SUSTAINABLE INTELLIGENCE IN THE DIGITAL LANDSCAPE:

EXPLORING PATHS FOR MANAGEMENT AND ECONOMICS

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PREFACE

In an era where the digital landscape intertwines with every part of our lives, the pursuit of sustainable intelligence within management and economics has become crucial. This exploration seeks to connect the dynamic worlds of sustainability and technology, bringing together visionary leaders, dedicated researchers, and experienced professionals. Their collective efforts aim to foster innovative strategies and solutions that address modern challenges while utilizing the vast opportunities offered by digital advancements. By embracing this mix of ideas, we create a path for a future where robust, intelligent approaches redefine the fields of management and economics.

Considering sustainable approaches as a potential path within the digital landscape of management and economics, the aim of the 6th Eastern European Conference of Management and Economics (EECME 2024), held as a hybrid meeting on May 16, 2024, at B2 Ljubljana School of Business, was to provide a platform for researchers, higher education teachers, and authorities to present their research results on topics including: i) Sustainable Management Strategies in the Modern World, ii) Modelling Dynamics and E-Transformation of Digital Business Processes, iii) Marketing Strategies in the Digital Landscape, iv) Globalization for Growth and Development in Management, Economics, and Informatics, and v) Digital and Trendy Learning Approaches: Building an Inclusive Knowledge Management Society. Participants from 15 different countries submitted their papers in either English or Slovene, resulting in a bilingual publication.

In the section Sustainable Management Strategies in the Modern World, three articles are included. The first presents the transition to Post-Fordism as an essential change. Authors Ulkar Alizada and Nigar Mammadzada from Azerbaijan State University of Economics highlight that the transition from Fordist to Post-Fordist management practices is driven by changes in economic, social, and technological landscapes. They provide a compelling analysis of the challenges and benefits of this transformation, offering valuable insights for businesses aiming to enhance innovation and market responsiveness while navigating organizational restructuring and workforce reskilling. The next article focuses on the logistics of the circular economy, highlighting the challenges and opportunities for enhancing efficiency as a key aspect of sustainable development. By analyzing the logistics efficiency index and using Singapore as a case study, authors Andriy Krysovatyy and Iryna Zvarych offer valuable insights into optimizing resource circulation and minimizing waste to meet the growing demands for sustainable production and consumption. The last article in this section, Sustainable Decision Strategies in Management and Economics, explores the biological underpinnings of algorithmic decision strategies. Author Jyoti Satpathy from the Management and Economics University of Africa investigates how cognitive processes and cerebral functions influence managers' openness to new ideas and decision-making amidst the challenges of artificial intelligence and information overload.

The e-transformation of digital business processes is the focus of the next section. An article with the title Role of Personal Innovativeness and Government Support in Driving Fintech Adoption in Rural Pakistan discusses the internal and external determinants influencing fintech adoption in Pakistan's rural small and medium enterprises sector. Using the extended technology acceptance model framework, the study reveals that personal innovativeness, social influence, and government support significantly impact the intention and actual usage of fintech services. The findings provide valuable insights for policymakers aiming to enhance

financial inclusion through targeted support and promotion of fintech services. An article by Albina Hashimova examines how the transition to a digital economy, driven by advancements in digital technologies, is reshaping traditional economic systems by shortening production chains and reducing data management costs. The study also addresses critical issues related to the regulation of user data, underscoring the need for international frameworks to manage the growing influence of major digital players. The role and importance of reporting in the uniform European Electronic Format are addressed in another article, discussing the transition to a standardized digital reporting format based on the XBRL standard. This format aims to harmonize financial reporting requirements across Europe, providing a comprehensive overview of its features, implementation stages, and guidelines for stakeholders to improve the quality and efficiency of financial reporting. The last article in the context of the e-transformation of digital business processes, written in Slovene, examines the role of cryptocurrencies in financial cybercrime. Julija Lapuh Bele from B2 Ljubljana School of Business highlights the dual role of cryptocurrencies as both tools and targets of abuse, emphasizing the urgent need for public awareness and improved self-protection against sophisticated cybercriminal tactics and financial scams.

The section Marketing Strategies in the Digital Landscape explores the transformative impact of digitalization on modern marketing strategies. The articles investigate how technology and digital tools, including artificial intelligence, revolutionize marketing by enabling precise audience targeting, data-driven strategy optimization, and the effective use of native advertising. By seamlessly integrating promotional content with natural media, these studies highlight advanced methods for engaging consumers, enhancing brand communication, and reducing marketing costs through sophisticated digital approaches. The role of social networks in influencing consumer purchasing behavior is the focus of the last article in this section, written in Slovene. It examines how digital advertising on social media platforms affects the decision-making process for purchasing cosmetic products, from identifying the need to the final purchase. It analyzes the factors of social media advertising that have the greatest impact on consumer choices and provides insights into the effectiveness of different types of social media advertisements. The study offers concrete guidelines for developing marketing strategies in the cosmetics industry based on consumer interaction with social networks.

Acknowledging the global interconnectedness of today's world, Globalization for Growth and Development in Management, Economics, and Informatics was a key topic at the 6th EECME conference. Yazeed Alsuhaibany from the College of Business Administration in Saudi Arabia explores the effects of e-commerce technology payment methods on trade volume in Saudi Arabia. The study investigates both the short-term and long-term impacts of point-of-sale transactions using near-field communication and e-commerce transactions with Mada Cards on the country's aggregate trade volume. The findings reveal that near-field communication point-of-sale transactions negatively affect trade volume, whereas e-commerce transactions using Mada Cards have a positive but minor impact, highlighting the need for policy initiatives to promote e-commerce activities to boost economic growth. Another article examines the present state and development potential of the European Banking Union's Single Resolution Mechanism, detailing its evolution from a fragile framework to a critical component of the European banking sector since 2015. It discusses the enhanced cooperation between national authorities and the Single Resolution Board, as well as the strategic goals outlined in the Single Resolution Mechanism Vision 2028. This strategy focuses on improving crisis resilience, governance, and digital transformation, aiming to strengthen the integration and operational efficiency of the Banking Union in facing future challenges. The final article in this section, Risks Related to Artificial Intelligence's Long-Term Use for the Economy, by Ali Yusifov, examines the long-term economic risks posed by artificial intelligence technologies. The article analyzes both incidental and existential risks at the macro level, comparing them with micro-level risks to highlight potential mitigation strategies. It explores

how current economic ideologies and profit-driven approaches by digital monopolies can hinder the development of human capabilities and emphasizes the need for a scenario-based approach to evaluate and address these risks effectively.

The final section places the conference topic in the context of digital and trendy learning approaches with a focus on building an inclusive knowledge management society. In this light, the first article examines the factors influencing the adoption of occupational safety and health practices in higher education institutions in Saudi Arabia. Shabir Ahmad uses empirical data from a survey of university employees and students to identify key influences such as perceived complexity, self-efficacy, formal policy, training, and regulatory pressures, while noting that perceived usefulness and top management commitment are less significant in this context. The study provides valuable insights for enhancing the implementation of safety and health measures in academic environments. The very last article in the conference proceedings, written in Slovene, compares the quality of studies at the University of Ljubljana and the University of Maribor by analyzing 44 self-evaluation reports from these institutions. The study addresses the challenge of the skilled labor shortage in Slovenia and evaluates key quality indicators such as student progression rates, graduation rates, and student satisfaction for the academic year 2021/2022. The findings highlight similar levels of student satisfaction at both universities but note differences in graduation rates and self-evaluation methodologies.

The conference proceedings span a broad spectrum of contemporary challenges and innovative solutions across various fields, from marketing strategies in the digital landscape and the role of cryptocurrencies in financial crime, to the evolution of digital business processes and the critical factors influencing occupational safety and health in higher education. Notably, the works examine the transformative effects of e-commerce on trade volumes, delve into the complexities of artificial intelligence's long-term economic risks, and present the quality of higher education institutions. We believe that these proceedings provide a robust platform for exchanging best practices and sharing insights on sustainable development, digital transformation, globalization, and the creation of an inclusive knowledge management society. By embracing the principles of sustainable intelligence in the digital landscape and exploring paths for management and economics, we can collectively foster a sustainably oriented knowledge society equipped to navigate the intricacies of our globalized world.

Katarina Aškerc Zadravec, Editor,
on behalf of the 6th EECME Committee

Sustainable Management Strategies in the Modern World

EMBRACING CHANGE: THE TRANSITION TO POST-FORDISM

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Abstract. This paper examines the necessity and challenges faced in transitioning from Fordist to Post-Fordist management practices in today's business environment. It explores the key drivers of this shift, including evolving economic, social, and technological landscapes. The article critically analyzes the challenges of this transformation, such as workforce reskilling, organizational restructuring, and adapting to more flexible production models. A real-world example from the automobile industry that successfully navigated this transition is presented to illustrate the tangible benefits of Post-Fordism, including increased innovation, responsiveness to market demands, and a focus on sustainability. This research not only emphasizes the need for change but also offers valuable insights for businesses contemplating this shift, outlining methods to manage and optimize the transition process.

Keywords: Post-Fordism, sustainable management, flexible production, organizational strategy, automobile industry

Introduction

The 20th century can be portrayed as industrial prosperity, especially in the context of Western nations and was a "springboard" for less developed nations to catch up and gain impressive numbers in economic growth. Large changes in production required adaption in management, as human capital is main player in the economy.

Fordism, as the name indicates, is named after the American industrialist Henry Ford, who pioneered the mass production of automobiles in the early twentieth century by means of standardized job tasks (Watson, 2019). The emergence of different management strategies such as Fordism, Taylorism, and others were relevant at their time as hardware and machinery were innovations in the market, henceforth, nowadays equipment is mostly supplemented with software. Software development is a highly dynamic and creative process that requires flexibility, innovation, and collaboration, which are not typically associated with Fordist principles (Jessop, 1992). Some characteristics of the Fordism approach were unskilled labor and routinized and unionized work, so current market demands make them not relevant and shape new techniques. In software development, the focus is on iterative development, where teams work collaboratively to create and refine software solutions through continuous feedback and adaptation. This approach contrasts with the rigid, linear processes of Fordism. Additionally, software development relies heavily on knowledge work and intellectual contributions from developers, rather than manual labor, which is central to Fordist production methods (Crowley et al., 2010). The nature of software development requires autonomy, creativity, and problem-solving skills, which are not well-supported in traditional Fordist

organizational structures.

Post-Fordism is an economic and social system that emerged in the late 20th century as a departure from the traditional Fordist model of mass production. To analyze and talk about it, better to start with an explanation of the Fordist model.

Overview of Fordism

Since the early 1970s, Fordism, a dominant mode of production characterized by mass production and standardized consumption, has been in a state of crisis (Roobeek, 1987). However, some scholars have argued that new technologies, such as computer-aided design (CAD) and computer-aided manufacturing (CAM) through Industry 4.0, have the potential to revitalize Fordism and extend its lifespan. (Paula & Paes, 2021). This hypothesis has gained empirical support over the past three decades, as these technologies have been widely adopted by manufacturers and have led to significant improvements in productivity and efficiency.

Fordism prioritized the efficient production of identical products in large quantities, which limited the ability to respond to evolving consumer preferences and market needs. Assembly lines lacked adaptability, making it challenging to introduce product variations or adjust production volume. Rigid hierarchical structures with limited worker autonomy stifled innovation and creativity.

The human and societal implications of Fordism included repetitive and monotonous work on assembly lines, leading to dissatisfaction and alienation among workers, often resulting in high turnover rates. The emphasis on specialized tasks offered limited opportunities for career progression and skill development for workers. The system primarily benefited management and shareholders, raising concerns about income inequality and exploitation of workers (Lovering, 2009).

Fordism's environmental concerns included mass production and excessive consumption, which contributed significantly to environmental pollution and the depletion of natural resources. Limited product variety often led to shorter product lifespans and increased waste generation. There had been conducted various research during the prosperity era of Fordism that depicted the exponential growth of world population, industrialization, food production, pollution and the use of raw materials would in the long run- within 100 years -exhaust the world's natural resources (Lovering, 2009).

Fordism's economic vulnerabilities included susceptibility to economic shocks. Reliance on specific production processes and materials made the system susceptible to disruptions such as oil shortages or supply chain issues. The oil crises of 1974 and 1979-80 increased fuel costs relative to total production costs to the point where industries reliant on energy-intensive processes faced significant difficulties. The resulting high product costs diminished their competitive position in the market (Roobeek, 1987).

Moreover, the emergence of competitors who employed more flexible and adaptable production methods posed a significant challenge to the dominance of Fordism. This new breed of competitors, often referred to as "lean manufacturers," was able to respond more quickly to changes in consumer demand and technological innovation. They were also able to produce higher-quality products at lower costs. (Womack, Jones & Roos, 1990).

Within the realm of industrial history, while the advent of Fordism brought about transformative advancements in the realm of production, it is crucial to acknowledge the concomitant shortcomings that ultimately led to its decline, thereby paving the way for the emergence of Post-Fordism. The transition from Fordist to Post-Fordist management is a significant development in the contemporary business landscape. It is driven by the evolving economic, social, and technological landscapes. This shift presents key challenges such as workforce re-skilling, organizational restructuring, and adapting to a more flexible production model.

Need for Change

The adoption of Post-Fordism requires a fundamental shift in organizational culture, processes, and structures. Organizations might embrace decentralized decision-making, encourage employee empowerment, and create a learning environment to foster continuous improvement. Successful implementation of Post-Fordism has led to tangible benefits such as increased innovation, responsiveness to market demands, and sustainability (Roland, 2016).

Real-life examples from various industries have demonstrated the successful navigation of this transition. These organizations have implemented flexible production models, invested in employee development, and embraced a culture of continuous improvement. The transition to Post-Fordism is not without challenges, but it offers a compelling path for businesses to thrive in the rapidly changing global economy.

In real-life examples across various industries, successful navigation of the transition to Post-Fordism is evident. These organizations have adeptly implemented flexible production models, prioritized investment in employee development, and fostered a culture of continuous improvement. For instance, Toyota's Toyota Production System (TPS) serves as a quintessential example of a flexible production model, emphasizing lean manufacturing principles and enabling rapid adjustments to production in response to market fluctuations. Studies such as "The Machine That Changed the World" by James P. Womack, Daniel T. Jones, and Daniel Roos extensively document Toyota's transformative impact on the automotive industry. Furthermore, companies like Google and Microsoft have demonstrated a commitment to employee development through comprehensive training and career advancement programs, contributing to their sustained success (Zulfan et al., 2020). Academic research, including "Learning by Doing: The Real Connection between Innovation, Wages, and Wealth" by James Bessen, underscores the crucial link between investment in employee training and organizational prosperity. Despite the challenges inherent in this transition, embracing Post-Fordism offers a compelling pathway for businesses to thrive in the rapidly evolving global economy.

Advantages

Post-Fordism offers several advantages over its predecessor, addressing some of the limitations of the rigid mass production system. Firstly, increased flexibility and adaptability allow firms to respond more rapidly to changing market demands and customer preferences. Post-Fordist production systems enable greater customization and product variations, thereby catering to diverse consumer needs and preferences. (Christopherson & Storper, 1986). Secondly, empowered workforce and improved work conditions necessitate a more skilled and adaptable workforce, encouraging continuous learning and skill development among employees (Lipietz & Slater, 1991). Flatter hierarchies and team-based approaches can lead to increased employee autonomy, decision-making power, and improved job satisfaction (Taylor & Bain, 1999). Thirdly, environmental benefits include reduced reliance on mass production and inventory storage, leading to lower resource consumption and waste generation. The emphasis on customization and niche markets in Post-Fordism opens up opportunities for developing more sustainable and ecologically responsible products (Gibson-Graham, 2006). Reduced reliance on mass production and inventory storage can lead to lower resource consumption and waste generation.

It's important to note that these advantages aren't without their challenges. Post-Fordism can also lead to job insecurity, income inequality, and increased pressure on workers due to its emphasis on flexibility and adaptability. The success of these benefits depends on effective implementation and addressing potential downsides.

Real Life Example and How Earthquake Fuelled Transition in Toyota

COVID-19 pandemic caused serious problems to supply chain oprations globally, especially in the automobile industry as there is a large number of consisting parts. This led many people to argue that just-in-time and lean production methods were dead and being superseded by "just-in-case" stocking of more inventory. This was the reason to argue with just-in-time concept and switching to just-in-case. (Shih, 2022).

Nevertheless, for some companies 2021 was quite a successful year, and even year for surpassing competitors. One of the examples is Toyota, who passed General Motors and achieved top seller label in North America region. Toyota was producing outputs even though it was controversial to minimizing inventory concepts, but they wanted to prove how overlooked aspects of its system enhanced adaptability to disruption by focusing on inventory planning. The Tōhoku earthquake and tsunami of 2011, opened up the weakest point on which disruption can be made up. As the line design subsequently evolved, the lead time requirement changed with it. Suppliers observed that their alliances with Toyota differed from those with other customers, which are distinguished by a special worth especially during problems. This helped to explain why the firm had been able to navigate recent disruptions in supply chain more effectively than most other companies as it continued to learn and adapt.

Conclusion

The transition from Fordist to Post-Fordist production reflects a significant development in the contemporary business landscape. Driven by evolving economic, social, and technological forces, this shift presents both opportunities and challenges. While Post-Fordism offers increased flexibility, adaptability, and a potential for a more skilled and empowered workforce, it also necessitates navigating issues like job insecurity and potential income inequality. This article contributes to the ongoing discussion on Fordism and Post-Fordism by highlighting the necessity of adaptation for businesses to thrive in the dynamic global economy. It also underscores the importance of effective implementation strategies to reap the benefits of Post-Fordism while mitigating potential drawbacks.

It is important to acknowledge the limitations of this study. Due to the complex and multifaceted nature of this topic, quantitative data that definitively measures the impact and effectiveness of Post-Fordism is scarce. Consequently, this research relied on existing literature and comparative analysis of Fordist and Post-Fordist paradigms. This highlights the need for further research to develop robust quantitative methods to assess the effects of Post-Fordism across various industries and economic contexts. Furthermore, the subjective nature of the topic means there is no single, universally accepted perspective on the relative merits of Fordism versus Post-Fordism. Future research could explore these subjective aspects in more depth, investigating how different stakeholders perceive and experience these contrasting production models. By acknowledging these limitations and outlining avenues for further inquiry, this study aims to provide a springboard for a more comprehensive understanding of the transition from Fordist to Post-Fordist management practices.

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OPPORTUNITIES AND CHALLENGES OF CIRCULAR ECONOMY LOGISTICS

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Abstract. The study of the logistics of the circular economy is a relevant topic in the context of modern challenges related to the preservation of natural resources and the reduction of the negative impact of human activity on the environment. The main objective of the study is to investigate what challenges circular economy logistics may face and what potential opportunities may contribute to improving circular economy efficiency. The circular economy is defined as a key direction for achieving sustainable development, so studying the logistics of this economic model is critical to understanding ways of its implementation and optimization. Circular economy logistics has the potential to become an effective tool for increasing the competitiveness of enterprises in the context of growing demands for sustainable production and consumption. The study of this aspect will allow to identify optimal strategies and approaches to the implementation of the circular economy in business processes. Understanding the logistics of the circular economy will reveal new opportunities for innovation and the development of new technologies aimed at optimizing the circulation of resources and minimizing waste. For this, the authors proposed the use of the logistics efficiency index, which is compiled by the World Bank. The top 12 leaders and outsiders and the place of Ukraine were determined with the help of statistical analysis of the data of this indicator. The trend over 10 years was also studied, which made it possible to conclude that countries such as Singapore, Belgium, Germany, the Netherlands and Sweden were consistently in the top 10. Using the example of Singapore made it possible to formulate potential challenges and perspectives of circular economy logistics.

Keywords: circular economy, logistics of circular economy, supply chain.

Introduction

In today's world, when issues of sustainable development and environmental safety are becoming more and more relevant, the concept of circular economy is gaining increasing importance. This concept is based on the idea of maximizing resource utilization and minimizing waste, creating closed loops where waste is transformed into new resources. The logistics of the circular economy plays a key role in ensuring the effective functioning of such cycles.

The circular economy transforms the traditional linear model of consumption, where resources are extracted, used and discarded, to a system where resources are efficiently used, regenerated and reused (Zvarych & Brodovska, 2023). This not only contributes to the preservation of natural resources and reduction of waste, but also creates new opportunities for innovation, increases the competitiveness of enterprises and ensures the sustainability of economic development.

In this context, logistics plays an important role in managing the flows of material and informational resources circulating in the circular economy system. It organizes the optimal movement of waste and secondary resources, their collection, processing and reuse, contributing to the reduction of losses and cost optimization.

In this article, we will explore the key aspects of circular economy logistics, examine its impact on modern industrial and business processes, and consider the opportunities and challenges facing the implementation of this concept in practice.

Literature Review

Technology is an important force in the entrepreneurial ecosystem as it has the potential to impact entrepreneurial opportunities and processes. This paper explores the possible perspectives and threats of reverse logistics (RL) and its implications of these perspectives for reverse logistics within the circular economy (CE).

Wilson, Paschen and Pitt (2022) performed provides significant benefits across all functions and tasks in the reverse logistics process; however, the various reverse logistics functions and tasks rely on different forms of AI (mechanical, analytical, intuitive). scholarly work in sustainable green logistics and remanufacturing (SGLR) and their subdisciplines, in combination with bibliometric, thematic and content analyses that provide a viewpoint on categorization and a future research agenda. This paper provides insight into current research trends in the subjects of interest by examining the most essential and most referenced articles promoting sustainability and climate-neutral logistics. Nikseresht, Golmohammadi and Zandieh (2023) he authors extracted and sifted 2180 research and review papers for the period 2008–2023 from the Scopus database. The authors performed bibliometric and content analyses using multiple software programs such as Gephi, VOSviewer and R programming.

Overconsumption of resources has become a global issue. To deal with resource depletion and mitigate these impending crises, the circular economy (CE) holds some promise. A wide range of performance measurements for (CE) have emerged over the years. However, with increasing complexity of supply chains, appropriate and potentially new performance measurements are needed for effective CE management. Blockchain is an innovative technology that may advance CE development. Kouhizadeh, Zhu, Alkhuzaim, and Sarkis, (2022) one of the main findings indicates that both blockchain and CE performance measurements – especially reverse logistics processes – are still evolving in both theory and practical developments. Reverse logistics (RL) has become integral in modern supply chains, with many companies investing in circular economy (CE), a recuperative and effective industrial economy.

The traditional linear model triggered many negative environmental consequences such as climate change, ocean pollution, loss of biodiversity and land degradation. Khan, Laalaoui, Hokal, Tareq, and Ahmad, (2023) development of RL strategies that support the transition between RL to CE is crucial. The purpose of this paper is to connect RL with CE in the context of Industry 4.0 and develop a hierarchal structure to explore the relationship between RL and CE critical success factors in the context of Industry 4.0. The enormous amount of waste generated and the scarcity of natural resources worldwide have encouraged societies and industries to adopt the Circular Supply Chain (CSC) concept. With a focus on zero-waste generation, Circular Economy (CE) mimics the ecosystem cycle as an alternative to the traditional linear economic model. Varma, Singh, and Zhang, (2023) this paper aims to investigate the evolution of research themes in this research area, hence, trace the trajectory of development in the field of CSC. The study aims to propose a circular economy-based reverse logistics (CERL) that emphasises the mediation effect of reverse logistics (RL) on sustainable resource commitment and financial performance. Fernando, Shaharudin, and Abideen (2023) the

structural equation modelling (SEM) approach has been applied to analyse the data acquired through the survey method that included 113 vendors of automotive supplies of the 1st and 2nd levels.

