek
Stres Testleri	Bankaların iklim riskleri (fiziksel/geçiş riskleri) açısından test edilmesi	Finansal sistemin iklim şoklarına dayanıklılığını ölçmek
Rezerv Yönetimi	Merkez bankasının yatırım portföyünde yeşil tahvil ve ESG uyumlu varlıkları tercih etmesi	Merkez bankası rezervlerini sürdürülebilir şekilde değerlendirmek
İletişim ve Raporlama	İklim riskleriyle ilgili düzenli raporlar, yeşil finans standartlarının teşvik edilmesi	Piyasaları bilgilendirmek, farkındalık oluşturmak

Kaynak: Yazar tarafından hazırlanmıştır.

Merkez bankaları yeşil dönüşüm kapsamında makro ve mikro ihtiyati düzenlemeler yapabilir (Dikao ve Voltz, 2018: 5-12). Mikro-ihtiyati düzenleme kapsamında finansal düzenleme araçları, bankaların kredi verme süreçlerinde ya da finansal istikrar açısından iklim ve çevresel riskleri dikkate almalarını teşvik edecek veya zorunlu kılacak şekilde uyarlanabilir. Bu aşamada yeşil finansmanla ilgili teşvik ve desteklere ilişkin rehber niteliğinde olan genel ilke, kriter ve koşullar oluşturmak önemlidir. Merkez bankaları yatırımcılara yönlendirici olması açısından yeşil taksonomi yapabilirler. Yeşil taksonomi iklim finansmanına ulaşma da yatırımcılara, hükümetlere ve tahvil ihraççılarına sürdürülebilir ekonomik faaliyetleri gösteren bir kılavuzdur. Bu kılavuzu hazırlamaktaki amaç finansal kaynakların yeşil yatırıma dönüşmesinde yatırımcılara yol göstermektir. Taksonomi oluşturulurken yeşil kredi tahsisi politika araçları, yeşil makro ihtiyati araçlar ve diğer aktiviteler olmak üzere yeşil merkez bankacılığı aktiviteleri 3 farklı alanda ele alınmaktadır (Çevre Şehircilik ve İklim Değişikliği Bakanlığı, 2022:3-4). Yeşil krediler çoğunlukla çevre, yenilenebilir enerji ve enerji verimliliği alanlarına özel sunulan kalkınma kredileridir (Turguttopbaş, 2020: 223). Yeşil kredi, Merkez bankaları yeşil kredi tahsis politikaları ile sürdürülebilir ve yeşil büyümenin sağlanabilmesi için kalkınmada öncelikli sektörleri belirler ve sonrasında ticari bankaları belirlenen koşullar dâhilinde sübvansiyonlu bir kredi ile bu alanlara kredi vermeye teşvik eder. Merkez bankasının kullandığı bir diğer yöntem zorunlu karşılık oranlarıdır. Bu yöntemde merkez bankası yeşil kredi veren bankalara daha düşük faizli ve daha az zorunlu karşılık bulundurmasına izin vermektedir. Başka bir uygulama ile merkez bankaları bankalar için minimum ve maksimum kredi kotaları oluşturabilir. Bu uygulama ile karbon yüksek sektörlerde maksimum kredi kotası koyarak daha az kredi verilmesini sağlarken, yeşil yatırımlar için minimum kredi kotası getirerek bu sektörlerin geliştirilmesine katkı sağlayabilmektedir. Yeşil kredi tahsisi politika araçları kapsamında merkez bankası bir de kalkınma bankalarını tahvillerini alarak ya da tahviller için piyasa oluşturarak kalkınma bankalarını destekleyebilir.

Makro ihtiyati politikalar finansal sistemdeki sistemik riski sınırlamak için öncelikle ihtiyati araçların kullanılması olarak tanımlanmaktadır (Yazıcı, 2024:322). Buradaki amaç sistemik riskler karşısında piyasalarda oluşabilecek yeni fiyatlamalara karşı tüketiciyi korumaktır. Makro ihtiyati politikalar kapsamında merkez bankası kredi büyümesini ve aşırı risk almasını sınırlandıran sermaye tamponları, gayrimenkul piyasasında balonları önleyen Kredi/değer oranı, şirketlerin aşırı borçlanmasını önleyen kaldıraç oranı, finansal kurumların karbon yoğun varlıklara maruz kalma durumunu ölçen stres testlerini kullanabilmektedir. Merkez bankaları bu politikalara ek olarak sürdürülebilir yatırımların finansmanında kullanılmak üzere ihraç edilen borçlanma aracı yeşil tahvillere (Göçmen Yağcılar ve Yılmaz, 2022: 155) ait yönergeleri, yeşil bankacılık yönergeleri, yeşil dönüşüme konu olan çalıştaylar ve seminerler yaparak yayınlar çıkarabilir.

SONUÇ

İklim krizinin ciddiyeti küresel bir sorun olduğunu ve önlem alınmasını gerekliliğini göstermektedir. Tüm ekonomik aktörlerin bu süreçte iklim krizini dikkate alarak ilerlemesi sürdürülebilir bir kalkınma için gerekli görülmektedir. Buradan yola çıkarak merkez bankaları da ekonomik aktörlerin başında gelmesi nedeni ile onlardan da iklim krizini dikkate alan sürdürülebilir yeşil politika izlemesi beklenmektedir. Çünkü bu durum merkez bankaları açısından yalnızca çevresel bir mesele değil; aynı zamanda **finansal istikrar, ekonomik kalkınma ve uzun vadeli refah** ile doğrudan bağlantılıdır. 2015 yılı sonrası birçok merkez bankası bu konuda adımlarını atmışlardır. Özellikle gelişmekte olan ülkelerin merkez bankalarının bu konuda daha kararlı gözükmektedirler. Çünkü iklim değişikliğine bağlı oluşabilecek bir tehdit durumunda öncelikle ekonomisi güçsüz olan ülkeler etkilenmektedir. Bununla beraber merkez bankalarının mevcut görev tanımlarının yanı sıra yeşil merkez bankacılığı sorumluluklarının da yüklenmesi bazı endişeleri de beraberinde getirmektedir. Merkez bankalarının görevlerinin genişletilmesi ve siyasallaştırılması, yeni görev verirken oluşabilecek belirsizliklerin gri alanlar oluşturarak para politikasını olumsuz etkilemesi bu endişelerdendir (Ünüvar ve Yelden, 2022:16). Bu sıkıntıların yaşanmaması için iklim hedefleri ile merkez bankalarının görev tanımlarının yasal olarak belirlenmesi gerekmektedir. Bu aşamada her ülke için belli görevler yerine, her ülkenin kendi iç dinamiklerini dikkate alarak görev tanımının güncellenmesi daha doğru olacaktır.

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