Logistics Performance Index (LPI) is a Key Tool for Investigating the Logistics

Using the LPI in the context of the circular economy has several important advantages. First, it allows to evaluate the efficiency of various logistics processes and identify the possibility of optimizing these processes from the point of view of waste minimization and optimal use of resources. Second, this index helps to identify elements of the logistics chain that can be improved in order to increase the turnover of resources and reduce the ecological footprint.

For a circular economy, it is important to have a clear understanding of the efficiency of each step in the logistics process, from the collection of raw materials to the recovery and reuse of waste. The Logistics Performance Index helps identify weaknesses in these processes and provides a basis for developing improvement strategies. The use of such a tool allows companies and government bodies to effectively manage resources, while increasing the degree of environmental sustainability and economic efficiency. This approach contributes to the creation of a more sustainable and rational economic system that takes care of both the needs of the present and future generations.

Every two years, the logistics performance index is determined for each country by collecting data from over 1,000 major international logistics firms via questionnaires. The index, initially introduced in 2007, has been subsequently published in 2010, 2012, 2014, 2016, 2018, 2023. This index enables analysis and comparison of logistics operations across 155 countries worldwide. This index includes a set of the following components (Linkedin, 2023):

- The Customs Score evaluates how well customs procedures function within a nation, taking into account aspects like the speed of customs clearance, the transparency of processes, and the predictability of requirements. A high score suggests efficient customs procedures, minimizing delays and enabling seamless cross-border movement of goods.

- The Infrastructure Score assesses the caliber and advancement of a nation's transportation infrastructure, encompassing roads, railways, ports, and airports. A sophisticated infrastructure facilitates effective transportation and uninterrupted movement of goods domestically and internationally. Nations scoring high in Infrastructure typically boast sturdy transport grids, reducing logistical hindrances and bolstering supply chain efficiency.

- The International Shipments Score gauges the simplicity of coordinating and executing international shipments, taking into account elements like the accessibility of international shipping services, the caliber of logistics service providers, and the availability of international trade paperwork. A higher score within this realm signifies a nation's capacity to facilitate smooth international shipments while reducing bureaucratic obstacles.

- The Logistics Competence Score evaluates a nation's capability to deliver high-quality logistics services, encompassing factors such as expertise in logistics, proficiency of logistics operators, and the accessibility of logistics service providers. A higher score indicates a mature logistics sector equipped with adept professionals and a diverse array of service offerings, guaranteeing effective handling and supervision of goods across the entire supply chain.

- The Timeliness Score evaluates the promptness and dependability of logistics services, encompassing factors like delivery punctuality, transit times, and adherence to schedules. A nation with a higher Timeliness Score showcases streamlined logistics operations, guaranteeing swift and punctual delivery of goods as per predetermined timelines.

- The Tracking & Tracing Score illustrates a nation's proficiency in furnishing visibility and live tracking for shipments. It takes into account elements like the adoption of cutting-edge tracking technologies, the presence of online shipment tracking systems, and the precision of tracking data. A higher score signifies heightened transparency and traceability, empowering businesses to monitor goods' movements and preempt potential disruptions effectively.

The LPI amalgamates these crucial metrics to offer a comprehensive evaluation of a country's logistics performance. It employs a rating scale ranging from 1 to 5, where 1 signifies a low level of performance and 5 signifies a high level of performance (Linkedin, 2023).

Statistical data on the rating of the country regarding the development of the logistics system were taken from the World Bank database. In order to show the current state of development of logistics systems in the world, it was proposed to take the top 12 countries in the rating and the top 12 outsiders and Ukraine in order to be able to compare with the state of development of the domestic logistics system. The authors used Microsoft Excel to interpret the obtained data in the form of a diagram. As part of the research, it is advisable to also use the values of the indicators that make up this index in order to identify "weak" sides in each country.

The State of Development of Logistics in the World

Circular (closed-loop) economy, as a scientific idea and one of the leading vectors of societal development, is not solely the result of recent cutting-edge research in the field of environmental economics or ecological economics (Fortunati et al., 2020). In fact, from the very inception of eco-economic perspectives on the relationship between the environment and human beings with their technological activities (the emergence of the prototype of sustainable development - the leitmotif of today's stage of societal evolution), the notion that it is necessary to return to nature what we take from it, and thus to ourselves and our future generations, was logical and simultaneously revolutionary

The article concerns natural resources, which, in the process of their utilization for production and consumption, transform into waste, which then, as in Ukraine, for example, is transported to landfills - the endpoint of their lifecycle. Obviously, no modern country can continue such predatory policies, hence significant changes are necessary, including the adoption and implementation of a circular economy model. Under these conditions, its integration with organizational and economic innovations in transportation logistics will not only allow for a reduction in waste generation and environmental pollution in the coming years but also, by implementing a phased scenario of responsible waste management, yield positive indicators of economic and ecological efficiency (Ripanti et al., 2015). Figure 1 shows Logistics Performance Index (LPI) in 2023, dark blue is better, blue or white is worse.

Figure 1

Logistics Performance Index in 2023 (LPI)
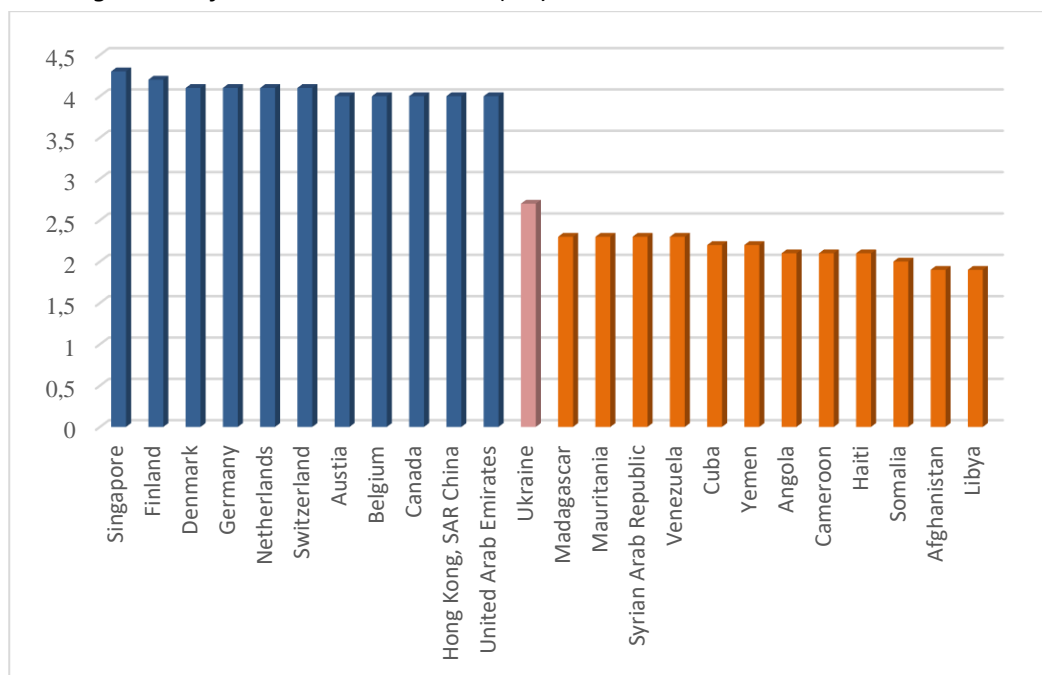
Source: World Bank.

The report introduces a fresh set of key performance indicators obtained through a Big Data methodology to complement the traditional Logistics Performance Index (LPI) based on surveys. The LPI evaluates structural performance aspects beyond disruptions, and despite the recent supply chain crisis, the relative LPI scores for 2023 remained largely unchanged, except for a slight decline in timeliness. Among the top 12 performers in the 2023 LPI, high-income economies dominate, with Singapore leading with a score of 4.3, followed by eight European nations, the United Arab Emirates, Hong Kong SAR, China, and Canada. Conversely, the bottom 10 performers mainly consist of low- and lower-middle-income countries across various continents, facing challenges such as armed conflict, natural disasters, political unrest, or geographical constraints, including landlocked nations struggling with connectivity to global supply chains. Despite an upward trend in average scores among underperforming countries over time, a performance gap persists between the top and bottom performers. Nevertheless, there has been an overall improvement in logistics performance, with more countries demonstrating relatively strong performance, as evidenced by the emergence of a secondary peak around a score of 3.5.

TOP 12 Leaders and Outsiders of LPI

In Figure 2, you can clearly see which countries occupy the leading positions, where the indicator varies from 4.3 in Singapore to 4 in the United Arab Emirates. Ukraine is highlighted in yellow with a value of 2.7, which is almost one and a half times less than the leading countries with a high level of income. Next, the countries with the lowest indicator are shown in green. The lowest level in Libya is 1.9, which indicates a low level of development of logistics chains.

Figure 2

12 Leaders, Ukraine and 12 Outsiders in LPI
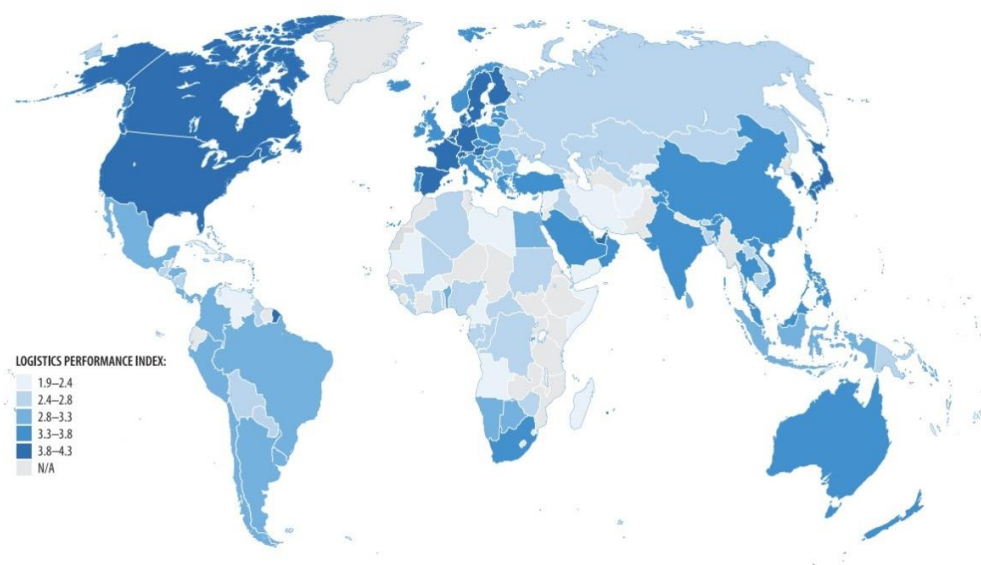
Source: compiled by authors.

Over the last ten years, wealthier nations have consistently held the highest rankings in the LPI listings (see to Fig. 2). While Europe remains a focal point for top performers, regions such as East Asia and the Pacific, North America, and the Middle East and North Africa also feature prominently. In 2023, there were 12 economies leading the way in logistics performance, all achieving scores of 4 or above, compared to 11 in 2018. These economies have traditionally exerted significant influence over global supply chain networks, and their makeup has remained relatively stable over time. Despite the recent global supply chain crisis, the relative standing of countries in these rankings has not undergone significant changes, as the crisis has affected nations worldwide. In contrast, the lowest-scoring 10 countries primarily consist of low-income and lower-middle-income nations, all achieving LPI scores of 2.2 or lower (see Fig. 2 for details). The fact that only 10 countries meet this criterion represents a substantial shift from 2018, when 22 countries did.

Now, more than ever, there is a heightened significance in gauging logistics performance and comprehending the factors influencing it, given the substantial shifts in global markets since 2018 precipitated by the COVID-19 pandemic, subsequent disruptions in shipping and air freight (the latter stemming from restrictions on passenger air travel), and the invasion of Ukraine by Russia. Throughout the COVID-19 pandemic, the demand for certain goods, such as electronics and household appliances, experienced an uptick, while production and transportation capabilities declined (Panigrahi et al., 2018). Notably, the demand for microchips, an essential component in electronics and numerous manufacturing sectors, surged, yet their supply was hindered by droughts and accidents at several major production facilities, compounded by the pandemic's effects. Moreover, the pandemic impacted the availability of truck drivers, train operators, port and warehouse staff in many countries, and complicated crew rotations on maritime vessels. Some nations implemented stringent zero-COVID strategies, entailing extensive localized lockdowns. The invasion of Ukraine by Russia led to a rise in energy and food prices due to halted exports from Belarus, Russia, and Ukraine, creating cascading effects such as export embargoes and inflated demand. Container shipping operations were disrupted when most services to and from Russia were terminated. Trade and transportation links between Europe and Russia, as well as Belarus, were largely severed, encompassing flight suspensions over Russian airspace and the suspension of container rail services connecting Europe and Asia via Russia.

Given that this index is complex and consists of 6 indicators, it is worth demonstrating in the framework of the study what exactly the values in each of them were obtained by the country as a result (see Table 1).

Table 1

2023 Logistics Performance Index Results

Economy	LPI	Customs	Infrastructure	International shipments	Logistics competence and equality	Timeliness	Tracking and tracing
Singapore	4,3	4,2	4,6	4	4,4	4,3	4,4
Finland	4,2	4	4,2	4,1	4,2	4,3	4,2
Denmark	4,1	4,2	4,1	3,6	4,1	4,1	4,3
Germany	4,1	3,9	4,3	3,7	4,2	4,1	4,2
Netherlands	4,1	3,9	4,2	3,7	4,2	4	4,2
Switzerland	4,1	4,1	4,4	3,6	4,3	4,2	4,2
Austria	4	3,7	3,9	3,8	4	4,3	4,2
Belgium	4	3,6	1,1	3,8	4,2	4,2	4
Canada	4	4	4,3	3,6	4,2	4,1	4,1
Hong Long, China	4	3,8	4	4	4	4,1	4,2
Sweden	4	4	4,2	3,4	4,2	4,2	4,1
United Arab Emirates	4	3,7	4,1	3,8	4	4,2	4,1
Ukraine	2,7	2,4	2,4	2,8	2,6	3,1	2,6
Madagascar	2,3	1,8	1,8	2,9	2,2	2,6	2
Mauritania	2,3	2,1	2	2,2	2,5	2,8	2,5
Syrian Arab Republic	2,3	2,2	2,2	2,3	2,2	2,5	2,3
Venezuela	2,3	2,1	2,4	2	2,5	2,5	2,3
Cuba	2,2	2	2,2	2,1	2,2	2,6	2,4
Yemen, Rep.	2,2	1,7	1,9	1,7	2,6	2,8	2,3
Angola	2,1	1,7	2,1	2,4	2,3	2,1	2,3
Cameroon	2,1	2,1	2,1	2,2	2,1	2,1	1,8
Haiti	2,1	2,1	1,8	2,3	2	2,5	2,1
Somalia	2	1,5	1,9	2,4	1,8	2,3	1,8
Afghanistan	1,9	2,1	1,7	1,8	2	2,3	1,6
Libya	1,9	1,9	1,7	2	1,9	2,2	1,8

Source: World Bank.

Analyzing the data from Table 1, Singapore is the absolute leader in all indicators, except for international transportation, in which it is second only to Finland. The next 4 places are occupied by countries in which the indicators are the same or differ by 0.1-0.2: Denmark, Germany, the Netherlands, Switzerland. Among them, it is worth highlighting Switzerland, which overtook them in terms of infrastructure - 4.4. Next come the countries with a total LPI of 4. In the context of this study, the authors could not bypass Ukraine, so the state of the logistics environment in our country is important. Here it is worth noting that, in comparison with the top 12 countries, Ukraine received rather low values of indicators. Taking into account the fact that, for example, the difference with the indicators of Libya is small.

Table 2

Top 12 LPI Scorers in 2023 and Their Top Scorer Status for 2018, 2016, 2014, and 2012

Economy	Top 10 scorer in 2018	Top 10 scorer in 2016	Top 10 scorer in 2014	Top 10 scorer in 2012
Austria	Yes	Yes	No	Yes
Belgium	Yes	Yes	Yes	Yes
Canada	No	No	Yes	No
Germany	Yes	Yes	Yes	Yes
Denmark	Yes	No	No	Yes
Finland	Yes	No	No	Yes
Hong Kong	Yes	Yes	No	Yes
Netherlands	Yes	Yes	Yes	Yes
Singapore	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	No
Switzerland	No	Yes	No	No
United Arab Emirates	Yes	No	No	No

Source: World Bank.

It is also worth tracking the development trends of logistics systems, which is shown in table 2. We have the countries that took the top 12 in 2023, the table shows whether the same countries took the leading places during the past 10 years. It can be concluded that there are countries that consistently occupied the top places in the rating: Belgium, the Netherlands, Singapore, Sweden. It is also worth noting that there are countries that dropped out of this top: Austria, Denmark, Hong Kong, Switzerland. The United Arab Emirates has been in the top 12 of the rating since 2018 due to successfully implemented reforms.

Case of Singapore: Perspectives and Threats of Logistics of Circular Economy

An interesting case is Singapore, which never dropped out of the top 12 and took first place in 2023. Singapore ranks first in the Logistics Performance Index (LPI) due to its highly developed and efficient logistics infrastructure and strategic location. Here are some factors contributing to his leadership: Singapore is located at the crossroads of international trade routes in Southeast Asia, which makes it a convenient hub for logistics; the country has high-quality ports, airports, rail and road systems that allow for the rapid and efficient movement of goods; Singapore invests in the development of technology in the field of logistics, which allows to increase efficiency and automate processes; Singapore is a financial hub that provides access to financing for the development of logistics infrastructure and innovation; government stability and economic transparency create favorable conditions for the development of logistics.

The conducted research allows us to single out possible perspectives and challenges that threaten the logistics of the circular economy (see Table 3).

Table 3

Perspectives and Threats of Logistics of Circular Economy

Perspectives	Threats
Resilient Supply Chain Networks: Develop resilient supply chain networks that are less susceptible to disruptions by diversifying sourcing strategies, incorporating local sourcing where feasible, and building redundancy into critical supply chain components. This includes establishing partnerships with multiple suppliers and exploring alternative transportation modes and routes to mitigate risks associated with geopolitical tensions and natural disasters.	Disruptions in Supply Chain: The COVID-19 pandemic and subsequent disruptions in shipping and air freight highlighted the vulnerability of global supply chains. For the circular economy, which relies on efficient and reliable movement of materials and products, any disruption in the supply chain can impede the flow of resources, leading to delays and inefficiencies.
Resource Efficiency and Recovery: Implement innovative technologies and processes to enhance resource efficiency and recovery along the circular supply chain. This includes investing in advanced sorting and recycling technologies, such as AI-powered sorting systems and chemical recycling processes, to improve the recovery rates of valuable materials from waste streams and reduce dependence on virgin resources.	Resource Scarcity and Price Volatility: The pandemic-induced disruptions, coupled with geopolitical events such as the invasion of Ukraine, led to scarcity and volatility in key resources like energy and food. In the circular economy, where materials are reused and recycled, fluctuations in resource availability and prices can affect the viability of recycling processes and the economic feasibility of circular business models.
Digitalization and Data-driven Decision-making: Embrace digitalization and data analytics to optimize logistics operations and enhance visibility and transparency across the circular supply chain. Utilize IoT sensors, blockchain technology, and advanced analytics to track and trace materials, monitor inventory levels, and optimize transportation routes, thereby reducing waste, improving resource utilization, and enhancing overall efficiency.	Labour Shortages and Workforce Disruptions: The pandemic affected the availability of truck drivers, train engineers, port and warehouse workers, and crew changes on seagoing vessels. In a circular economy context, where the collection, sorting, and processing of recyclable materials rely on a functional workforce, labor shortages and disruptions can hinder the logistics of recycling and waste management operations.
Collaborative Partnerships and Circular Business Models: Foster collaborative partnerships among stakeholders across the value chain to co-create innovative circular business models and closed-loop systems. This includes forming partnerships between manufacturers, retailers, waste management companies, and logistics providers to design products for durability, reparability, and recyclability and establish reverse logistics channels for the collection and repurposing of end-of-life products and materials.	Policy Uncertainty and Regulatory Changes: The implementation of strict zero-COVID policies and trade restrictions in response to the pandemic, as well as geopolitical tensions like the Russia-Ukraine conflict, can lead to policy uncertainty and regulatory changes affecting international trade and transportation routes. Such changes can impact the logistics of the circular economy by altering waste export/import regulations, trade agreements, and transportation infrastructure investments.
Policy Support and Regulatory Frameworks: Advocate for supportive policy frameworks and regulatory incentives to promote circular logistics practices and investments. This includes implementing extended producer responsibility (EPR) schemes, incentivizing eco-design and sustainable packaging practices, and establishing standards and certification schemes for circular products and materials to create a level playing field for circular businesses and encourage market uptake of circular solutions.	Infrastructure Disruptions: The suspension of container shipping services to and from certain regions, as well as the disruption of trade and transportation links due to geopolitical events, can lead to infrastructure disruptions in key logistics hubs. In the circular economy, where efficient infrastructure for collection, sorting, and processing of recyclable materials is essential, any disruption in logistics infrastructure can hamper the movement of materials and products within the circular supply chain

| Capacity Building and Skills Development: Invest in capacity building and skills development initiatives to equip the workforce with the necessary knowledge and skills to effectively manage circular logistics operations. This includes providing training programs on waste management, recycling technologies, sustainable procurement practices, and circular supply chain management to empower workers and enable them to adapt to the evolving demands of the circular economy. | |

Source: compiled by authors.

By embracing these possibilities and adopting a holistic approach to circular logistics development, stakeholders can overcome the challenges posed by global disruptions and realize the full potential of the circular economy to create sustainable, resilient, and resource-efficient supply chains.

Conclusion

As a result of the conducted research, it can be concluded that the state of development of the logistics system directly depends on the economic development of the country. Since it has already been stated that the logistics of the circular economy depends on the logistics system in the country itself, on the basis of this, it can be argued that the logistics of the circular economy is better developed and functions more efficiently in highly developed countries. Singapore has been the leader in this ranking for 10 years, which indicates that the logistics system functions as efficiently and smoothly as possible. The authors also highlighted opportunities and challenges that may arise in the logistics of the circular economy.

Therefore, the study of the logistics of the circular economy is not only relevant, but also strategically important for the development of modern society and business. Its results can serve as a basis for formulating policies, strategies and practical measures in the direction of sustainable development and optimization of resource use.

The study outlined several practical implications for various stakeholders involved in logistics and supply chain management:

- Policy makers can use the findings to inform the development of strategies and regulations aimed at enhancing logistics performance and resilience, particularly in the context of global disruptions such as pandemics and geopolitical conflicts. They can prioritize investments in infrastructure, technology, and workforce development to strengthen supply chain resilience and promote the adoption of circular logistics practices.

- Businesses operating within global supply chains can leverage the insights to identify potential vulnerabilities and risks in their logistics operations and take proactive measures to mitigate them. They can invest in diversifying their supplier base, implementing digitalization and data-driven technologies, and fostering collaborative partnerships to enhance their resilience and agility in responding to disruptions.

- Logistics service providers can use the study findings to optimize their service offerings and develop tailored solutions to meet the evolving needs of their clients. They can invest in innovative technologies and capabilities to improve the efficiency and sustainability of their logistics operations, such as last-mile delivery optimization, reverse logistics for recycling and waste management, and real-time tracking and monitoring systems.

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SUSTAINABLE DECISION STRATEGIES IN MANAGEMENT AND ECONOMICS

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Abstract. Algorithmic sustainable decision strategy is implicit to have biological basis. This introduces critical influence cerebral and helps activate openness to new ideas, observe real phenomena and describe brain - impression equations, in a back-and-forth process in realm of human behaviour. In such a scenario, pertinent issue is how Managers decide when engulfed in a situation of 'seen and unseen' forces within environment of Artificial (Fabricated and / or Synthetic) Intelligence? Will sustainable decision strategy be the same as it was in Classical / Neo - Classical era? What about the 'tsunami 'of information waves ('Infoplosion' or 'Info-Tectonics')? What about degrees of significant signal-detection problem intrinsic in complex circumstances? How do we use cognitive operations in judgment, sustainable decision strategy? Based on EEG experimental data methodology, this paper explores how cerebral box help activate openness to new ideas; observe real phenomena and describe in brain - impression equations.

Key Words: Decision, Infoplosion, Brain Tracking, EEG and Info-Tectonics

Introduction

New definitions and interpretations have emerged to examine decision making through integration, and some still adhere to narrow models. Currently, behavioral science attempts to provide theory and practice to understand these phenomena. This paper attempts to provide comprehensive understanding of biological basis of decision-making behavior. This raises an important question; what is biological evidence in decisions? In a fast-paced world, organizations face ever-increasing problems, which require revolutionary technology and ways of strategic thinking. In this, it is necessary to understand power of brain and internal characteristics. As anatomy shows, specific brain regions and mechanisms work together to produce specific effects (Bechtel & Richardson, 1993). In these, awareness plays a key role. Prismatic neuronoscopy provides kind of vision that becomes ability to think and solve problems by switching between complex thinking of left brain and exploration of thinking of right brain (Beatty & Finsen, 1989). The scope of this debate is to explore. How to make best business (and financial) priority? How do preferences affect human minds? How to choose "hot buttons" (Infoplosion) in neural research? Neural control (and economics) shows that each sensory organ in human body behaves differently when exposed to decision processes (Boyatzis, R., and McKee, A.; 2011). Neuroscientific "inference" data and neuroscientific models have inspired new explorations. Neural control (and economics) is one way of testing how organizational (and economic) preferences depend on the observations and computational processes that lead to these choices (Algumaei, Hettiarachchi, Farghaly & Bhatti, 2023). Neuroscience helps increase interest through: neural pathways. A powerful "Agent" controls the behavior. Since this is a theoretical discussion, it is an attempt to delve into (Info-Tectonics) principles of applied neuroscience about how we make decisions (Barker, 2015).

Problem Statement

All decisions are made in an environment, which is defined as the collection of information, alternatives, values, and needs available at time of decision. A good decision environment includes available information, correct information, and alternatives. However, information and alternatives are limited because it takes time and effort to obtain information or otherwise identify it. A time constraint means that decision must be made at a certain time. We all have different priorities. So, it may seem strange to think of intuitive in first place. However, studies show that most people are less capable of making decisions than they think. Knowing what affects decision making, along with some helpful techniques, will help make better decisions (Camerer, Loewenstein & Prelec, 2005).

The issues, because modern models ignore influence of emotions on neuro - optometric decision-making, that crop up is (Kahneman & Tversky, 1972):

- What happens when we alter our minds?
- What happens when we alter our minds?
- What are the calculations that permit valuable sensorimotor practices to be learned?
- What computational instruments permit the brain to adjust to changing circumstances and stay fault-tolerant and robust?
- How (and where) are esteem and likelihood combined in brain and what is the flow of this computation?
- What neural frameworks track classically characterized shapes of anticipated and marked down utility?
- How is utility metric diverse from neural signals of consideration and engine preparation?
- How is negative utility signaled? Is there a negative utility forecast flag comparable to one for positive utility?
- How do frameworks that appear to be centered on quick choices and

Subsequent issues are:

- There's a got to go to as to how neuroscience can, and as of now has, profited from Neuro - viewpoint,
- How neuroscience has been improved by taking account different specialized neural frameworks with potential investigate bearings.

The central thought central to experimental-behaviour is the observational investigation of brain wave action (Satpathy, 2019, 2022, 2023). This approach speaks to a step alter to understanding of choice making, particularly beneath conditions of vulnerability. The human brain's generation of Alpha, Beta and Theta waves is known as a pre-conscious movement. In doing so the estimation of these waves end up the elemental approach of experimental-economics. Since improvement of brain following techniques, analysts have been able to urge prevue into cerebral forms included with performing errand (making choice) (Satpathy, 2019, 2022, 2023). The advantage is that they assent to go past considering result of errand (choice) and screen movement through which director goes approximately making a choice (Satpathy, 2019, 2022, 2023). Since where somebody is looking and what they are paying (attention) are safely joined (there's a brain-mind connect), analysts track choice maker's (consideration) all through a trial (Satpathy, 2019, 2022, 2023). With this prove, they can look at classification with which choice producer tests information around choice choices and term of time went through making stipend for them. These strategies will be valuable in settling between conflicting models with unique accounts. Brain following strategies are not a cure-all and confined in capacity to bolster inductions almost decision-making (Satpathy, 2020–2024).

Methodology

Current business (and economic) models do not 'fully 'understand how brain works (Satpathy et al., 2023). The purpose of studying decision-making behavior is prediction. The aim of this research 'is to develop a theoretical model that allows predicting doctors' decisions based on 'axiomatic concept of neurofeedback. These models take 'external world as input and produce 'actual judgments of selected individuals as output. For this reason, 'purpose of 'research is to achieve a short and convenient decision-making model. Visual analysis includes not only decisions between options, but 'neurofeedback data such as time to decision, number of decision errors, and mental patterns. The method used is a combination of theoretical contributions and experimental work focused on ability to switch between left and right cerebral examination. This experiment is an extension of theory and involves observing neuro-brain wave activity through alpha waves (Satpathy et al., 2022, 2023). Cognitive processes are mapped using EEG. This is a symbol of "open" and "constructive" work that support strong economic decisions. We asked two specific research questions: the first is exploring decision options, and the second is the part of the brain that helps us make decisions. The main goal is to explore brain wave activity. This approach represents change in understanding of choices, especially in situations of uncertainty. In doing so, measurement of waves has become a fundamental approach in experimental economics. Three interviewees participated in the experiment (Satpathy, 2019, 2022, 2023).

Experiment

With reference to undercurrents of activity, business (and, economics) abilities, capacity to see prospects, ability to act in settings of entrepreneurial choice - risk and equivocalness, field of Neuroentrepreneurial administration (and, economics) sciences is still in its beginning organize and sub - field of neuro soundings in information - driven entrepreneurial choices (with accentuation on entrepreneurial conduct) is still in its embryonic organize where there's an associate - disciplinary consideration to completely create it into its embryo Neuroentrepreneurial administration (and, economics) sciences have associated incongruent areas of administration and brain research. Slack of this field complements interface between entrepreneurial trade and brain sciences. Neuroentrepreneurial disclosures pose challenge as an inter-disciplinary assurance to bridge this hole as to stipulate exact representations of choice making. Regardless significant extensions, raising a choice that gathers a substitute choice to be calculated, enquiry of how we make choices pose noteworthy trials for deliberate investigations (Satpathy et al., 2022).

Table 1

EEG Experimental Data: Decision Strategies

Subjects	FEV1_pre	FEV1(%)_pre	FVC_pre
FVC (%)_pre	FEV1/FVC_pre	FEV1/FVC (%)_pre	FEF 25-75_pre
4	2.43	86	2.52
70	97	120	3.56
128	7	1.75	2.42
85	2.71	76	89
111	3.6	129	11
2.39	2.19	78	2.36
66	93	116	3.21
117	14	2.87	567.98
661.134	631.41	14.5	14.9
	721.06	1548.00	
5	2.54	93	2.97
86	86	107	3.11

113	15	3.03	2.15
78	2.79	80	77
96	1.83	66	23
	1.79	66	2.16
63	83	104	1.85
68	28	5.11	165.138
339.99	250.838	9.86	12.32
	616.94	10.40	
7	3.07	104	3.76
100	82	102	3.08
111	9	2.07	3.04
104	3.8	102	80
101	2.97	108	12
2.55	2.42	82	3.06
82	79	100	2.17
79			320.562
414.842	305.128	13.6	17.9
	626.26	581.40	
12	1.17	39	2.39
58	49	67	0.61
27	13	2.71	1.44
48	2.85	69	51
69	0.75	34	23
4.31	1.3	44	2.28
56	57	78	0.8
37	20	3.83	971.4
706.854	398.274	10.5	17.8
	729.60	1170.00	
15	2.35	77	2.94
77	80	97	2.1
68	20	3.38	2.4
78	3.14	83	76
93	1.91	62	23
4.31	2.24	73	2.61
69	86	104	2.33
75			524.556
548.57	417.702	14.7	13.91
	738.73	1132.00	
16	2.06	83	2.46
78	84	106	2.19
89	17	3.35	2.75
111	3.36	106	82
103	3.15	128	15
3.03	1.83	74	2.24
71	82	103	1.88
77	13	2.71	475.986
429.142	360.552	16.1	12.72
	742.04	1397.00	
21	2.32	75	2.56
68	91	109	2.64
81	17	3.35	2.36
76	2.58	68	92
110	3.6	112	18
3.51	2.05	66	2.2
58	93	112	3.34
103	15	3.03	810.42
733.136	732	13.9	15.3
	755.44	1060.00	
22	3.67	90	3.67
73	100	125	6.07
155	8	1.91	3.91
97	3.91	78	100
125	6.04	156	8

1.92	3.75	93	3.75
74	100	125	3.54
100	4	1.27	417.702
326.282	433.49	16.2	14.68
16.58	760.88	120.50	
24	3.9	94	4.71
89	83	104	4.28
111	30	5.43	4.05
97	4.77	91	85
107	4.54	118	45
7.83	4.1	99	4.81
91	85	108	5.28
137	33	5.91	242.85
126.282	99.27	14.45	16.9
16.92	700.85	1400.00	
25	3.01	99	3.69
91	82	108	3.18
128	43	7.51	2.44
80	3.05	75	80
106	2.33	94	36
6.39	2.42	80	2.75
68	88	117	2.95
121	8	1.91	548.57
438.856	329.42	12.68	16.42
14.48	777.39	900.20	
29	2.65	61	3.39
59	78	102	2.23
62	30	5.43	2.88
66	3.55	62	81

A paradigmatic case of 'crossbreeding', paper experimentally tests behavioral explore plan by means of psychophysical approaches other than utilitarian and principal imaging frameworks (Satpathy et al., 2022, 2023). Experimentation is pushed as best approach to infer causal information. Collaboration isn't continuously direct. Connecting 'accelerationism' choice information and 'accelerationism' choice forms, paper endeavors to get it atomic and hereditary 'drivers' (with reference to frontal cortex, orbito-frontal cortex, front cingulate cortex and ventro-medial prefrontal cortex) that underlie conduct and 'accelerationism' choice making, explore fundamental components of 'accelerationism' choice forms by implies of crucial instruments from administration (and, Financial matters), brain research and atomic and hereditary science, applying integrator approaches to broaden understanding of key highlights of 'accelerationism' choice forms, apply standards of emotional, hereditary qualities, cognitive and atomic and hereditary science to inquire about questions and hierarchical conduct, talking about conceivable issues that rise from such applications and methodologically display examinations in 'accelerationism' choice atomic and hereditary science.

Brain (conduct through focal point of mental operations) inquire about comes about propose that naturalistic clarification of neural signature cannot bubble down to single arrange or few brain (conduct through focal point of mental operations) districts. Correspondingly, think about calls into address hypotheses localizable to an unequivocal neural framework. Experiment offers 'multiplicative' window to curiously philosophical and methodological concerns based on regulating and expressive levels of examination. Experiment concludes with unmistakable points of view a number of recommendations that have been created from hypothetical 'edifice' and presents headings for future inquire about. Accentuation is upon causality that best fits clarification? Key thought is to lock in atomic and hereditary logical strategies to explore atomic and hereditary connects suitable to brain (conduct through focal point of mental operations) forms. What does 'accelerationism' in choice structure cruel for 'organising'? What is certainly

cleared out of 'organisation' and 'organising' in an accelerationist world of 'accelerationism' in choice structure evanescence? Has authoritative logic been astute to draw its radical and basic voice from obscurantist's of motility and imperativeness? Experiment endeavors towards reexamining establishments of administrative 'accelerationism' choice elements by giving elective scientific categorization for judicious 'accelerationism' choice issues (Sanfey, 2007).

Results and Discussion

This paper propels models, grounded on proverbial basis of neurofeedback, to motivation - based financial choice (Sanfey, 2007). Alpha and Gamma actuation imaging strategy appear repeatability and specificity in mental reactions. This show reflects pertinent discoveries on ordinary management (and economic) conduct. Comes about recommend that neural signature cannot bubble down to few neuronal districts. Paper watches EEG as mediating in this arrange, so that brain can learn to break out of locally caught condition. Comes about show monikers to lock in management (and economic) choice to particular neural framework.

Conclusion

Paper observes EEG as capture in this orchestrate, so that brain can learn to break out of locally caught condition (Satpathy et al., 2022, 2023). Results approximately show monikers to bolt in management (and economic) choice to specific neural system. Paper raises inquisitively neuro-management (and economic) issues, theoretical and commonsense, based on both standardizing and expressive levels of examination. These approximately makes strides coherent understanding of natural shapes as basic component in management (and economic) related choice procedure. Recommendation is upon rethinking foundations of choice stream by giving elective logical classification for choice issues.

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Modelling Dynamics and e-Transformation of Digital Business Processes

ROLE OF PERSONAL INNOVATIVENESS AND GOVERNMENT SUPPORT IN DRIVING FINTECH ADOPTION IN RURAL PAKISTAN

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Abstract. This study examines a mix of internal and external determinants of fintech adoption in the rural small and medium enterprises (SME) sector of Pakistan. The study used the extended technology acceptance model (TAM) framework to explore the role of personal innovativeness, financial literacy, social influence, brand image, and government support in fintech usage intention and actual usage. The survey was conducted on 228 fintech services users using an online and paper-based questionnaire. Further study employed structural equation modeling using smart PLS 4. The study's results reveal that among internal factors, personal innovativeness positively affects the fintech adoption (usage) intentions. Whereas, social influence and government support are the external factors that positively affect the adoption behavior of fintech users in the rural SME sector of Pakistan. The study provides valuable insight, especially for the policymakers who can affirmatively pursue the use of fintech services through their continuous and disseminated support, which may enhance financial inclusion in the country.

Keywords: Fintech adoption, Rural SME, user Innovativeness, Financial literacy

Introduction

Advancements and innovations in communication technology and information systems have brought incremental changes to every facet of the economy. Financial technology is one of the outcomes of those rapid innovations (Jarvis & Han, 2021). Undoubtedly, fintech has brought about disruptive changes in the financial sector. It has shown its aggressive hegemony over traditional financial services, and financial institutions are forced to shift towards fintech at a noteworthy pace. On the other hand, financial technology has also brought about striking changes in the consumer market. The emergence of Financial technology has enhanced the accessibility and affordability of financial services (Philippon, 2016). It has further reshaped the personal finance and economic activities of an ordinary household (Yang & Zhang, 2022), and an increasing number of consumption and fund transfer activities are taking place now on the fintech platforms.

The global fintech adoption trend has prompted researchers in the domain to explore the phenomenon. Over the years, ample research has emerged to examine the adoption of fintech in various economies (Firmansyah et al., 2022; Tapanainen, 2020). Very few studies have targeted the neglected, financially excluded, rural segments of less developed countries. Especially regarding Pakistan, no such research is available that targets the rural SME sector for fintech adoption. Hence the study is attempting to bridge this gap.

The study is important because of several new contributions to existing literature. First, Pakistan is an emerging & developing market predominantly situated in the region with one of the highest fintech growth

worldwide (statista, 2022). The country has only a 21% financial inclusion rate, with 55% of unbanked adults having mobile phones (Demirgüç-Kunt et al., 2021), which makes it a very apt choice to scrutinize under the lens of fintech adoption. Secondly, almost 60% of the country's population and around 45% of the labour force is linked to farmland (Rashid & Sheikh, 2015). Although research on fintech adoption in Pakistan is available (Noreen et al., 2022; Saleem, 2021; Zhang et al., 2023) however, none of the studies have covered the ruler population; this fact makes this study more interesting. Thirdly, we have used a modified TAM framework with external and internal factors that lead to fintech adoption intention. Constructs like users' innovativeness and financial literacy are used as internal antecedents to intention to use. Social influence, government support, and brand image are used as external antecedents of fintech usage intention. These constructs are taken from various well-published studies in the literature (Lu et al., 2005; Saeed et al., 2014; Thakur & Srivastava, 2014; Yoshino et al., 2020). Finally, the relationship between Usage intention and actual usage is examined in line with previous studies (Kim & Malhotra, 2005; Wu & Du, 2012).

Henceforth, this study is structured as follows: Section 2 presents a comprehensive review of the relevant literature, and hypotheses are developed based on the literature review. Section 3 outlines the methodology employed in the study. The results are presented in Section 4, followed by a discussion of the findings and their implications in Section 5. Section 7 highlights the research limitations and suggests future research directions.

Literature Review and Hypothesis Building

Technology adoption frameworks

Financial technology, or fintech, has evolved over the last two decades, but its widespread adaptability has been propagated in literature mainly in the last few years (Bajwa et al., 2022). According to Kawai (2016), fintech refers to "*technologically enabled financial innovation. It is giving rise to new business models, applications, processes, and products. These could have a material effect on financial markets and institutions and the provision of financial services".* Extensive research has examined the fintech adoption, e.g. (Samarasekara et al., 2023; Tun-Pin et al., 2019) in Malaysia, (Setiawan et al., 2021) in Indonesia, (Aggarwal et al., 2023) in India, (Yang & Zhang, 2022) in China.

The TAM model developed by Davis (1989) is probably the most common framework used for technology adaptability and acceptance for users, including fintech technology. The TAM model originally proposed the simple constructs of perceived usefulness (PU) and perceived ease of use (PEOU). Afterwards many extensions of the basic TAM models have emerged in the literature. The most prominent of which are TAM2 and TAM3 frameworks. This study uses a modified framework of the technology acceptance model covering both external and internal factors that instigate the intention to use financial technology among the SME and farmhand classes in rural areas of Pakistan. The present study employed external constructs like social influence (SI), Brand Image (BI) and Government support (GS). On the other hand, internal constructs like personal innovativeness (PI) and financial literacy (FL) have been used. These constructs have been widely used in previous literature, and their details and linkage to previous literature are provided in Table 1.

Hypotheses building

Financial literacy

Financial literacy is the ability to understand how money works in the world: how someone manages to earn or make it, how they invest it, and how that person donates it to help others (OECD/INFE, 2015). Furthermore, Huston (2010) describes financial literacy as the personal ability to understand and use financial information for decision-making.

Since financial technology is an innovation intended to be used for the personal financial management of small businesses and individuals, the consumer's decision to adopt fintech also depends upon many factors other than technology. The financial literacy of the consumers is one of those factors (Chan et al., 2022). Therefore, we hypothesized that

H1: Financial literacy (FL) positively affects Usage intention (UI).

Personal Innovativeness

The users' attitude and willingness to use and experiment with new technology is called innovativeness (Lu et al., 2005). User innovation is further described as users' acceptance level of new products, technology or services (Hu et al., 2019). Fintech developments are pretty recent and are further gaining momentum at a noteworthy pace. Consumers, especially in developing countries, are adopting these services due to ease of use and cost-cutting aspects (Bajwa et al., 2023). However, the intention to try new technology, especially when it is coupled with other desirable features, may also be due to consumer innovativeness (Setiawan et al., 2021). Existing literature has highlighted a significant and affirmative relationship between user innovation and technology adoption (Chao et al., 2013; Morosan & DeFranco, 2014; Saeed et al., 2014). Especially fintech adoption and innovativeness of users have a shred of solid evidence in many countries (Setiawan et al., 2021; Tun-Pin et al., 2019). Therefore, we have proposed the following hypothesis:

H2: Personal innovativeness (PI) has a positive effect on fintech usage intentions (UI).

Social Influence

Human behaviors are often carved by the influence of people living around them. The case of technology usage is not very different. When it comes to the use of financial technology services, we cannot ignore the concerns that lead to social dimensions. The intention and the attitude to use a particular technology are often influenced by social dimensions (Sivathanu, 2019). Studies like Park et al. (2019) highlighted two dimensions of the adoption of financial technology: the external environment or social aspect and the internal users' perceptions of technology. Similarly, according to Guo et al. (2021), social influence plays an anchoring role in users' intention to adopt a new system. Therefore, these arguments are the driving force for our fifth hypothesis about social influence.

H3: Social influence (SI) positively affects usage intention (UI) to adopt fintech.

Brand Image

Kotler (2001) defined brand image as a set of beliefs, ideas and impressions that a person holds regarding an object. Alternatively, the brand image can be considered as a collection of perceptions about a particular product or service on the consumer's memory (Keller, 2000). In connection to service providers, the brand image plays a pivotal role, especially if the user's purpose is fulfilled, the services will be considered

reliable, and the brand image will last long (Park et al., 2015). In a study, Tamanna (2021) found a positive relationship between brand image and smartphone adoption among consumers. The existing literature has highlighted numerous aspects of brand image and fintech users. For example, Riyadh et al. (2010) highlighted the influence of the quality of e-finance service on consumers; Saleem and Rashid (2011) discuss consumer satisfaction with a particular e-banking brand. In contrast, Bajwa et al. (2021) highlighted brand equity for financial service providers. Based on the above literature, we hypothesized the following:

H4: Brand Image (BI) has a positive effect on fintech Usage intentions (UI).

Government Support

Numerous factors contribute to the user's decision to adopt technology, which includes both internal and external factors. Among external factors, government support is one of the key factors. The government always holds a key place in chalking out the regulatory framework to facilitate smooth work and ensure the confidence of the user in the available technology and infrastructure (Nugroho, 2015). The literature has highlighted a prominent linkage between government support, technology adoption, and continuous intention to use it (Kiwanuka, 2015; Zeynalov, 2023). Moreover, Marakarkandy et al. (2017) highlighted the factors that influence online banking adoption; the study found that government support is a prominent factor in GS in online banking products. Similarly, in the case of fintech adoption, government support is believed to be a Catalyst (Yee-Loong Chong et al., 2010). Based on the arguments mentioned above, we made the following hypotheses:

H5: Government support (GS) positively affects fintech usage intentions (UI).

Usage Intention and Actual Usage

The behavioural intention and actual usage intention behaviour have been extensively discussed in the previous literature. Studies like Thakur and Srivastava (2014) have discussed an affirmative relationship between the behavioural intention of consumers and the actual usage of mobile Internet technology. Similarly, Leon G. Schiffman (2019) has further confirmed the strong correlation between intentions and actual usage behaviour. Tao (2009) also highlighted the positive relationship between Usage intention and actual Usage of electronic research resources among the students. Further studies that refer to the Usage intention and actual usage include (Kim & Malhotra, 2005) for electronic records, (Lee et al., 2012) for mobile financial services, (Gerlach & Lutz, 2019), (Hashimova, 2023) for digital financial solutions, and (Rahardjo et al., 2020) for electronic money. Based on these arguments, we use the following hypothesis:

H6: Fintech usage Intentions (UI) have a positive effect on fintech actual usage (AU).

Figure 1

Theoretical framework
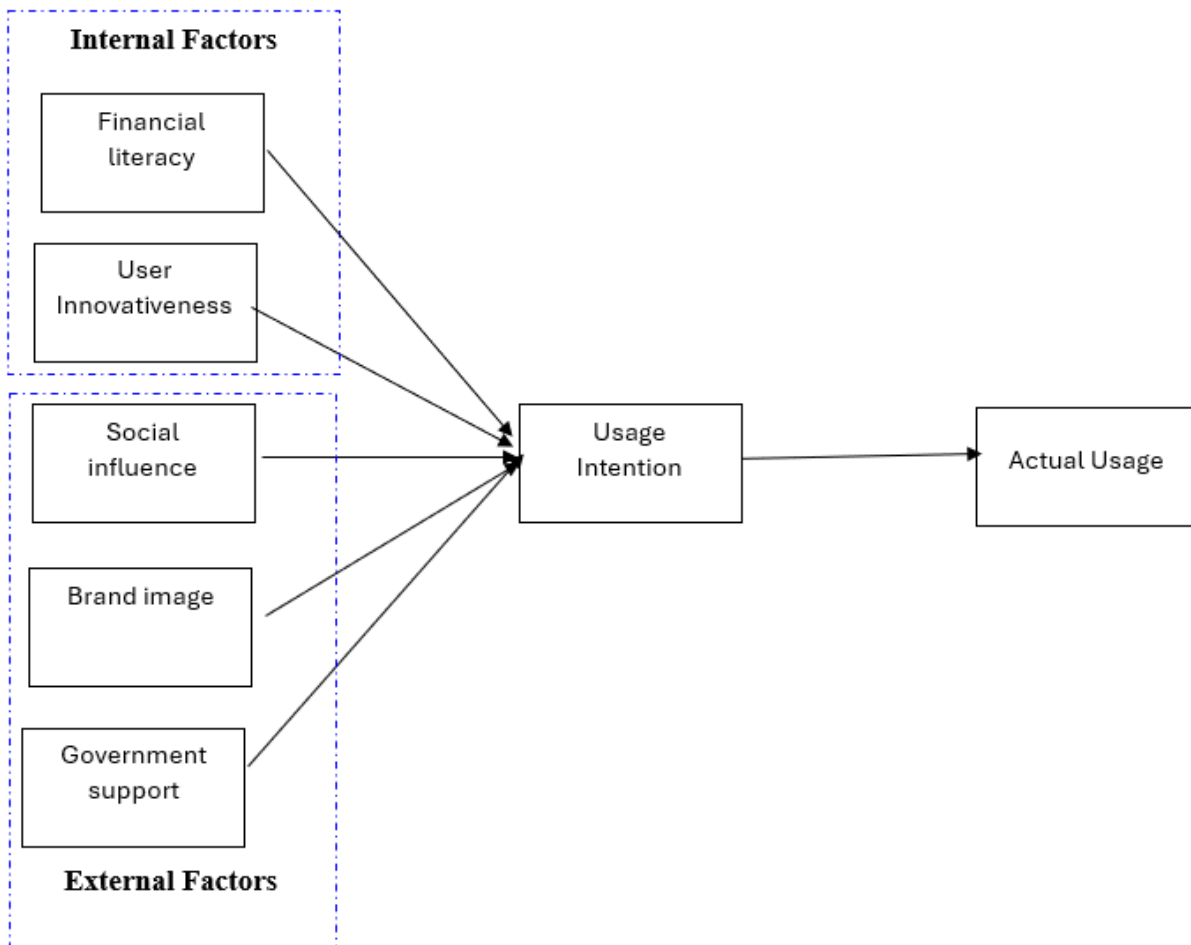
Methodology

Data collection and sampling method

The data was collected from the rural areas of Pakistan, where the literacy rate is relatively low. So, two types of data collection approaches have been used. First, where possible, we collected data using online Google forms, and second manual data collection with the help of university students. The main target respondents were small and medium-scale businessmen, including shopkeepers, agriculture middlemen, transporters, agri-firm owners, and farmers. The Pakistani context is particularly important since Pakistan is the fifth-largest populated country, with 55% of unbanked adults having mobile phones (Demirgüç-Kunt et al., 2021). This fact makes financial technology adoption an apt choice for the country's inhabitants (Saleem, 2021).

In Both forms of data collection, the questionnaire used filter questions, inquiring respondents if they have been using any form of financial technology services recently. Only those respondents who answered yes could further participate in the survey. A quota sampling method was used to collect data from all potential categories at a low cost (Malhotra, 2020). The technique is typically used to ensure each category is represented in the data. However, as expected, we faced the challenge of targeting female respondents since their share in the SME workforce in rural areas of Pakistan is shallow (Amir et al., 2018).

The study initially targeted around 400 responses; however, due to the nature of respondents, target

population, and domain of study, only 228 complete responses have been received. It is worth mentioning here that the term fintech covers online banking services, payment services, money transfer services, online investing services, insurance and loans and financing services, etc.

Constructs and instruments

The study adopted a questionnaire to examine 7 constructs. The items used in the questionnaire were adapted from various studies. Some of the words and phrases in these questions were changed and replaced according to the context of the study. For example, the word technology adoption has been replaced with the word fintech adoption (Lu et al., 2005), the phrase mobile payment was changed to fintech services (Istijanto & Handoko, 2022), etc.

The constructs used in the study are personal innovativeness (PI), financial literacy (FL), social influence (SI), brand image (BI), government support (GS), Usage intentions (UI), and actual Usage (AU). The measuring items are scored on a five-point Likert scale with anchors ranging from 1 (strongly disagree) to 5 (strongly agree). The detailed items are shown in Table 1.

Analysis method

The study used structural equation modeling (SEM) for data ***analysis*** purposes. The model is commonly used in literature because it allows us to simultaneously test the measurements and evaluate the relationships between the variables of interest. Moreover, the SEM is considered a dominant tool to examine the cause-effect relationship in a model that contains latent variables.

Table 1

Measurement constructs and sources

Latent variable	Source
Financial literacy (FL)	(Prabhakaran & Mynavathi, 2023; Van Rooij et al., 2011; Yoshino et al., 2020)
Personal innovativeness (PI)	(Chao et al., 2013; Saeed et al., 2014; Setiawan et al., 2021)
Social influence (SI)	(Park et al., 2019)
Brand image (BI)	(Tamanna, 2021)
Government support (GS)	(Noreen et al., 2022; Nugroho, 2015)
Usage intentions (UI)	(Kim & Malhotra, 2005; Lee et al., 2012; Thakur & Srivastava, 2014)
Actual Usage (AU)	(Istijanto & Handoko, 2022; Tamanna, 2021; Wu & Du, 2012)

Results

Demographic factors

Table 2 presents a descriptive analysis of the participants' demographics and their decision-making. The sample primarily consisted of male respondents, comprising approximately 64% of the participants. Most of the sample fell within the age range of 31 to 40 years, accounting for 42% of the respondents. Most of our respondents hold a graduate degree, 38%, followed by high school qualification, around 27%. Among the participants, 24% were employed in small industries and businesses, followed by small shopkeepers in rural areas and towns, accounting for 23%. Additionally, a significant proportion of the participants (53%) had a monthly income range of 31000-50,000 Pakistani Rupees.

Regarding fintech usage in rural Pakistan, the majority of the respondents are payment app users, around 46%, followed by users of two services viz, payment app and online banking, which were around 16%. Among respondents, 13% use money transfer services, whereas 12% are engaged with only online banking services.

Table 2

Demographic Characteristics of Participants

Variable & Categories		Frequency	Percent	Variable & Categories		Frequency	Percent
Gender	Male	147	64%	**Monthly**	Below PKR 10000	1	0%
	Female	81	36%		PKR 11000 - 30000	76	33%
	Prefer not to say	0	0		PKR 31000 - 50000	120	53%
Age	Less than 20 years	5	1%		PKR 51000 - 80000	4	2%
	20-30 years	66	29%		81000 or more	27	12%
	31-40 years	96	42%				
	41-50 years	30	14%	**Occupation**	Farmers	29	13%
	More than 50	31	14%		Shopkeeper	53	23%
Education	Primary of less	53	23%		Small Scale Business	35	15%
	High School	62	27%		Medium Scale Business	30	13%
	Graduate	87	38%		Employed	54	24%
	Masters	21	9%		Others	27	12%
	Masters or above	1	0%				
	Others	4	2%				

Source: Authors analysis

Analysis of the Measurement Model

Before proceeding to the research hypothesis, ensuring the reliability and validity of latent variables is vital. For this purpose, an evaluation of the measurement model is conducted. In line with the criteria of Hair et al. (2017), the study assessed the convergent validity of the constructs using the average variance extracted (AVE) values. Further, it was compared with composite reliability (CR).

The reliability of the latent constructs was ensured through the indicator outer loadings (threshold > 0.70) and internal consistency through Cronbach's alpha and composite reliability (CR). On the other hand, in line with Fornell and Larcker (1981), the Heterotrait-Monotrait Ratio of Correlations (HTMT), criterion, and cross-loadings are used to examine the discriminant validity.

Analysis of Reliability

Cronbach's alpha and composite reliability for latent variables are given in Table 3. All the values exceed the threshold level of 0.70, which indicates the reliability and consistency of the measurement scale for the latent variables. The values indicate that the measured constructs are captured accurately. Moreover, all outer loading values exceed or are approximately around the threshold of 0.70. That represents the strength of the relationship between the indicators and their corresponding latent variables.

Since this study conducted the analysis in multiple stages and during the initial analysis, a few items (one from personal innovativeness and one from usage intention) were far from the used cutoff criteria of 0.70; hence, those items were excluded from the subsequent analysis. After this exclusion, the revised analysis presented in Table 3 confirms that all remaining indicators meet the established threshold for factor loading. The reliability analysis demonstrates that the measurement model exhibits satisfactory internal consistency and reliability, as evidenced by high composite reliability values and indicator outer loadings surpassing the prescribed thresholds.

Table 3

Reliability and Convergent Validity Assessment of Measurement Scales

Latent Variable	Indicator	Factor Loading	Cronbach's Alpha	Composite Reliability	AVE
Financial Literacy	FL1	0.885	0.891	0.893	0.753
	FL2	0.851			
	FL3	0.865			
	FL4	0.870			
Personal Innovativeness	PI1	0.786	0.766	0.702	0.587
	PI2	0.830			
	PI3	0.673			
Brand Image	BI1	0.957	0.802	0.920	0.656
	BI2	0.768			
	BI3	0.679			
Social Influence	SI1	0.741	0.842	0.864	0.766
	SI2	0.938			
	SI3	0.932			
Government Support	GS1	0.871	0.715	0.728	0.580
	GS2	0.694			
	GS3	0.793			
Fintech Usage Intention	UI1	0.847	0.731	0.740	0.649
	UI2	0.799			
	UI3	0.770			
Actual Usage	AU1	0.927			
	AU2	0.831	0.835	0.855	0.678
	AU3	0.655			

	AU4	0.855			

Source: Authors analysis

Validity Assessment of Measurement Scales

This study used convergent and discriminant validity tests to assess the validity of the measurement model. Moreover, table 3 confirms that the study meets the three criteria given by Hair et al. (2017) for convergent validity for each latent variable. These criteria include i) CR > 0.70, ii) AVE > 0.50, and iii) CR > AVE.

Discriminant validity, on the other hand, ensures that distinct constructs within the measurement models are not excessively correlated, indicating their independence. Fornell and Larcker (1981) criterion, Heterotrait-Monotrait Ratio of Correlations (HTMT) principles, and cross-loading are three commonly used methods to assess discriminant validity.

According to Fornell and Larcker's criterion, the square root of AVE values along the diagonal should be greater than the squared correlation coefficients in the corresponding rows and columns. In Table 4, the diagonal values exceed the squared correlation coefficients, providing support for the discriminant validity of the measurement model.

Table 4

Discriminant Validity Assessment using Fornell and Larcker's Criterion

#	Latent Variable	1	2	3	4	5	6	7
1	Actual Usage	0.823						
2	Brand Image	0.174	0.810					
3	Financial Literacy	0.296	0.249	0.868				
4	Government Support	0.626	0.106	0.415	0.762			
5	Personal Innovativeness	0.353	0.261	0.563	0.543	0.766		
6	Social Influence	0.380	0.249	0.581	0.500	0.572	0.875	
7	Useage Intention	0.604	0.246	0.559	0.717	0.742	0.678	0.806

Source: Authors analysis

Another reliable and accurate criterion used to measure the discriminant validity in SEM is Heterotrait-Monotrait Ratio of Correlations (HTMT) introduced by Henseler et al. (2015). According to this approach, the correlation coefficient between latent variables should be below 0.85 to establish discriminant validity.

HTMT ratios (correlation coefficients between latent variables) for this study are presented in Table 5 below. The strongest correlation observed is between government support and actual usage, with a coefficient of 0.780. Since this value is below the threshold of 0.85, it confirms the discriminant validity of the construct.

Table 5

Discriminant Validity through HTMT Criterion

#	Latent Variable	1	2	3	4	5	6	7
1	Actual Usage							
2	Brand Image	0.162						
3	Financial Literacy	0.334	0.213					
4	Government Support	0.780	0.136	0.522				
5	Personal Innovativeness	0.441	0.277	0.696	0.715			
6	Social Influence	0.444	0.219	0.667	0.628	0.730		
7	Usage Intention	0.740	0.221	0.692	0.743	0.673	0.560	

Source: Authors analysis

Cross-loading is the third criterion for establishing discriminant validity, ensuring that items load significantly onto their intended latent variable and not onto other latent variables. Table 6 demonstrates that all factors exhibit significant loadings on their respective latent variables without significant loadings on other latent variables. This finding strengthens the discriminant validity of the measurement model.

Overall, all criteria have been satisfied, providing ample evidence to establish the measurement model's convergent and discriminant validity.

Table 6

Discriminant Validity through Cross Loadings

	Actual Usage	Brand image	Financial Literacy	Government Support	Social Influence	Personal innovativeness	Usage Intention
AU1	0.927	0.192	0.289	0.552	0.374	0.386	0.593
AU2	0.831	0.071	0.149	0.469	0.213	0.242	0.405
AU3	0.655	0.134	0.284	0.543	0.304	0.344	0.474
AU4	0.855	0.153	0.226	0.481	0.240	0.253	0.482
BI1	0.179	0.957	0.274	0.119	0.282	0.283	0.282
BI2	0.124	0.768	0.139	0.024	0.149	0.106	0.113
BI3	0.045	0.679	0.046	0.121	0.079	0.081	0.035
FL1	0.228	0.212	0.885	0.362	0.508	0.688	0.476
FL2	0.331	0.242	0.851	0.356	0.484	0.449	0.518
FL3	0.213	0.246	0.865	0.372	0.513	0.614	0.497
FL4	0.248	0.156	0.870	0.347	0.444	0.248	0.443
GS1	0.734	0.117	0.342	0.871	0.456	0.482	0.688
GS2	0.280	0.054	0.203	0.594	0.199	0.209	0.275
GS3	0.310	0.059	0.373	0.793	0.512	0.383	0.565
PI1	0.321	0.227	0.578	0.585	0.786	0.498	0.668
PI2	0.272	0.186	0.352	0.340	0.830	0.461	0.619
PI3	0.188	0.189	0.320	0.247	0.673	0.308	0.313
SI1	0.269	0.123	0.469	0.363	0.435	0.741	0.505

SI2	0.388	0.273	0.555	0.486	0.538	0.938	0.653
SI3	0.332	0.240	0.499	0.453	0.522	0.932	0.612
UI1	0.775	0.198	0.410	0.704	0.481	0.592	0.847
UI2	0.327	0.220	0.525	0.618	0.635	0.544	0.799
UI3	0.314	0.176	0.421	0.379	0.707	0.498	0.770

Source: Authors analysis

Assessment of the Structural Model

Following the validation and reliability assessment of each measurement model, the structural model is further evaluated for its explanatory power using the coefficient of determination (R^2), predictive validity through the effect size (f^2), and hypothesis testing through path coefficients (β).

Explanatory Power of the Model (R2)

The coefficient of determination (R^2) measures the model's accuracy in explaining outcomes. An R^2 value above 0.10 is considered significant for a parsimonious model (Craney & Surles, 2002), while values of 0.25, 0.50, and 0.75 are classified as weak, moderate, and strong, respectively (Henseler et al., 2009).

In the structural model of this study, there are six exogenous constructs, including Financial literacy, Personal Innovativeness, Social Influence, Brand image, Government support, and usage intention. On the other hand, usage intention and actual usage have been used as endogenous variables.

Table 7 exhibits the results, indicating that Financial literacy, Personal Innovativeness, Social Influence, Brand image, Government support, and usage intention account for 74% of the variation in usage intention. On the other hand, usage intention explains approximately 36% of the variance in actual usage.

These findings highlight that usage intention has relatively higher explanatory power than actual usage. The results provide valuable insights into the relationships between the variables examined and underscore the relative importance of Financial Literacy, Personal Innovativeness, Social Influence, Brand image, Government support, and usage intention in understanding the fintech usage (adoption) intention.

Table 7

Model Explanatory Power

Endogenous Constructs	R²	Corresponding Exogenous Construct
Usage Intention	0.740	Financial literacy User Innovativeness Social Influence Brand image Government support Usage intention
Actual Usage	0.365	Usage Intention

Source: Authors analysis

Predictive Validity of the Model

Assessing the structural model involves examining the contribution of each exogenous variable to the variation in the endogenous variable, along with evaluating R^2 values. This can be done by systematically omitting the exogenous constructs and observing changes in R^2 for the endogenous construct (Hair et al., 2017).

This study predicts the usage (adoption) intention by financial literacy, Personal Innovativeness, Social Influence, Brand image, and government support. Moreover, Actual Usage is predicted by the adoption intention. As shown in Table 8, the effect size of two exogenous variables, Personal Innovativeness, and Social Influence, on usage intention was moderate. In contrast, government support has a sizeable predictive effect on usage intention. On the other hand, usage intention profoundly affects actual usage.

Table 8
Predictive validity of the model through effect size (f2)

Endogenous Variables Exogenous Variables	Usage Intention	Actual Usage
Financial literacy	0.0050 (Small)	
Personal Innovativeness	0.2590 (Medium)	
Social Influence	0.1270 (Medium)	
Brand image	0.0050 (Small)	
Government support	0.3450 (Large)	
Usage Intention		**0. 5753 (Large)**

Source: Authors analysis

Hypotheses Testing

This study employed path coefficient analysis to examine the significance of the hypothesized variables in structural equation modeling (SEM). The study used the conventional criteria of t-stat and p-values associated with each path to determine the importance of the path coefficient. A 95% confidence interval was employed to evaluate the hypotheses in this study. For a path coefficient to be statistically significant at a 95% confidence interval, the t-value must exceed 1.96, and the associated p-value must be less than 0.05. the path coefficients (β), corresponding t-values, and p-values for each hypothesis are presented in Table 9.

The findings of this study indicate that H2, H3, H5, and H6 were supported with an acceptable level of statistical significance. The indicative t-stat and p-value also fall within acceptable criteria, see figure 3. The results assert that Personal Innovativeness, social influence, and Government Support are essential in predicting consumers' intentions to adopt fintech in rural Pakistan. Contrary to this, basic financial literacy and brand image do not significantly impact fintech adoption intention. Moreover, in line with previous literature, the intention to use (adopt) fintech has a statistically significant impact on actual fintech usage by Pakistani rural inhabitants.

Table 9

Hypotheses Testing and Structural Model Statistics

| Hypotheses	Path Coefficient β	Standard deviation	T values	P values	Decision
H1: Financial literacy -> Usage Intention	0.048	0.041	1.152	0.249	Not Supported
H2: User Innovativeness-> Usage Intention	0.360	0.078	4.607	0.000	Supported
H3: Social Influence -> Usage Intention	0.248	0.059	4.200	0.000	Supported
H4: Brand Image-> Usage Intention	0.039	0.039	1.001	0.317	Not Supported
H5: Government Support-> usage intention	0.374	0.096	3.890	0.000	Supported
H6: Usage Intention -> Actual Usage	0.604	0.041	14.800	0.000	Supported

Source: Authors analysis

Figure 2

Structural model with loading, path coefficient, and R2 values
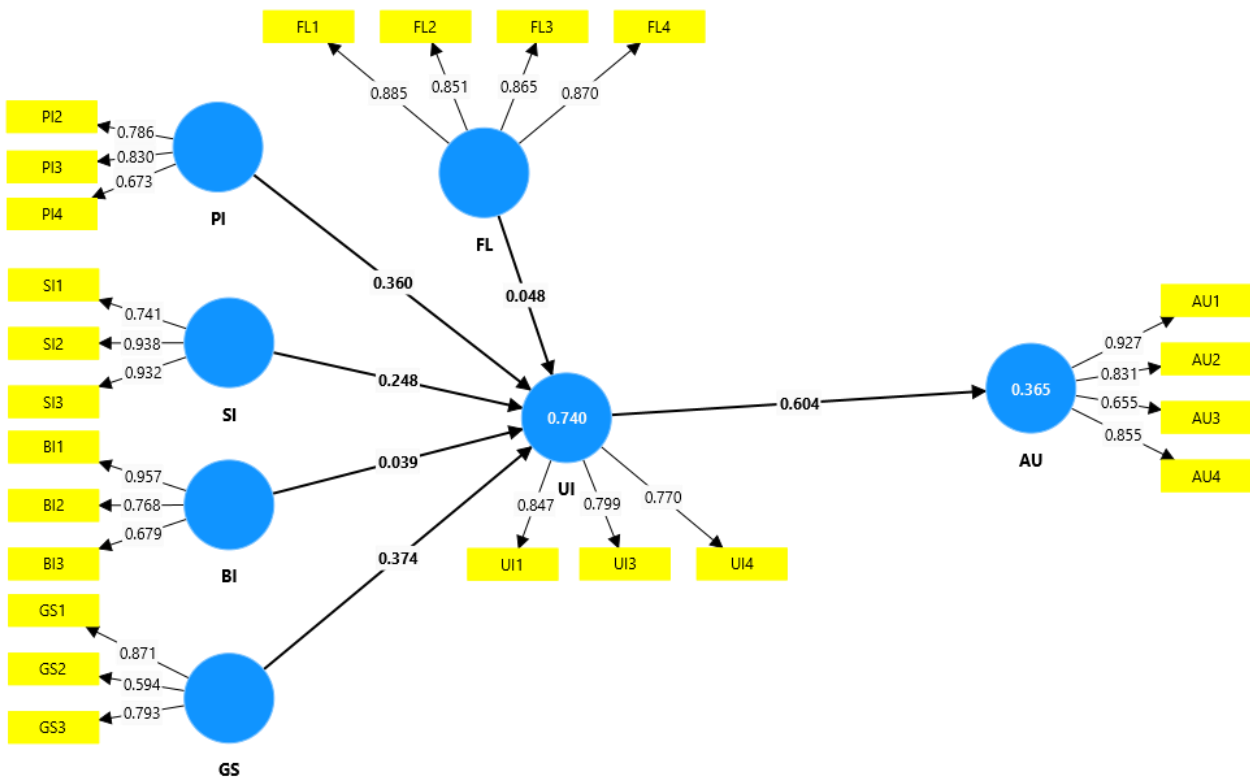
Figure 3

Structural model with P-values
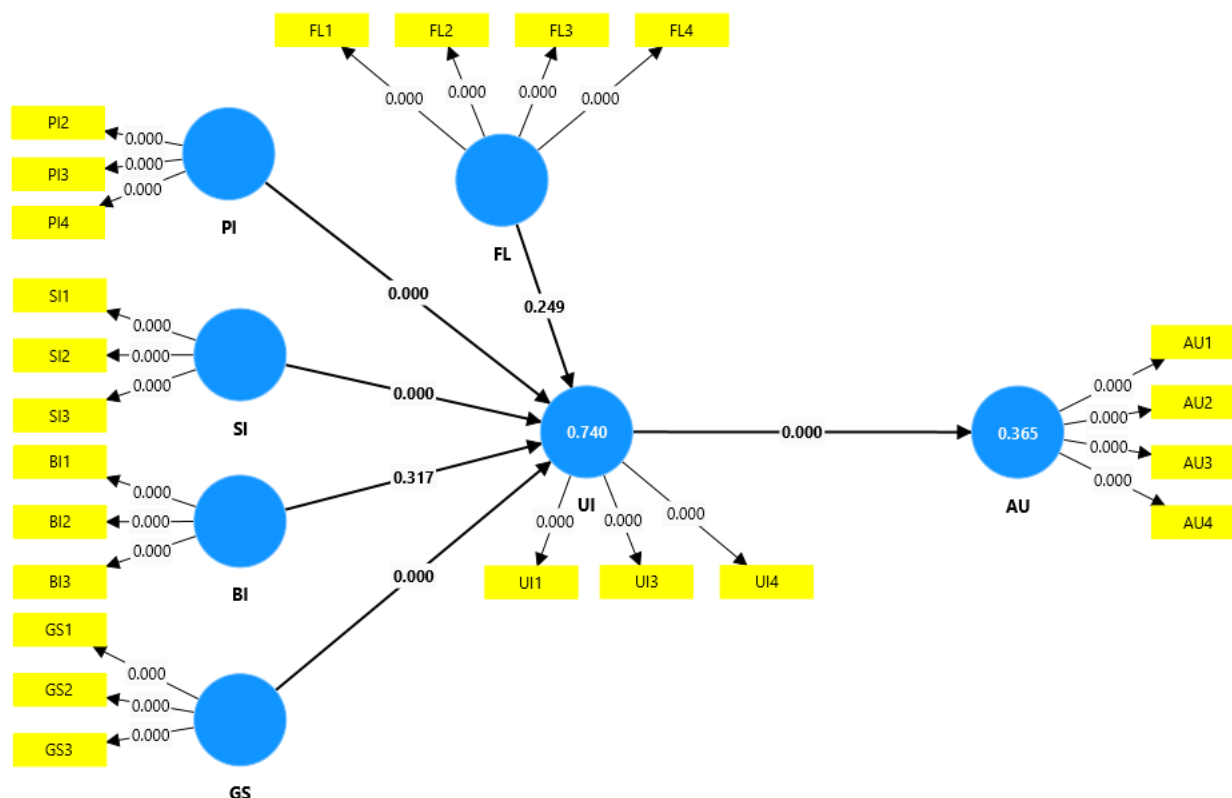
Discussion and Implications

Fintech is one of the dynamically growing domains in financial markets, and it is capturing the attention of both academic researchers and policy circles. Especially in the tickly populated developing markets like Pakistan, the fintech adoption rate is growing at a noticeable pace. Although in such developing markets, fintech adoption is mainly concentrated on payment apps; other domains are also wide open. The respondents' data in our study also reveals that the majority of the consumers are using payment apps followed by online banking; this observation is not very different from the results of previous studies Statista (2024), Dapp et al. (2014) and Chemmanur et al. (2020).

This study aimed to examine the impact of personal innovativeness, financial literacy, social influence, brand image, and government support on adopting fintech services in rural Pakistan. Notably, the rural population was targeted since a minimal amount of literature is available targeting the less developed segments of the population in general and with the particular context of Pakistan. The results indicate that financial literacy is not a significant contributor to the intentions of fintech adoption. The result is in line with the results of Setiawan et al. (2021); however, contrary to popular belief presented in some previous studies like Yoshino et al. (2020) and Prabhakaran and Mynavathi (2023). On the other hand, personal innovativeness remained a significant contributor to the fintech adoption intention, which is in line with the results of the previous literature, such as Ashurbayli and Yusifov (2023), Setiawan et al. (2021) and Chao et al. (2013).

Furthermore, the study used brand image, social influence, and government support as external factors contributing to the fintech adoption. The results indicate that brand image does not predict fintech adoption intention among the rural Pakistani population. In this regard, the cost factor may be an exciting factor to

study in the future. On the other hand, social influence and government support were significant external factors in predicting the fintech usage intention in line with the previous litartaure (Lu et al., 2005; Nugroho, 2015).

The study has vital social and practical implications; first, it is quite pertinent for fintech service providers to understand those factors that contribute to the fintech adoption by the rural population. Accordingly, the service providers may design strategies to target the population segment and enhance service quality for better service provision. Moreover since government support is also an important contributor to the customers' intentions to adopt fintech services in rural Pakistan, the government should play a proactive and protective role in enhancing the consumers' confidence. This will not only help the local population to use the services at a low cost but also increase the rate of financial inclusion in the country in the long run (Zvarych & Brodovska, 2023). From the consumers' point of view, the use of financial technology services will not only help them reduce their overall financial transaction costs. Still, it will help them do business and other professional activities smoothly and rapidly.

Limitations of the Study

The study is not without limitations; first, the study targeted Pakistani rural populations, which account for more than 60% of the country's population; in this regard, the sample size of 228 is limited and insufficient. Moreover, Pakistan's rural sector is quite diverse; however, we targeted only a few regions due to time limitations. Therefore, future studies may target a bigger and more varied sample size to enhance the validity of the results. Another noticeable limitation observed during data collection concerns the service cost factor of fintech service providers, which is not considered in this study. Future studies may include an exogenous variable of service cost in the model, yielding exciting results.

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ANALYSIS OF THE IMPACT OF COVID-19 ON THE DIGITAL ECONOMY IN THE WORLD AND IN AZERBAIJAN

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Abstract. *The economy in the ordinary sense is adopting a new subsystem - the digital economy. Thanks to the rapid development of digital technologies, more and more countries prioritize the transition to digitalization of economic processes in order to achieve competitiveness with other nations. This approach was introduced with the advent of the Internet in small businesses, where the transfer of goods between the seller and the buyer can be provided without intermediaries. Thus, the digitization of the global economy contributes to the reduction of production chains, and also reduces the costs of data processing, storage and collection. The development of digital technologies raises many issues that require international regulation. For example, the question of the use of user data. Data is a key factor in the development of the digital economy, and its concentration under the control of the largest players creates both market and political advantages for them. And there are practically no regulatory mechanisms.*

Keywords: *digital transformations, digital emission, electronic commerce, internet networks, global economic priorities.*

Introduction

Digitalization has become more important, especially for developing countries. With the use of technology, traditional sectors have developed and many sectors in developing countries (agriculture, tourism, and transport) have begun to benefit from digital opportunities. Developing countries have made faster progress with the leverage of digitization. Companies that did not export before having opened on the Internet. They promote their products abroad at cheaper prices and reach more remote areas. In addition, digitization also increases employment opportunities, although some traditional jobs are lost, new professions and new business areas are opening up. Creativity increases, things that were never thought of before beginning to be done. A taxi service is offered without a taxi owner, catering services are provided without a restaurant owner, or hotel rooms are rented out without a hotel owner.

As a result, the scope of the digital economy expanded, and the technological aspect began to gain weight in the conceptualization. Many topics like robots, internet of things, cloud computing, digital platforms are included in the definition of digital economy.

Thus, the digital economy has become a concept that includes elements related to technology on the one hand, and elements related to the economy on the other hand. Conceptualization work is very important in defining the digital economy in terms of both technical and economic aspects and sheds light on the research to be conducted on this topic. In the study, the concept of digital economy is explained as a concept that includes more and more elements such as basic definition, narrow definition, and broad definition. While the core definition includes hardware, software, ICT consultancy, information services and

telecommunications within the digital economy, the narrow definition includes digital services, platform economy, sharing and gig economy together with the core definition.

The broad definition includes e-business, e-commerce, industry, algorithmic economy, and precision agriculture, along with core and narrow elements. Thus, the digital economy emerges as a concept that constantly improves its meaning, with its content extending from basic informatics activities to broader activities. Developments provided by digitization and technological progress also make the conceptualization dynamic and constantly create a need for new definitions.

Since the 2000s, the rapid development of technology and the widespread use of the Internet in most areas of life has led to an increase in commercial transactions in the digital domain. Wide use of information and communication technologies has begun to be defined in economic literature with concepts such as "Internet age" or "digital economy".

Although the term digital economy is generally used synonymously with the term electronic commerce (e-commerce), the digital economy; In addition to e-commerce, it is a high-level concept that includes all activities such as internet advertising, 3D printing, digital (virtual) payment systems and cloud computing (Abbas, 2016).

Mechanisms of Impact of the Covid-19 Pandemic on the Digital Economy

When the COVID-19 pandemic hit in early 2019, much of the world went online, accelerating a decades-long digital transformation. Children with Internet access at home began taking distance classes, many employees began working from home, and numerous firms adopted digital business models to maintain operations and protect some revenue streams.

Meanwhile, mobile apps have been developed to help track the pandemic's progress, and researchers have used artificial intelligence (AI) to learn more about the virus and speed up the search for a vaccine. In some countries, internet traffic increased by up to 60% shortly after the outbreak (OECD, 2020a), highlighting the digital acceleration caused by the pandemic.

While these activities demonstrate the great potential of digital transformation, the pandemic has also highlighted remaining gaps. While some digital divides have narrowed rapidly in recent years, others have not followed the same pace, leaving some behind in the digital acceleration caused by COVID 19. Moreover, increasing reliance on digital solutions has added new urgency to concerns about privacy and digital security.

This puts the countries in front of a big problem. Economies and societies are unlikely to return to "pre-COVID 19" patterns. The crisis has vividly demonstrated the potential of digital technologies, and some changes may now be too profound to reverse. We face a future where jobs, education, health, public services, and even social relations may depend more than ever on digital technologies, and failure to ensure widespread and reliable digital access and efficient use risks deepening inequalities and hindering countries' efforts.

The OECD Digital Economy Outlook 2020 highlights the growing importance of digital technologies and communication infrastructures in our daily lives, and reveals that governments are increasingly placing digital strategies at the center of their policy agendas. As countries work to respond to and recover from the COVID-19 crisis, now is the time to ensure comprehensive digital transformation with coordinated and comprehensive strategies that build resilience and bridge digital divides for the post-COVID-19 era.

Widespread connectivity allowed many businesses and individuals to adapt to the crisis. Fast and reliable connectivity facilitates interactions between people, organizations and machines and enables the use of connected devices in critical contexts including healthcare, manufacturing and transportation

(Muradov & Bağırzadə, 2021).

Mobile broadband subscriptions in OECD (Organization for Economic Co-operation and Development) countries increased from 32 subscriptions per 100 population in 2009 to approximately 113 subscriptions per 100 population in June 2019. Meanwhile, average mobile data usage quadrupled in just four years to 4.6GB in 2018, and prices for high-usage mobile broadband plans fell nearly 60% from 2013 to 2019.

Although growing at a slower pace, by June 2019 fiber accounted for 27% of all fixed broadband subscribers in the OECD (Figure 1) and over 50% in no less than nine OECD countries.

Technology type data prior to Q2 2016 should be considered indicative until further notice. Data for Israel are OECD estimates. Data for Switzerland and USA are preliminary. This high level of connectivity allowed many businesses and households in the OECD to come online after governments imposed national lockdowns to contain the initial spread of COVID-19. In France, for example, it allowed businesses to work remotely after a national lockdown order in early 2020, and industries with the highest levels of remote work were able to maintain business activity at 70% to 80% of normal levels.

Figure 1

Fiber Broadband Connections, June 2019. General Fixed Broadband Percentage of Subscriptions
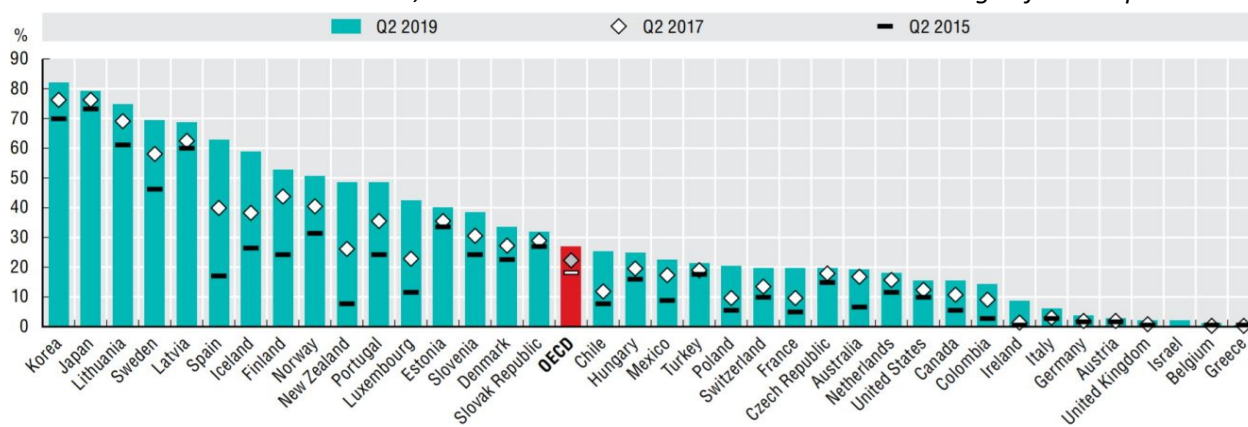

With the rise of digitally enabled economic and social activity, COVID-19 has raised the stakes around digital access and connectivity, confirming that connectivity and the use of digital technologies are dynamic goals. Although some online activities are beginning to emerge as COVID-19 treatments allow for more in-person interactions, they will remain high in industries catalyzed by the pandemic, including telecommuting, e-commerce, and e-health. This keeps the pressure on creating high-quality connectivity while increasing the ability of people and firms to use increasingly sophisticated digital solutions (Əliquliyev, 2019).

As governments adjust their strategies in response, they should bear in mind that increased reliance on digitization risks opening up new digital divides or exacerbating divides that have proven persistent over the years. For example, Internet users in OECD countries have changed from 95% of the adult population to less than 70% in 2019 (Figure 2), and there are important demographic differences in Internet use. Although 58% of 50-74 year olds used the internet daily in 2019, up from just 30% in 2010, this is well below the average share of daily internet users aged 16-24 (so-called "digital natives"). remains. There are also persistent skills gaps between demographic groups and countries, with people with higher skill or income levels making better use of the internet and online activities, and better access to knowledge, job opportunities, health and education services. Addressing the digital gender divide also remains an important policy objective. Women are more likely to experience job stress related to frequent computer use at work, and skills in high demand in digital-intensive sectors are more often demonstrated by men.

Figure 2

Internet Users by Age, 2019. Percentage of Population in Each Age Group
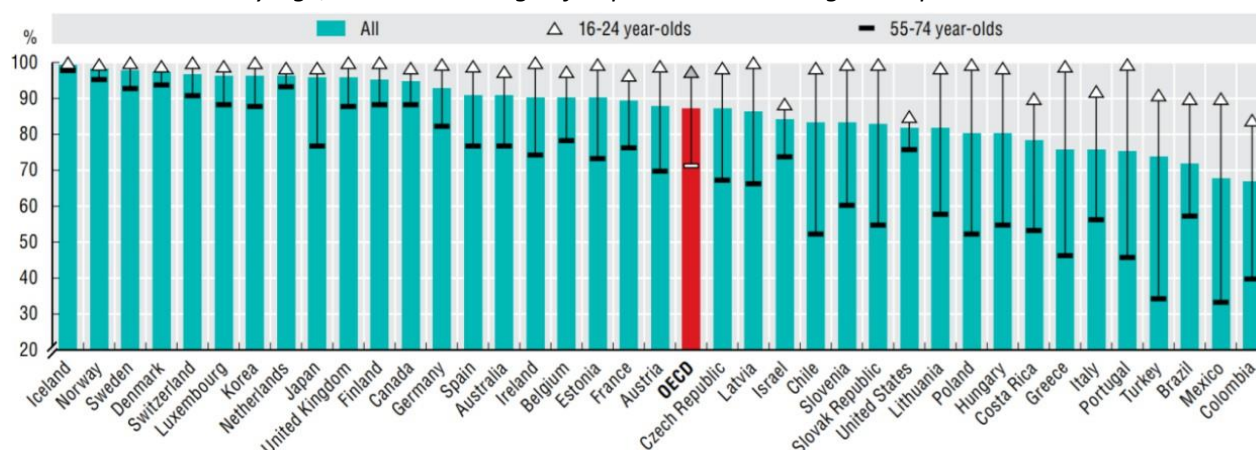

Data refer to 2019, excluding Australia (fiscal year ending 30 June 2017), Brazil, Canada, Colombia, Costa Rica, Japan, and Mexico (2018) and Chile, Israel, Switzerland and the United States (2017). Data refer to age groups 16-74, 16-24 and 55-74, except for Israel (20-74 and 20-24), Japan (15-74 and 55-74). OECD data figures are based on a simple average of existing countries.

There are also significant differences in digital diffusion and adoption among businesses. Before the pandemic, e-commerce accounted for 19% of firms' turnover in the OECD (mainly through business-to-business transactions), although there were significant discrepancies between large firms (24%) and small firms (9%). Although the use of big data has increased over time, it remains a top option across countries and sectors. In 2018, more than 25% of all information and communication technology firms in the European Union, and only 10% of all firms, used big data (Figure 3).

Figure 3

Business Use of Big Data by Data Source and Industry in the European Union, 2018. Percentage of Enterprises
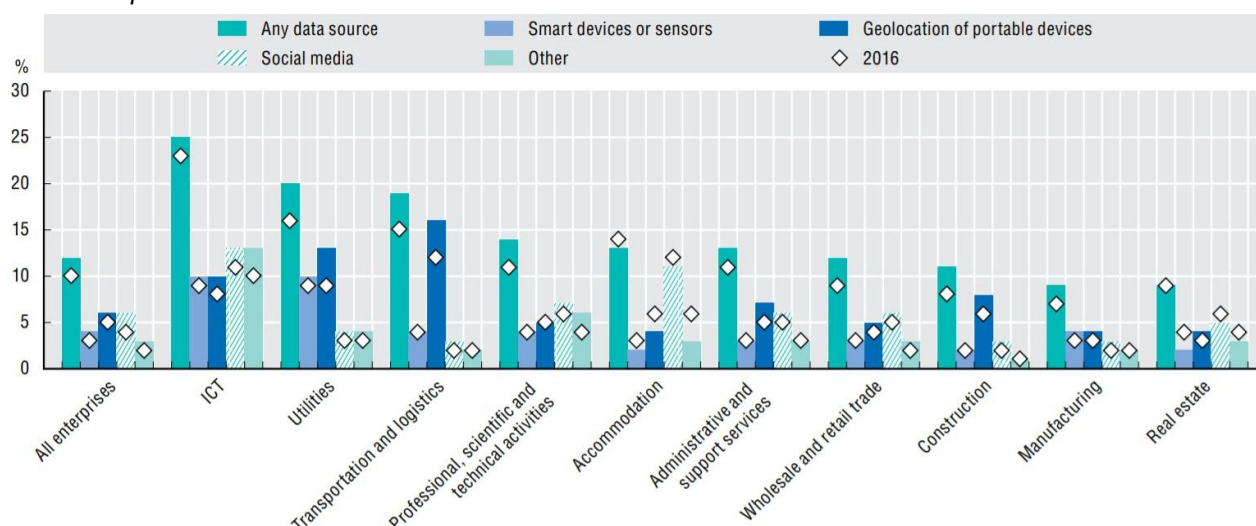
Uneven diffusion may have important implications for firms' productivity performance as the pandemic continues to accelerate digitization, potentially widening the productivity gap between digital adopters and digital laggards. An important factor in this divide is skills gaps among workers, which can prevent wider companies from fully exploiting the potential of digital technologies. The economic crisis created by the pandemic makes it difficult to create and survive startups, which are the main source of job growth and

innovation and often the main source of digital adopters and may contribute to increased market concentration that can weaken digital diffusion (Rahmanov, 2019).

Governments are increasingly putting digital transformation front and center on their policy agendas. Many governments had strengthened their strategic approach to digital transformation before the COVID-19 pandemic. As detailed in the OECD Digital Economy Outlook 2020, 34 OECD countries implemented a coordinated national digital strategy at the highest level of government as of mid-2020, and five additional OECD countries (Chile, Colombia, Japan, Italy, and Turkey) Since 2016, prime ministers have reported on coordination.

Governments are also paying more attention to emerging digital technologies such as AI, blockchain and 5G infrastructure, which are essential to support mobile broadband, Internet of Things (IoT) devices and AI applications. By mid-2020, 60 countries had national AI strategies, and in the past three years several OECD countries have introduced national 5G strategies, including Australia, Austria, Colombia, France, Germany, Korea, Spain, the UK, and the US. Blockchain and quantum computing are also attracting increasing policy attention. Several countries (Australia, People's Republic of China, Germany, India, Switzerland) have introduced a blockchain strategy, while others (France, Italy) are developing a blockchain strategy.

The virtuous circle between digital innovation and digital transformation is a key driver of new business models and markets. Digital technologies have the potential to strengthen science and research systems that are critical to countries' response and recovery from COVID-19. However, countries also recognize that the use of these technologies may pose risks to human-centered values, as well as to privacy, security and consumer protection. This gives additional impetus to their efforts to define strategic directions, including at the international level, the OECD IP Principles are just one example of cooperation between like-minded countries in the direction of reliable technologies. But it needs to do more to build a digital future.

This strategic trend is promising but may not be enough to ensure a sustainable and more inclusive digital future. The COVID-19 crisis reinforces the need for a coordinated, whole-of-government policy approach to digital transformation. This requires a balancing act that will not be the same for all countries, as cultural, social and economic factors influence the most appropriate policy environment (Rahmanov & Süleymanov, 2021).

The OECD Going Digital Integrated Policy Framework (Figure 4) provides a way forward. Focused on seven building blocks – access, use, innovation, trust, jobs, community and market openness – the framework brings together the policies governments must consider shaping a shared digital future that improves lives, boosts economic growth and prosperity. These pillars and the indicators and policy guidance that support them have become even more critical for policy decisions in light of the COVID-19 crisis.

Figure 4

OECD Digitally Integrated Policy Framework
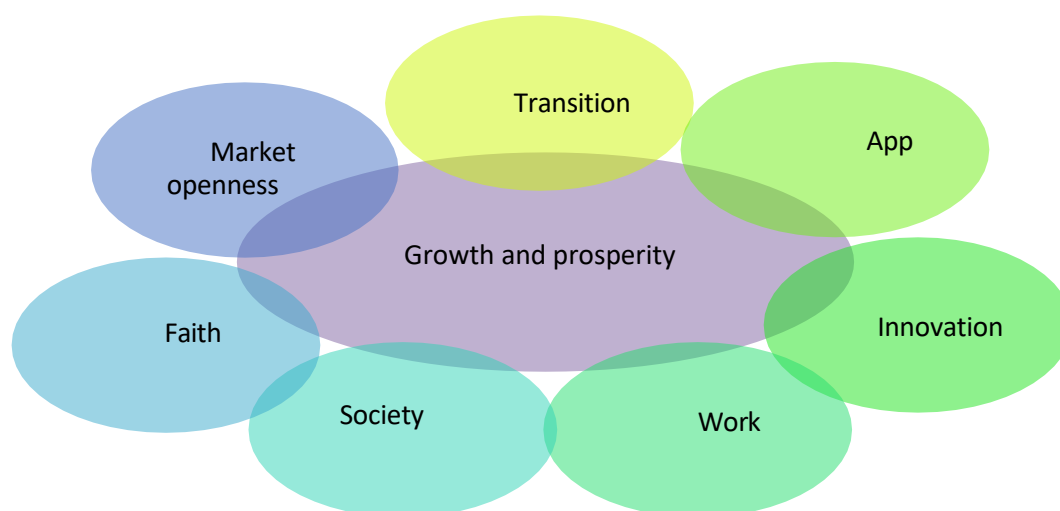
- Transition: With lockdowns and social distancing measures forcing many businesses and schools to operate online, the COVID-19 crisis has reinforced the importance of communication infrastructures and services, as well as access to data and robust governance. Bridging rural-urban disparities in access to broadband and underserved socioeconomic groups, upgrading networks to the next evolution of fixed and wireless broadband, and expanding data access and sharing can help increase economic and social benefits.

- Implementation: As more people and firms "go digital" in the wake of the COVID-19 crisis, governments must work to ensure all workers are equipped with the skills they need to succeed in the digital economy and do more to increase uptake in small and medium-sized businesses. In a technology-rich environment, individuals with well-rounded skill sets in literacy, numeracy, and problem-solving can be expected to use digital tools more effectively, perform more complex activities online, and better adapt to digital transformations.

- Innovation: As a key driver of digital transformation, digital innovation leads to new goods and services, creates opportunities for new business models and markets, and can improve efficiency in the public sector and beyond. Enhancing entrepreneurship, enabling the further digital transformation of scientific research, and stimulating investment in research and development can support a strong crisis response and recovery (Huseyn & Shahbazov, 2014).

- Trust: Given the increased reliance on digital tools after COVID-19, further attention is needed to ensure trust in the digital environment, particularly in relation to digital security, as well as privacy, data and consumer protection. Scams and phishing campaigns related to the coronavirus have increased since the pandemic began. Most OECD countries have adopted whole-of-government digital security strategies, but these strategies often lack autonomous budgets, assessment tools and metrics, and are not integrated with overall national digital plans.

- Work: Digital transformation is already changing organizations and markets, raising profound questions about what the future of work will look like. The outlook has become more uncertain amid the pandemic, which has led to an increase in teleworking at many firms and cast doubt on the future of some jobs. As policymakers grapple with the economic fallout of the crisis and as automation continues to spread across economies, they will need to take a fresh look at labor market structures and rules as

they work to ensure that displaced workers are not left behind.

- Society: As people spend more time online during the pandemic—whether for work, school, or social interaction—extra attention is needed to support their well-being. Governments should use this opportunity to address the various social issues raised by the digital transformation, including data-driven healthcare, misinformation, and screen addiction, among others.

- Market openness: The COVID-19 crisis has raised concerns about market consolidation as start-ups and SMEs struggle to stay afloat and large tech companies exert increasing influence over our digital lives. As fewer and fewer companies mediate access to the online world, governments must consider the implications for business dynamics and inclusion (Heshimova, 2020).

Regardless of how the crisis and its aftermath unfold, there is no doubt that digital technologies will continue to change the way we live and work. The advent of 5G and IoT will further intensify the production of data, adding relevance to ongoing policy debates around data governance, privacy, and security. These challenges may become more acute as firms weigh the costs and benefits of increasing automation—especially in manufacturing—to increase resilience to future health crises and thereby increase the importance of information flows between firms. As governments reassess existing digital policies in light of the COVID-19 crisis, they will face complex, interconnected challenges that require concerted international coordination, cooperation and dialogue. The OECD Digital Economy Outlook 2020, together with the Going Digital Toolkit and other OECD work on digital transformation, can help inform their decisions across a wide range of policy areas. Through evidence-based analysis, policy advice and the development of international standards in areas such as artificial intelligence and privacy, the OECD will continue to work actively with countries to support their digital transformation and help them navigate the post-pandemic future.

Promotion of Digital Transformations in Azerbaijan

Azerbaijan has the opportunity to design its own system solutions from China, USA and Russia. The current state of the foreign strategy of the states manifests itself in a certain sense through the prism of their technological development, and in the future, it may receive the conventional definition of "Smart diplomacy". The degree of commitment of certain countries to the new technological order, which leads to the wide spread of digital technology, is important for the increase of its influence in the international arena, ensuring the transition of the country to the club of influential states. is one of the criteria (Hashimova, 2020).

North and Central Asian countries face multiple challenges in implementing digital technologies for economic growth and social well-being. The legislative framework to effectively support the digital economy is not yet fully mature. Technology management and staying abreast of the latest advances in digital technology is still a work in progress.

Cheap access to reliable and fast Internet is essential for the development of the digital economy. In North and Central Asia, mobile Internet access is increasing, while landline communication is decreasing. Since 2000, the percentage of the population using mobile internet has increased significantly (Figure 5).

Azerbaijan, Kazakhstan, and the Russian Federation performed close to OECD averages in 2017, while mobile internet access growth was slow in Turkmenistan and Tajikistan.

Figure 5

Number of Mobile Internet Subscribers per 100 People
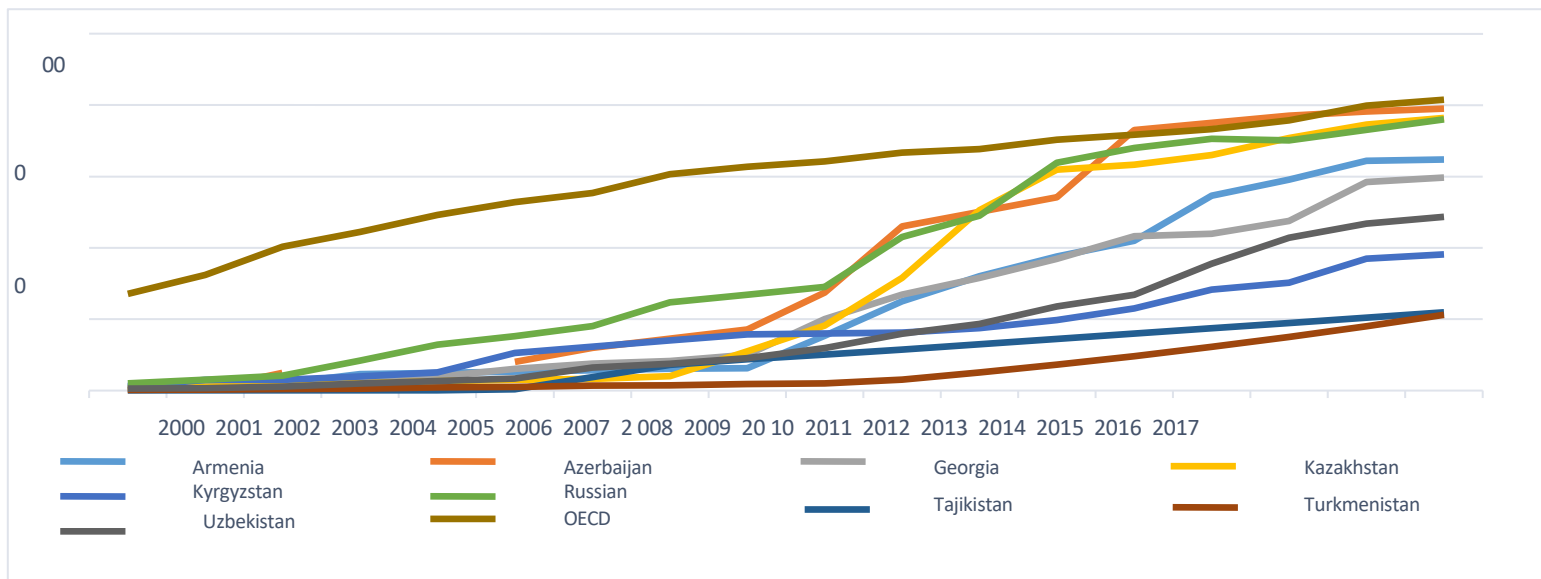
Limitation of access to the mobile Internet is a serious obstacle to the development of the digital economy and e-commerce in particular. Digital Subscriber Lines (DSLs) are the backbone of ICT infrastructure in North and Central Asian countries, while Kazakhstan and the Russian Federation have recently started deploying fiber optic networks that can provide faster internet access. There are no active projects on the construction of fiber-optic networks in other countries of the region (Hashimova, 2020).

In the last ten years, a steady increase in the number of fixed broadband subscribers has been observed in most countries of North and Central Asia (Figure 6), including cable modem Internet connection, high-speed RAX, fiber optics and similar technologies. As can be seen from the figures below, the number of mobile internet subscribers is greater than that of fixed broadband subscribers. Mobile internet is of great importance for the population of the subregion and meets their needs.

However, stable and reliable fixed broadband communication is an important part of ICT infrastructure and is essential for academia, the private sector and government, and therefore the expansion of fixed broadband communication requires targeted invest (Hashimova, 2023).

Figure 6

Number of Fixed Broadband Subscribers per 100 People
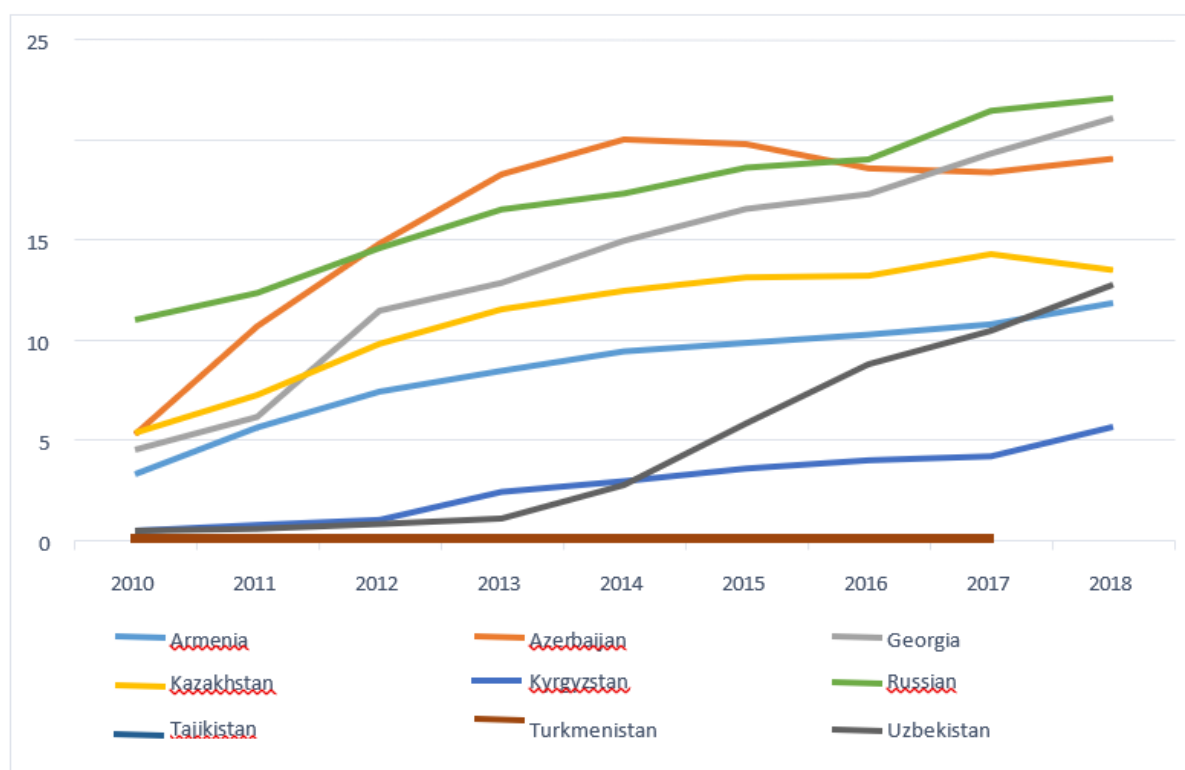
The share of ICT products in North and Central Asian exports averaged about 0.23 percent in 2018, well below the OECD average of 7.1 percent. This low share can be explained by the poor diversification of economic structures, which still show a high dependence on the export of natural resources.

Compared to other countries in the region, ICT products have a larger share of Armenia's exports, which may indicate the importance of the ICT sector and at the same time limit the growth of other industrial sectors in Armenia (Figure 7).

Information on the use of Enterprise Resource Planning (MRP) and customer relationship management (CRM) systems can serve as a valuable indicator of the level of digitization of the economy. Due to the novelty of this indicator, the national statistics offices of North and Central Asia do not always have such information (Mahmudov, 2015).

Digital transformation is the priority direction of the National Strategy for the Development of the Information Society in the Republic of Azerbaijan for 2014-2020. Digital technologies are mainly considered as an important strategic vector in the national policy of economic diversification. This strategy specifically envisages measures for the development of scientific and technical potential of Azerbaijan, creation of digital potential and improvement of cyber security.

Figure 7

Share of ICT Products in Exports
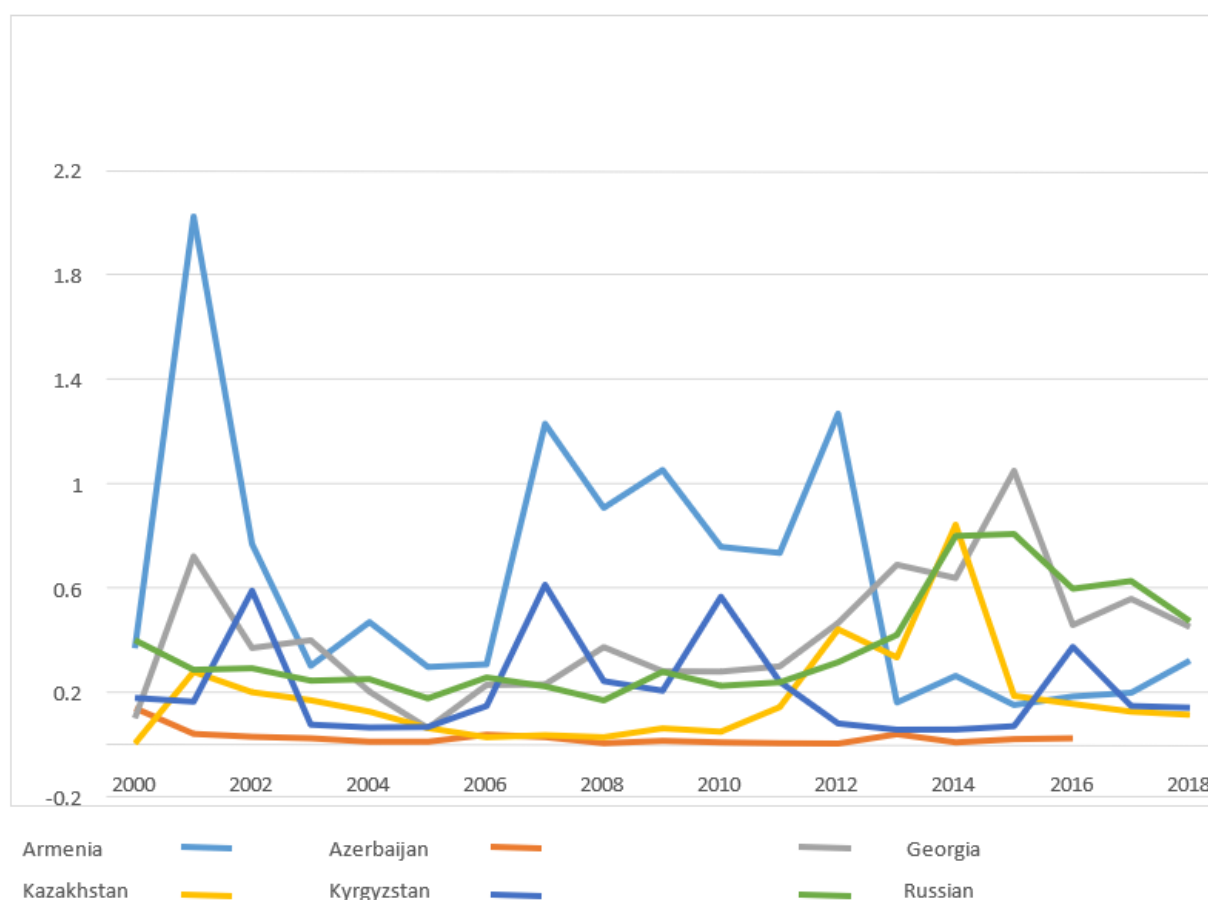
Also, in 2016, supporting the development of the ICT sector in Azerbaijan, increasing the productivity and efficiency of enterprises through the application of advanced digital tools, as well as the quality of public services and the development of evidence-based policy can also be noted. It calls for the creation of an independent agency responsible for developing an enabling regulatory framework for the development of the digital economy.

Among the state institutions of Azerbaijan, the State Agency for Service to Citizens and Social Innovations plays an important role in promoting digital transformation in the country. In order to support the digitization of the public sector, the Agency created the Center for the Development of Electronic Government and the Center for Incubation and Acceleration of INNOLAND, which supports the development of ICT startups (Baldwin & Weder, 2020).

The technological basis of the digital government of Azerbaijan is the "Government Cloud" (G cloud), which provides the basis for the development of various digital government services. The Small and Medium Business Development Agency is another government agency that supports the digital transformation of the economy. It provides financial support and advisory services to the country's SMEs. One of the latest projects of ARMSB is aimed at spreading ERP systems among Azerbaijani enterprises.

Azerbaijan Innovation Agency provides targeted support to digital enterprises and helps to create all necessary conditions for the increase of innovation activity. The space industry is also developing in Azerbaijan. Currently, the country has three satellites, one of which provides remote Earth observation services, and two are used for telecommunications. In order to support the digital transformation of the economy and the formation of the ICT sector, the High Technologies Park was established in Azerbaijan in 2012. In addition to developing software, residents of the park are also engaged in production activities for

the production of electronic devices. One of the main priorities of the government of Azerbaijan is the digital transformation of agriculture through the development of the following digital solutions (Bello, 2020):

1. Information portal about soil and environmental conditions;
2. Internet portal for electronic trade of agricultural products;
3. An e-learning portal offering opportunities for farmers and SMEs to improve their skills.

Azerbaijan, like many countries of North and Central Asia, plays the role of a communication hub between the East and the West. Currently, a number of projects related to the transit of information have been implemented or are in the process of implementation. Azerbaijan is currently a member of the "Europe Persia Express Gateway" project, which aims to build a fiber optic line from Germany to Oman. Agreements were signed with Kazakhstan and Turkmenistan on cooperation in the field of laying a fiber-optic line through the bottom of the Caspian Sea. It is assumed that these projects will make an important contribution to the implementation of the Trans-Eurasian Super Information Highway, within the framework of which a transnational fiber-optic highway covering the Eurasian continent will be created.

In order to create favorable conditions for the development of the digital economy, the government has started adapting the legislative framework to the needs of the digital economy, starting with tax regulation. The Law of the Republic of Azerbaijan "On Electronic Commerce" included the concept of electronic commerce in the national legislation and reduced discrimination in the rights of residents and non-residents to participate in electronic commerce in Azerbaijan. This shift reflects trends in digital commerce of goods, services, and intangible assets. New changes make it easier to collect VAT from electronic transactions in Azerbaijan. In addition, on the basis of international experience, the "National Strategy of the Republic of Azerbaijan on Information Security and Cyber Security" has been prepared and is currently in the approval stage.

In response to the pandemic, Azerbaijan has developed special websites and a mobile application to provide citizens with information about COVID-19. Currently, the software is also used as an informational alert system based on the infected people tracking system (Eurostat, 2019).

Development Priorities of the Digital Economy after the Covid-19 Pandemic

COVID-19 has forever changed the rules of the game for the global economy. Classic forms have been replaced by new tools and formats. The current situation shows that the transformation will continue and will happen quite quickly, therefore the main criterion for the success of the business in the current conditions will be its ability to adapt to the requirements of the digital world and actively interact with other market players.

As you know, the processing center of Visa and Azericard, the world leader in the field of electronic payments, is currently working on the development of digital emission and creation of innovative digital payment solutions for a wide user audience in Azerbaijan.

New digital services are being created, and the following specific measures should be taken to stimulate the digitalization of Azerbaijan's economy: the modern infrastructure of electronic payments is very complex, and the well-coordinated work of all participants is essential for future digitization. Banks are still our main partners, but the palette of partnerships is wider - they include mobile operators, fintechs, Big Tech and, of course, regulators. Based on this, it is possible to work in several main directions (Digital Economy Outlook, 2020).

Traditionally, the daily expenses of consumers and the development of the infrastructure for accepting

electronic payments, including working with small and medium-sized businesses, new technologies for accepting cards where electronic payments are not yet accepted, in particular QR payments, Visa Tap to Phone, and the development of contactless payments and primarily contactless in transport fees must be applied.

Digital emission is digital innovation that involves the development and implementation of new innovative solutions to improve the customer experience. In November 2020, a strategic partnership was announced between Visa and the Azericard processing center, within the framework of which work began on the development of digital issuance and the creation of innovative digital payment solutions for a wide audience of users. The purpose of this partnership is to make digital services more accessible to consumers in Azerbaijan in order to stimulate the digitization of the economy.

This raises the question of how much non-cash payments have increased in Azerbaijan during the Pandemic? Against this background, in 2021, what new projects does your company plan to implement in Azerbaijan regarding the application of contactless payments?

Active growth of non-contact is one of the leading trends of recent years. The pandemic served as a certain impetus for the increase in non-contact. Global research shows that since its inception, consumers have preferred contactless payments as a safer and faster payment method, among other things to minimize physical contact. As a result, 6 out of 10 transactions in Azerbaijan are now carried out using contactless payment tools (Liu, 2020).

Nearly half (49%) of consumers say contactless payment capability is one of the most effective measures for secure shopping an offline POS can offer their customers. In addition, 65% of consumers said that they would prefer contactless payments in the period after the COVID-19 pandemic, while only 16% said that they could return to regular forms of payment.

Given the current growth rates of contactless payments, Visa's mission is to make contactless payments, including mobile tokenized payments based on the Visa Token Service, more accessible to consumers and merchants. In particular, it will continue to expand the channels of accepting contactless payments.

In the summer of 2020, Visa announced the launch of Tap to Phone technology, designed for small and medium-sized merchants. The Visa Tap to Phone feature allows an Android smartphone with an NFC module to act as a POS terminal to accept contactless payments without additional hardware. The advantage of this technology is that it expands the infrastructure for accepting payments, while at the same time significantly reducing the costs of accepting card payments for small and medium businesses.

Kazakhstan was one of the first to implement the Visa Tap to Phone service in the CIS countries and the Southeast European region, and today the number of merchants using this technology to accept cards already exceeds 5,000. Visa is now looking at how the technology develops in the countries where it is already in use to expand it to other markets, including Azerbaijan.

In 2019-2020, Visa launched the Visa Token Service program in Azerbaijan together with the International Bank of Azerbaijan, Kapital Bank and Bank Respublika (McKibbin & Fernando, 2020).

Visa Token Service provides technical opportunities for the development of mobile contactless payments. Rapid growth in tokenized transactions is observed in Azerbaijan. With the support of the banks that have already launched personal mobile wallets (International Bank of Azerbaijan, Kapital Bank, Bank Respublika and VTB Bank) and the Central Bank of Azerbaijan, together with the "Pay with Visa mobile application" campaign, a 264% increase in turnover was observed when paying with mobile phones. is done. At the same time, the number of transactions increased by 189%.

An important role in increasing the reputation of tokenized transactions is played by the presence of gadgets with payment functionality. Over the past year, manufacturers have even begun to equip low-cost NFC (Near Field Communication) smartphones with a payment module, which indicates that the number of

tokenized transactions will grow even more actively.

Currently, a project is being implemented between Azerbaijan Railways and Visa company. This begs the question, what other projects are being implemented with Visa on transportation fares?

Payments in transit are one of Visa's priorities. In November 2020, Azerbaijan together with PASHA Bank launched the first contactless payment solution for public transport in the city of Sumgait. In September, within the framework of cooperation with "Azerbaijan Railways" CJSC, the Central Bank of Azerbaijan and the International Bank of Azerbaijan, testing of the payment system using contactless bank cards and payment rings was started at a number of stations of the Absheron Circular Railway. Visa continues to work on the development of this area together with partners (Nicola, 2020).

Conclusion

Although the pandemic had almost no effect on the growth rate of costs for the development of the digital economy in 2020, it had a significant impact on their structure. The shift of some employees to remote working mode has led to an increase in public spending on digital goods and services, and at the same time has allowed companies to "save" on digitalization. To meet the growing demand, ICT companies required additional investments in digital infrastructure for the population. The near future will show whether these changes are short-term or reflect the beginning of a new trend in the development of the digital economy.

According to the results of the study, the modern economic system based on market competition and openness was not ready for a global pandemic. Its rapid transformation is not possible, therefore, according to the authors, the world economy will face many shocks in the near future. Due to the pandemic, the population's income has decreased, and some citizens have become completely unemployed. This has adversely affected the retail, aviation, and restaurant businesses.

The development of digital technologies opens new horizons for progress and progress in front of humanity today. Currently, the world is entering "INDUSTRY 4.0" - that is, the Fourth Industrial Revolution. This means the automation of production, the use of innovative systems, robotization, the application of artificial intelligence, the use of digital technologies in all areas of the economy. "INDUSTRY 4.0" leads to the application and development of innovations in the most different fields, closely related to digitalization, technological infrastructure construction. Today, a number of countries in the world are taking quite big steps towards digitalization. The digitalization of the economy and also the stability and security of the digital economy are directly related to infrastructure construction. As a rule, let's say that without building stable, safe infrastructure foundations, both the digitalization of the economy - the use of ICT in the economy and economic relations, as well as the transition to the digital economy and the development of digital products during digital technologies are impossible. Today, the modern technological infrastructure is the most important component of both digitalization and the digital economy. At present, the rapidly developing digital means in the world - 5G, robotization, cyber security and artificial intelligence application areas also require that the relevant highway infrastructure be renewed or built. It is of course impossible to provide inter-country and even intra-country connectivity services in accordance with modern standards without providing stable stable infrastructure. Today, connection services around the world are developing very rapidly. This increases the number of both mobile and broadband internet users.

In modern times, the wide spread of the Internet network has resulted in the transformation to the digital economy, which is considered a new stage of development, and at the same time, Internet innovative technologies, information communication systems have deeply penetrated and integrated into the economic zone (Phan & Narayan, 2020).

Already in the modern era, the economy itself has developed as such a science, new concepts, knowledge economy, bioeconomy, digital economic sphere and, finally, the transformation into the coronavirus economy, which is considered very relevant today, have conditioned the transformation.

Recently, the number of e-commerce connections made through the Internet in Azerbaijan is constantly increasing, and it is inevitable that this trend will continue to increase in the future. However, the implementation of electronic commerce operations in the virtual has also complicated the process of taxation of these procedures.

In order to prevent such losses and eliminate the occurrences, the President of the Republic of Azerbaijan, Mr. Ilham Aliyev, with his decree dated August 4, 2016, signed a decree on further increasing transparency and expanding the tax collection base in this direction.

It should be noted that one of the important nuances in the field of digital economy is the issue of accounting, in this way, by stimulating the use of this field by natural persons, it is possible to tax these types of services. In this way, the specific weight of the incomes in the GDP will increase, and these figures will play an important role in the revival of our economy. It is for these reasons that the urgent calls and concerns of the head of the country regarding the transition to digital transformation are understandable from the perspective of a professional specialist, and it is necessary to take important steps in this field without delay.

In terms of ICT infrastructure, Azerbaijan has taken significant steps and expanded, and when we look at the population's use of the Internet, we see that it is relatively high. But the country does not exploit its infrastructure in this field enough to achieve satisfactory results, as stated in the ICT strategic road map, and cannot benefit from the use of the Internet. In this way, ICT does not yet have the expected large-scale influence, which is required for its intended transformation in the economic field. There are a number of areas where improvements in these areas will result in more effective implementation and use of ICT. The main proposals highlighted in this area are:

- One of the important factors for the development of the digital field is the creation of digital infrastructure. Although work is being done in this direction in our country, the current situation requires improvement in this area.
- The development of digital knowledge and skills at all stages of education is the next step towards the development of this field. Because the personnel potential needed in this field is related to education.
- Stable, continuous, and fast internet in the country. It is impossible to imagine digitalization without the Internet. But in this direction, sometimes downloads bring up various problems. For this reason, ensuring internet speed and continuity is one of the important factors (Zhang, 2020).

The main problems facing the global economic development, the high-tech production ecosystem, including the digital transformation of the economy, green economy, sustainable development, especially, economic challenges in the post-pandemic period, at the same time, business transformations after the pandemic, a perspective on the past and future of the Azerbaijani economy, Karabakh restoration of the economy as soon as possible, possibilities and priorities of the use of digital technologies during its development are among the most important issues related to the digital economy.

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THE ROLE IN IMPORTANCE OF REPORTING IN THE UNIFORM EUROPEAN ELECTRONIC FORMAT (ESEF)

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__Abstract.__ Without standards for exchanging information, the accounting profession has long been burdened with inefficient reporting processes - based on a large number of different formats (pdf, html, doc) that reproduce financial statements. As in the case of the adoption and implementation of international accounting standards, it was only a matter of time when there would be a similar standardization in the exchange of business information. The idea of developing a European Single Electronic Format, actually originates from the Transparency Directive from 2004, which sets the rules for harmonizing transparency requirements for reporting entities. Finally confirmed in 2019. Directive added a requirement for filers to prepare their annual financial statements in a unified format based on the XBRL standard. The rest of the article is organized as follows: in the first section a brief overview of the features and requirements brought by the ESEF. This is followed by a description of the XBRL standard that underlies EFES. Finally, in the last section, with concluding remarks, we introduce to the readers stages of implementation of this standard. For the realization of these objectives, we conducted desk research and provide an indication of the guidelines for public authorities, associations of accountants, as to what is immediately needed and what must be done in order to create a favorable regulatory environment for the implementation of the latest standards of digital financial reporting, which would finally result in improving the quality of reporting.

__Keywords:__ ESEF, XBRL, digitization, accounting standards, management, financial reporting.

ESEF Regulatory Requirements

The European Securities and Markets Authority – ESMA (esma.europe.eu, n.d.) - authorized to develop regulatory technical standards (Regulatory Technical Standards - RTS) - in 2017 announced the Single Electronic Format - ESEF and the principles according to which consolidated financial statements of companies listed must be prepared from 2020 onwards. This new formal requirement for the creation and submission of financial information aims to simplify the analysis and comparability of reported data.

Namely, companies listed on the EU capital markets that prepare their consolidated financial statements in accordance with International Financial Reporting Standards (IFRSs) are required to report in a single European electronic format, which is basically based on the XBRL format. All this requires those responsible for the preparation of financial reports to adapt the reporting process, train staff and implement all the necessary technological solutions. Here we must certainly not forget one of the key implementations

of XBRL at the global level. Namely, the Securities and Exchange Commission (SEC) in 2012 obliged all public companies in the USA to submit financial statements in XBRL format.

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What is Prescribed by Regulatory Technical Standards?

All financial statements must be prepared in XBRL format, which is readable and can be opened with any standard web browser. If the financial statements contain consolidated financial statements prepared in accordance with International Financial Reporting Standards, they will be marked with so-called XBRL codes. (tags) which will enable their machine reading.

XBRL tags will be embedded in an XHTML document using Inline XBRL (iXBRL) technology, allowing humans to view the tags, not just machines (Consolidated financial statements in XBRL format , n.d.). A taxonomy is a descriptive label of information whose purpose is to facilitate the comparison and analysis of descriptive ratings from financial statements at a global level. For filers who are required to prepare financial statements in accordance with IFRS, an IFRS taxonomy has been established on a global level that contains all standard-defined positions used in financial reporting. The IFRS taxonomy is the basis of the ESEF taxonomy, and with each change in the IFRS taxonomy (which is implemented annually due to changes in standards), an amendment to the ESEF taxonomy is implemented in order to adopt the amendment to the IFRS taxonomy. ESMA publishes an updated version of the taxonomy on its website at least once a year (Authority, n.d.).

Companies must mark financial statement positions using the taxonomy element that has the closest accounting significance, and in case the closest taxonomy element is not adequate for a specific position, it is necessary to create a so-called extension and connect it to the basic taxonomy element that has the closest accounting significance.

A full set of financial statements must be labeled in detail; where notes must be marked using marks for entire parts of notes (block marks). Therefore, the introduced requirements do not force companies to create new information, but only refer to a change in the reporting format. It is essential that existing information be available in a form that is both human and computer understandable. Therefore, it would make sense to observe adaptation activities in companies first of all as actions aimed at ensuring compliance.

On the other hand, preparing annual reports is already an expensive and time-consuming process. The new requirements represent a good starting point for analyzing existing policies, identifying potential savings and optimizing processes related to the preparation of financial statements. Before introducing any operational changes, introductions or optimizations in the current process of preparing financial statements, we recommend that three basic questions be considered in particular:

- Is the taxonomy published by ESMA transparent and understandable?
- Can existing taxonomy codes be assigned to positions in the consolidated financial statements? Will corrections or extensions to the published taxonomy be needed?
- Do the personnel within the reporting team have the appropriate skills and time to properly mark positions in each segment of the financial statements?

ESEF Reporting Manual

In order to make it easier for companies to apply the new reporting requirements, ESMA has also prepared the ESEF Reporting Manual[6], which provides guidance on common challenges faced by companies in compiling annual financial statements in Inline XBRL format and provides solutions to these challenges. The purpose of this document is to promote a harmonized and consistent approach to the preparation of annual financial statements in the format specified in the Regulatory Technical Standards[7]) on ESEF. The handbook also provides several concrete examples of 'extensions', including guidance for both report submitters and software manufacturers, and is certainly one of the key documents that companies can refer to in case of specific reporting problems.

In addition to this manual, ESMA has also prepared the ESEF Conformance Suite, intended primarily for more technically qualified groups (e.g. XBRL software developers), which describes how to test and verify that software tools are able to create financial statements in accordance with all technical requirements of ESEF. Specifically, the ESEF Conformance Suite determines whether the software is able to detect and flag validation rules and is based on the rules and guidelines established by the ESEF Reporting Manual.

XBRL – Bar Code for Financial Reporting

Why XBRL - ESEF is Necessary?

In parallel with the development of new technologies, organizational solutions and the establishment of financial reporting standards, a strong expansion of software tools for the exchange of business information is evident in the last decade. We have already emphasized how without standards for exchanging information via the Web, the accounting profession has long been burdened with inefficient reporting processes - based on a large number of different software applications that reproduce financial statements in different formats (pdf, xls, html, doc), which most often they are not compatible with each other (Martic, XBRL bar kod za poslovno izvještavanje u 21 vijeku, 2024).

The implementation of XBRL in the first place provides the possibility of reaching agreement on how information will be exchanged, which is highly correlated with the harmonization of financial reporting and the implementation of international accounting standards. Today, the XBRL standard serves as a kind of Rosetta Stone in the exchange of business information, since it simplifies the exchange of data between different business systems. This practically means that information can be easily identified, extracted and presented in a way that the end user requires. Finally, in addition to enabling agreement on communication protocols and the exchange of information in virtually real time, perhaps the most important benefit of XBRL implementation is that it reduces the need for rekeying when creating reports for each user in the reporting chain. It is enough to create a report in XBRL once, which can then be distributed via the Web for multiple use (print report, submission to regulatory bodies and tax authorities) (Martic, XBRL kao pretpostavka unaprijeđenja kvaliteta finansijskog izvještavanja, 2013).

What is XBRL?

Although even in the very name of XBRL we find the concept of business reporting, which is undoubtedly one of the basic aspects of its operation, it is clear that it has a much wider application. If we consider reporting as a subset of business information exchange, as it is shown in the paper XBRL as (Durkovic,

Dmitrovic Saponja & Durkovic, 2017):

- A standard based on open source, independent of any software manufacturer - which offers a whole range of advantages in data storage, manipulation and analysis;
- XML extension intended for electronic exchange of business information;
- One of the most successful formats for meta data (meta-data);
- Global agreement on the concept of exchange of business information and rules;
- A new way of distributing and modeling business information in a form understandable for computer applications, which completely moves business reporting to the Interne.

At the same time, the application of XBRL is not limited only to financial reporting, but this standard has a much wider application. Although today it is primarily used in financial reporting, it can equally be used in non-financial reporting and the exchange of information content on the broader, social and environmental aspects of the company's operations. In fact, the XBRL standard finds its application in the latest phase of the evolution of corporate reporting - integrated reporting (Martic, Digitization of financial reporting in Montenegro - empirical research on the example of the XBRL standard, 2016).

Here, it is especially necessary to point out iXBRL, or Inline XBRL, which, in addition to being structured for machine reading, is at the same time more human-readable. Namely, the difference between XBRL and iXBRL is in the way financial information is presented. While XBRL is focused solely on machine readability of data, iXBRL allows that data to be presented in a way that is readable by both humans and machines. This makes iXBRL more suitable for regulatory requirements that require financial statements to be accessible and understandable to a wider audience, while providing the structured data needed for analysis and processing.

Since in some of the earlier works we got acquainted with the characteristics and benefits that its application brings, at this point we can point out that it is clear that XBRL will be the bearer of changes, at least when it comes to the ways of collecting, processing and exchanging business information. Namely, today the XBRL standard is globally accepted and very quickly took a dominant role, in the real era of software tools and techniques that are constantly showered on us by consulting firms and manufacturers of accounting software.

Clear definitions

What are its Characteristics?

XBRL allows the creation of multiple, authoritative definitions, called taxonomies, that capture the meaning contained in all reporting terms used in a business report, as well as the relationships between all terms. Taxonomies are developed by regulators, accounting standard setters, government agencies, and other organizations that must clearly define the information to be reported. XBRL does not limit what kind of information is defined: it is a standard that can be used and extended as needed.

Verifiable business rules

XBRL allows the creation of business rules that limit what can be reported when submitting a report. Business rules can be logical or mathematical, or both, and can be used to:

- preventing poor quality information from being sent to the regulator or a third party, by directing the drafter while the report is still in draft,
- preventing the regulator or third party from receiving low-quality information. Business reports that do

not meet critical rules may be returned to the developer for review and resubmission,

- marking or highlighting questionable information, enabling quick follow-up, correction or explanation,
- creation of raids and other types of information on additional value, based on the provided basic data.

The ability to define business rules and their inclusion within XBRL taxonomies is probably one of the most significant features of the XBRL standard. Based on that and thanks to the fact that information is presented in a structured way, XBRL enables users to exchange business rules in a standardized format, which greatly facilitates data validation.

Multilingual support

XBRL allows the preparation of concept definitions in as many languages as needed. Translations of definitions may also be added by third parties. This means that it is possible to display a series of reports in a language different from the one in which they were prepared, without additional work. The XBRL community makes great use of this capability as it can automatically enable reports to different communities (Nel & Steenkamp, 2012).

Strong software support

XBRL is supported by a very wide range of software from both large and small vendors, allowing a very wide range of stakeholders to work with the standard.

Who is it Intended for?

The International XBRL Consortium is supported by more than 600 member organizations from both the commercial and public sectors. The standard has been developed and refined for more than a decade and supports almost all possible types of reporting, while providing a wide range of features that improve the quality and consistency of reports, as well as their usability. XBRL is used in many different ways, for different purposes, including:

- Regulators and stock exchanges that are worldwide leaders in implementing XBRL.
- Tax authorities who need financial statements and other compliance information from companies for taxation and tax policy review purposes.
- Statistical and monetary policy authorities who need information on financial performance for various organizations.
- Legal entities that need to provide information to one or more of the above-mentioned regulators.
- Government agencies seeking to simplify the reporting process and reduce unnecessary procedures, either by harmonizing data definitions or consolidating reporting obligations (or both).
- Data providers that use performance and risk information published in the market and create comparisons, ratings and other information products with added value for other market participants.
- Analysts and investors who need to compare potential investments and understand the underlying performance of existing investments.
- Accountants use XBRL to support client reporting requirements and are often involved in the preparation of XBRL reports. Moreover, accountants and auditors face increasing regulatory burdens, and therefore strive to spend less time on data preparation and processing than on analysis, which is where we come to one of the key benefits that XBRL offers. Figuratively speaking: enter once, format many times.

Recommendations for the Creation of XBRL and ESEF Implementation Models

Taking into account all these aspects and many additional, both technical and reporting requirements and features of the XBRL reporting language, it is evident that companies must allocate significant resources in order for their reports to be prepared in accordance with the regulatory technical standards at ESEF. If we look at experiences from neighboring countries (Croatia and Slovenia), companies usually choose between three options when choosing the method of application (Gostimir, n.d.).

- A. Complete outsourcing, engagement of external consultants for the creation of iXBRL reports.
- B. Hybrid approach or purchasing a license for a tool for generating iXBRL reports with additional support from consultants, especially in the part of marking paragraphs of financial statements and solving validation errors, where it is advisable to use certified providers of tools for creating iXBRL reports.
- C. Internal software development and independent preparation of iXBRL reports.

However, complete outsourcing crystallized as the most frequently used approach, where external consultants were entrusted with the entire process of marking, technical preparation of reports and generation of iXBRL reports. In this way, the company's internal resources are directed towards other regular jobs and activities, which is of crucial importance for all societies in today's time of growing challenges.

Precisely because of this, the process of introducing XBRL implies a series of specific stages leading to implementation, which can be grouped according to the appropriate order:

- A. The introduction of the XBRL standard implies appropriate organizational and methodological preparations, which aim to enable the creation of conditions for the efficient and easy application of this standard.
- B. Creation of institutional and regulatory framework.
- C. Creation of XBRL repositories and applications for electronic data processing and recording.
- D. Testing XBRL standards.

As we dealt with the mentioned and many other issues related to defining the foundations on which the complete system for reporting through XBRL will be based in the previous chapters, in the following articles we will deal in more detail with the remaining stages leading to the implementation of this standard (Consolidated financial statements in XBRL format, n.d.).

Concluding Considerations

We have seen that the first implementations of XBRL standards were realized in the field of the financial arena, led by regulatory agencies data. Relevant research indicates that by the end of 2025, on a global level, everyone in the accounting industry should use XBRL, aware of the advantages it brings, or for the reason that there are no available alternatives. If we look at the environment, we have seen that Croatia and Slovenia are applying XBRL mandatorily from 2020, and the only, possible and best way for the Western Balkan Region is to accept without restrictions and adapt the EU regulations for XBLR. This should be done through legal regulation and application in the Western Balkans Region of the Single European Electronic Format, which is based on XBLR.

In the end, all this leads to the conclusion that, if the mentioned recommendations are not implemented soon, the digitization of financial reporting in the Region will continue to be slow and limited. In support of the stated claim, we cite the fact that the implementation of the XBRL standard - which, according to many, caused a revolution in the digitization of financial reporting - still has not taken off in the Western Balkans

region, not even ten years after its introduction at the global level, and from 2020 at the EU level.

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VLOGA KRIPTOVALUT V FINANČNEM KIBERNETSKEM KRIMINALU | THE ROLE OF CRYPTOCURRENCIES IN FINANCIAL CYBERCRIME

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Povzetek. Prispevek obravnava problematiko rasti kibernetskega kriminala, katerega cilj je protipravna pridobitev premoženjskih koristi, pri čemer so kriptovalute sredstvo ali cilj zlorab. Predstavimo tako neposredne kraje kriptovalut z različnih platform kot goljufije, kjer kriptovalute služijo kot vaba in obljubljeni vir zaslužka za naivne vlagatelje. Izpostavlja se nemoč organov pregona, nizka učinkovitost izterjave nezakonitih sredstev in obseg zlorab, kjer oškodovanci sami veliko pripomorejo, da so ogoljufani ali okradeni. Zato je namen prispevka osveščanje javnosti za preprečevanje nepotrebnih oškodovanj in samozaščitno delovanje. Kriminalci se poslužujejo odlične tehnologije, naprednih manipulativnih tehnik in za prevare izkoriščajo lastnosti ljudi kot so ustrežljivost, dobrosrčnost, naivnost, pohlep. Pri tem izrabljajo slabo finančno pismenost prebivalstva in nepoznavanje kripto tehnologij.

Ključne besede: kibernetski finančni kriminal, kibernetske finančne prevare, kriptovalute

Abstract. The contribution addresses the issue of the growth of cyber financial crime, which aims at unlawfully gaining financial benefits, with cryptocurrencies being both a means and a target of abuse. We present both direct cryptocurrency thefts from various platforms and scams, where cryptocurrencies serve as bait and a promised source of profit for naive investors. It highlights the impotence of law enforcement agencies, the low effectiveness of illegal asset recovery, and the extent of abuses, where victims themselves contribute significantly to being deceived or robbed. Therefore, the purpose of the contribution is to raise public awareness to prevent unnecessary losses and encourage self-protection. Criminals employ excellent technology, advanced manipulative techniques, and exploit human traits such as compliance, kindness, naivety, and greed for fraud. They take advantage of the population's poor financial literacy and lack of knowledge about crypto technologies.

Keywords: cyber financial crime, cyber financial fraud, cryptocurrencies

Uvod

Po raziskavi, ki so jo naredili v PricewaterhouseCoopers za leto 2022 (PWC, 2023), je finančni kriminal globalno organizirana dejavnost. Različne kriminalne združbe in posamezniki s celega sveta se povezujejo, sodelujejo in poslujejo s pomočjo temnega spleta in kriptovalut (PWC, 2023), s čimer povečujejo količino uspešno izvedenih finančnih goljufij, izsiljevanj in drugih aktivnosti. Podobno v letnih poročilih ugotavljajo Europol (2023), FBI (2023) in številne organizacije, ki se borijo proti kibernetskemu kriminalu vseh vrst. Iz navedenih aktualnih poročil o kibernetskem in finančnem kriminalu zaznamo nemoč organov pregona v boju proti kibernetskemu kriminalu, saj so žrtve pogosto same krive, da so zlorabljene. Razen tega organizirani kriminal uporablja napredna informacijsko komunikacijska sredstva in metode ter jih stalno posodablja in

nadgrajuje. Organi pregona se nenehno spopadajo z njihovimi inovativnimi rešitvami. Če bi bila kibernetska kriminaliteta merjena kot država, bi bila tretje največje gospodarstvo na svetu, za ZDA in Kitajsko (Europol, 2023). Kriminalci uporabljajo in razvijajo tehnologije, ki omogočajo anonimnost storilcev kibernetskih kaznivih dejanj, sodelovanje med njimi, skrivanje ilegalno pridobljenega denarja pred organi pregona in pranje denarja. Šifrirane sporočilne aplikacije, tržnice na temnem spletu (ang. dark web), kriptovalute in druge tehnologije za izboljšanje zasebnosti ščitijo njihovo identiteto in prikrivajo njihovo dejavnost, kar otežuje odkrivanje in kaznovanje s strani pravosodnih organov (Europol, 2023).

Čeprav se zdi in tudi zelo verjetno drži, da bi bila stopnja finančnega kriminala brez uporabe kriptovalut nižja, je po oceni Europola (2023) le okoli 1 % kriptovalut v posesti kriminalcev. Pri tem moramo upoštevati, da so za kriminalce kriptovalute le faza v njihovem poslovanju, saj je njihov končni cilj opran denar, ki ga želijo vložiti v legalne gospodarske dejavnosti ali kako drugače neopazno potrošiti.

Kriptovalute so orodje kriminalcev pri izvajanju vseh mogočih kibernetskih kaznivih dejanj. Hkrati so tudi predmet kraje in sredstvo pri izvedbi naložbenih in drugih finančnih goljufij. Na trgu kriptovalut je ogromno nepoštenih udeležencev, ki prežijo na naivne ali kibernetsko slabo zaščitene žrtve.

Kriptovalute so med kriminalci razširjene iz več razlogov:

- Zagotavljajo anonimnost, zato je prevare težje izslediti.
- Zakonsko so slabo regulirane. V večini držav je zakonodaja še v pripravi ali še ni ustrezna, zato so pravna tveganja za kriminalce manjša kot v običajnem poslovnem okolju. V EU je že sprejeta Uredba o trgih kriptosredstev, znana pod oznako MICA, ki pa se začne uporabljati 30. decembra 2024 (EU, 2023).
- Zaradi tehnološke zapletenosti in slabega poznavanja kriptovalut goljufi lažje prepričajo posameznike, da verjamejo lažnim investicijskim shemam z obljubljenimi visokimi donosi.
- Nihanja cen na kripto trgu in občasne velike rasti spodbujajo nerealna pričakovanja o hitrem zaslužku.
- Medijske zgodbe o bogatenju s kriptovalutami ustvarjajo strah pred izgubo priložnosti (angl. Fear of Missing Out).
- Globalna dostopnost kriptovalut omogoča širok nabor potencialnih žrtev, čezmejno delovanje in izogibanje organom pregona.
- Nove rešitve na področju kriptovalut omogočajo goljufom nove priložnosti za sleparije.

Kriminalci nenehno iščejo in izkoriščajo šibke točke v celotnem sistemu kibernetske varnosti, še najbolj pa njegove najšibkejše člene – to smo uporabniki.

Interpol, Europol, nacionalne policije in agencije za kibernetsko varnost vlagajo letno veliko finančnih sredstev in napora za zmanjševanje kibernetskega kriminala. Znesek premoženja, ki ga organom kazenskega pregona uspe odvzeti iz rok kriminalnih mrež, je pod 2 % letnih ocenjenih prihodkov organiziranega kriminala, kar je kaplja v morje ogromnih nezakonitih prihodkov kriminalne mreže (Europol, 2023). To pomeni, da je preventiva edina učinkovita metoda pred zlorabami. Ljudje smo tisti, ki moramo biti osveščeni, primerno usposobljeni s področja informacijske varnosti in previdni. Če se hočemo ubraniti pred zlorabami, moramo poznati taktike kriminalcev. Ta prispevek je namenjen predvsem spoznavanju načinov dela kibernetskih kriminalcev in nasvetov za obrambo.

V nadaljevanju bomo podrobneje predstavili najpogostejše načine kraje kriptovalut, investicijske prevare in kako kriptovalute pomagajo kriminalcem pri izvajanju drugih kriminalnih aktivnosti. Pomembno je zavedanje, da žrtve pogosto same omogočijo oškodovanje in da se to da v veliki meri zmanjšati.

Kraje kriptovalut

Kriptovalute so tarča različnih vrst kriminalcev – od posameznikov do različnih dobro organiziranih

kriminalnih združb. Za nekaterimi izmed njih stojijo države, ki skušajo s krajo kriptovalut pridobiti sredstva za financiranje vojn, razvoj jedrskih programov in podobnih nelegalnih aktivnosti. Po nepopolnih podatkih za leto 2023 se je število napadov na kripto platforme v letu 2023 povečalo, a je bilo ukradenih 50% manj sredstev kot leto prej, ki je bilo po izgubah rekordno (Chainalysis Team, januar 2024). To je posledica izboljšav varnosti na kripto platformah, kar pa nas ne sme uspavati, saj so kriminalci inovativni pri odkrivanju ranljivosti (Chainalysis Team, februar 2024). Slika 1 prikazuje rast oškodovanj po vrednosti v USD.

Slika 1

*Oškodovanje po vrednosti in številu napadov, od 2016 do 2023*
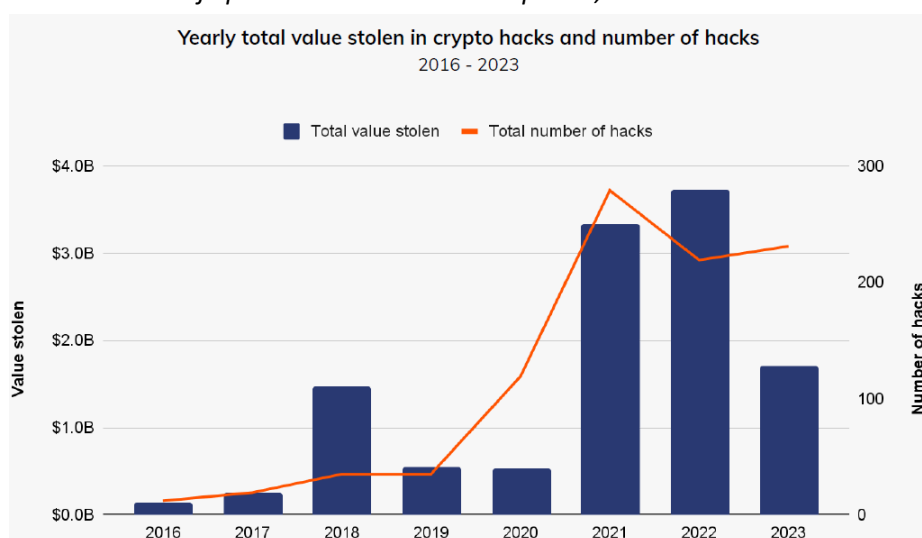
Vir: Chainalysis Team, januar 2024.

Čeprav se zdi, da je bilo leta 2023 zabeleženo nižje oškodovanje, vir opozarja, da je bila podobna statistika zaznana tudi pretekla leta. Veliko napadov namreč do konca zadnjega leta spremljanja ni registriranih, saj se iz različnih razlogov, npr. skrivanje podatkov in nezavedanje oškodovanja, v statistiki pojavijo za leto ali več nazaj.

Naslednji grafikon (Slika 2) pa kaže razmerje ukradenih sredstev glede na vrsto platforme. Najranljivejše so DeFi platforme, sledijo pa centralizirane storitve (ang. centralised services) in kripto denarnice (ang. wallet). DeFi je okrajšava za decentralizirane finance.

Slika 2

Ukradene kriptovalute glede na vrsto platforme
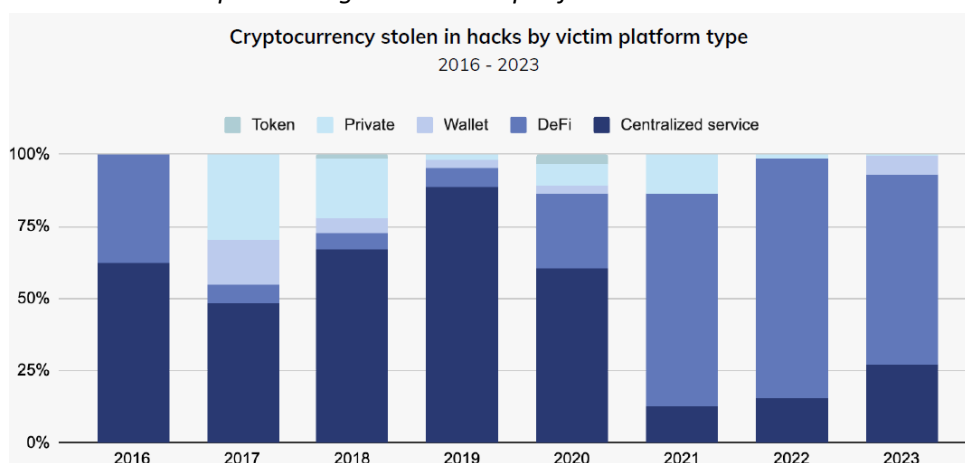
Vir: Chainalysis Team, januar 2024.

Na DeFi platformah se izvajajo finančne storitve (npr. kreditiranje) direktno med uporabniki. Izraz centralizirane storitve (ang. centralized service) se nanaša na kripto platforme, kjer je nadzor nad platformo in uporabniškimi podatki v rokah ene same organizacije ali skupine ljudi. Po tej definiciji spada večina kripto menjalnic med centralizirane platforme.

Kraje z DeFi platform

DeFi, ali decentralizirane finance, so aplikacije na tehnologiji veriženja blokov (ang. blockchain). Na njih izvajajo finančne transakcije, ki so jih od tradicionalno opravljale banke in borznoposredniške hiše. Na DeFi se transakcije izvajajo neposredno med strankami, brez vmesnega zaupanja vrednega posrednika. Prav tako ni organa, ki bi določeno DeFi platformo potrdil kot zaupanja vredno, ali potrdil, da ima implementirane ustrezne varnostne mehanizme. Zato obstaja tveganje kraje kriptovalut ali drugih podatkov. Zaradi tehnoloških lastnosti verig blokov in kriptovalut so transakcije nepovratne. Če so sredstva ukradena, jih je skoraj nemogoče povrniti. To pomeni, da je dolžnost uporabnika, da se sam prepriča o varnosti platforme, preden vanjo vloži svoja sredstva.

Največja tovrstna kraja se je zgodila leta 2022, ko je bilo ukradenih 3,8 milijarde dolarjev, predvsem z DeFi platform in sicer s strani napadalcev, povezanih z Severno Korejo. Severna Koreja, ki je sicer izjemno revna država, naj bi z ukradenimi sredstvi financirala razvoj jedrskega oboroževalnega programa (Chainalysis Team, februar 2023). V zvezi s krajami in drugimi kibernetskimi kaznivimi dejanji se omenja tudi Rusija. Ruska federacija z ofenzivnimi kibernetskimi operacijami povzroča ogromno škodo, pri čemer ne gre le za velike finančne izgube žrtev, temveč tudi za prekinitve delovanja kritične infrastrukture in motnje ključnih oskrbovalnih verig (Wolff, 2022), kar spada v kibernetsko vojskovanje, o čemer pa v tem prispevku ne bomo govorili.

Kraje na kripto menjalnicah

Vsak, ki želi kupiti ali prodati kriprovalute in druga kripto sredstva (npr. NFT[1] žetone), mora to storiti preko ene do kripto menjalnic. Med najbolj znanimi so npr. Coinbase, Kraken, eToro, Bitstamp, Binance.

V letu 2022 se je zgodil propad kripto menjalnice FTX. Sodišče je njenega ustanovitelja spoznalo za krivega goljufij, poneverb in kriminalne zarote. Propad kripto menjalnice FTX je precej resno zamajal zaupanje v kriptovalute in varnost imetja vlagateljev ter vsaj kratkoročno zmanjšal obseg trgovanja s kriptovalutami (Chainalysis Team, oktober 2023). Konec leta 2023 pa je trg kriptovalut spet oživel, pozitivni trendi pa se kažejo tudi v začetku leta 2024.

Napad na kriptomenjalnico Mt. Gox (2014) je bil eden najbolj odmevnih. V kraji je izgubila več kot 850.000 Bitcoinov (BTC). Ta incident je pripeljal do stečaja Mt. Goxa in velike izgube za njihove uporabnike. Še danes ne vemo, kdo je bil kriv za ta rop. Ne ve se, ali je šlo za notranjo krajo ali hekerski napad. Dejstvo je, da so slaba regulacija in pomanjkljivi varnostni ukrepi omogočili eno ali drugo zlorabo. Napadene in oropane so bile še številne druge kripto menjalnice, med njimi tudi, takrat še slovenski, Bitstamp. Leta 2021 je bila napadena menjalnica Coinbase. Napadalci so izkoristili varnostne pomanjkljivosti in pridobili podatke več kot 6000 uporabnikov. Coinbase je obljubil, da bo oškodovancem denar povrnil. Primer je zanimiv, saj se je napad

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[1] NFT je kratica za nezamenljiv žeton. To je vrsta digitalnega sredstva, ki se shranjuje in prenaša na verigi blokov. Običajno se uporablja za dokazovanje lastništva nad različnimi digitalnimi vsebinami, kot so umetnine in druga avtorsko zaščitena dela.

dogajal med marcem in junijem, pri Coinbase pa so ga priznali šele oktobra (Reuters, 2021). Leta 2023 so bile oropane menjalnice CoinEx, HTX in Poloniex exchange (Chainalysis Team, januar 2024).

V današnjem času imajo zaupanja vredne kripto menjalnice dobre varnostne ukrepe, saj se zavedajo pomembnosti informacijske varnosti. Vseeno pa vlagatelji ne morejo biti brezskrbni in morajo sami skrbeti za varnost svojih finančnih sredstev.

Napadi na kriptomenjalnice so povzročili velike izgube za uporabnike. Čeprav regulacija kriptovalutnih menjav postaja strožja, je uporabnik še vedno ogrožen in mora tudi sam ravnati preventivno. Preveriti je potrebno, ali je kripto menjalnica zaupanja vredna: kako dolgo posluje, ima morebitno zgodovino varnostnih incidentov, kako ščiti imetje strank.

Če je menjalnica zaupanja vredna, mora preverjati kupce oz. izvesti aktivnosti, s katerimi ugotovi, da je uporabnik res oseba, za katero se izdaja. Poslati je treba dokazila o identiteti in dokazati, da je navedeni bančni račun last uporabnika. Čeprav je postopek za uporabnika zamuden, je v njegovo dobro. V kolikor izbrana kripto menjalnica ne preverja novih uporabnikov, njeno uporabo strogo odsvetujemo.

Kraje iz denarnic

Vsak, ki posluje s kriptovalutami, potrebuje kripto denarnico. Lahko jo ima na računalniku, na kripto menjalnici, na mobilni aplikaciji, na posebni napravi ali pa podatke shrani na papirju.

Marsikateri vlagatelj v kriptovalute ima svoja sredstva na računu na kriptomenjalnici, kar ni varno. Vsaka kriptomenjalnica lahko doživi hekerski napad. Zato je treba kriptosredstva takoj po nabavi shraniti v lastni kripto denarnici na posebni napravi, ki je priključena na računalnik le, ko se izvede transakcija. Običajno je ta naprava v obliki USB ključa, ki ga shranimo izven internetnega omrežja.

Kriptodenarnice na računalnikih in aplikacijah prav tako niso varne, saj so lahko tarča hekerskega napada ali pa prelahko dostopne, če kriminalci pridejo do podatkov z zvijačo na podlagi lažnega predstavljanja.

Investicijske prevare

Po poročanju FBI IC3 (2023) so bile leta 2022 najobsežnejše goljufije na področju naložb. Zabeležene prijave na FBI-jev center za priglasitev internetskega kriminala (FBI IC3) se v zadnjih letih drastično povečujejo, kar prikazuje Slika 3. Prikazuje še, da je po obsegu največ oškodovanj na področju naložb s kriptovalutami.

Goljufije pri kripto naložbah so doživele velik porast tako glede števila žrtev kot tudi glede izgub v dolarjih za te vlagatelje. Številne žrtve so se znašle v dolgovih. Zaradi goljufivih naložb, ki obljubljajo sanjske donose, nekatere žrtve vlagajo denar, ki si ga izposodijo. Najbolj prizadeta starostna skupina je med 30 in 49 let (FBI IC3, 2023).

Slika 3

Rast obsega naložbenih prevar
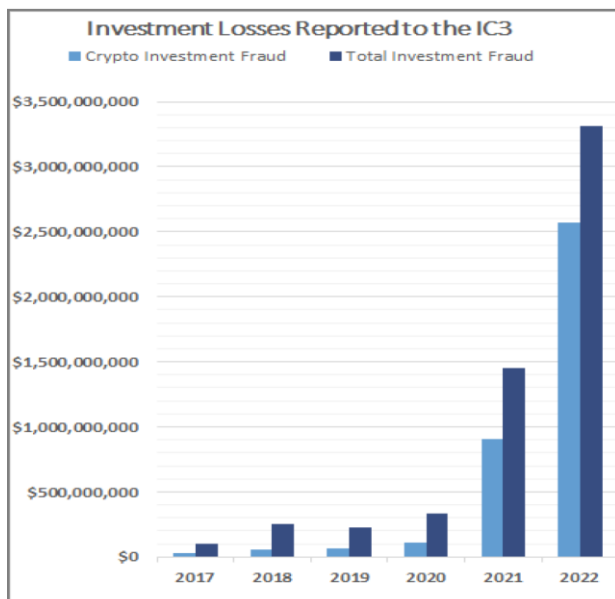
Vir: FBI IC3, 2023.

Chainalysis Team (februar 2024) poroča, da so v zadnjem času številni kripto prevaranti začeli pogosteje uporabljati taktike romantičnih prevar, namesto prej najpopularnejšega oglaševanja shem bajnega bogatenja. Ciljajo na posameznike in gradijo odnose z njimi, da bi jih napeljali na goljufive naložbene priložnosti.

Rejenje prašiča

Včasih je goljufijo težko pravočasno prepoznati, saj se goljufi poslužujejo tehnike »rejenja prašiča« (ang. pig butchering). Poročilo UNDC (2023) navaja, da je veliko prevarantov žrtev trgovine z ljudmi in so prisiljeni izvajati kibernetske prevare in finančne goljufije. Prisiljeni so mamiti ljudi preko neposredne komunikacije. Običajno svoje žrtve prepričajo v »dobre« naložbe z nakupom in prodajo kriptovalut, kot sta npr. ether (ETH) in tether (USDT). Na začetku ima žrtev prevare dobiček, ki ga lahko spremlja na goljufivi spletni strani. Dokler polaga denar, je za kriminalce koristna. Prevaranti "pitajo" svoje žrtve z manjšimi dobički, preden se lotijo "uboja". Če želi žrtev prevare izplačilo denarja, se komunikacija z žrtvijo prevare prekine, žrtev pa spozna, da je prevarana.

Vsebine, ki jih prevaranti uporabljajo za prepričevanje, so različne. Včasih navežejo romantične odnose. Prežijo na osamljene, na filantrope, na željne zaslužka.

Piramidne sheme

Veliko naložbenih goljufij uvrščamo med piramidne sheme. Njihova značilnost je, da temeljijo na stalnem privabljanju novih vlagateljev. Novinci se pridružijo z vplačilom, ki ga prejmejo pridruženi pred njimi. Posebna vrsta piramidne sheme je Ponzijeva shema. Ponzijeva shema je vrsta poslovne goljufije, ki privablja investitorje s pretiranimi in neuresničljivimi obljubami o zaslužku. V začetnih fazah vlagatelji prejemajo visoke dobičke in o teh izjemnih rezultatih obveščajo druge morebitne investitorje, ki se na podlagi zaslužkov tudi sami odločijo za vstop. Shema tako pridobiva nove člane, katerih vložena in vezana glavnica služi za izplačilo obresti in morebitnih zahtev za poplačilo glavnice starih članov. Tipične žrtve ponzijeve sheme so bili sorazmerno premožni ljudje, ki dlje časa niso potrebovali vloženega denarja. Ko pa dokončno zmanjka

potencialnih investitorjev ali se začno večje zahteve po dvigih, shema propade (Investopedia, 2024).

Sheme, ki niso bile zasnovane na kriptovalutah, so po propadu jasno pokazale, kdo so bili goljufi. V piramidnih kriptoshemah pa so tarče tako mali kot večji investitorji. Organom pregona je težje najti goljufe, ki so pobudniki sheme, saj so kripto transakcije zaščitene. V Sloveniji smo imeli veliko oškodovancev pri piramidni shemi Onecoin. Shema je delovala štiri leta. Skupaj je bilo oškodovanih 3 milijone ljudi, za več kot 5 milijard USD (Bel, 2020). Ta shema se je oglaševala na prireditvah v živo in preko spleta.

Goljufi za privabljanje žrtev uporabljajo tehnike globokih ponaredkov, s katerimi digitalno zlorabijo znane osebe in oglašujejo s pomočjo videov, ki jih kreira umetna inteligenca. Globoki ponaredki delujejo resnično in prepričljivo. Zato je pomembno, da se potencialne žrtve zavedamo njihovega obstoja in nevarnosti. Goljufije odkrivajo vsako leto. V zadnjem času so goljufi iz območij pod sankcijami (npr. Severna Koreja, Rusija), kjer pa je še težje zapreti sheme in goljufe (SEC, 2022; Adams; 2023).

Goljufivi kripto projekti

Obstajajo poštene in nepoštene kriptovalute. Med poštene spada npr. bitcoin, saj njegove verige blokov ni mogoče zanikati, spremeniti ali ukiniti. Razlog se skriva v tehnologiji. Avtor bitcoina Nakamoto (2008) je dokazal, da bi moral imeti napadalec na verigo blokov vsaj 51% procesorske moči celotnega omrežja. To je v praksi zelo težko izvedljivo, če gre za znano in uveljavljeno kriptovaluto z ogromno uporabniki.

Vedeti pa moramo, da je kreiranje nove kriptovalute zelo enostavno. Nepošteni in zlonamerni posamezniki lahko kreirajo kriptovaluto z namenom goljufanja. Kreirajo spletno stran, objavijo t.i. beli dokument (ang. white paper), v katerem opišejo projekt in začnejo z zbiranjem finančnih sredstev. Mnogi taki projekti so uspeli (npr. solana, cardano), mnogi so propadli zaradi slabega vodenja, zelo veliko pa jih je nastalo le zato, da bi ukradli finančna sredstva vlagateljev. Zato je tvegano vlagati v kripto kovance, ki se na novo pojavijo na trgu.

## Uporaba kriptovalut za pomoč kriminalnim aktivnostim

Zaradi tehnologije, ki omogoča tajnost in zaupnost transakcij, so kriptovalute priljubljeno plačilno sredstvo med kriminalci. Kot bomo videli v nadaljevanju, so za posamezna kriminalna dejanja nekatere kriptovalute bolj priljubljene od drugih. Imajo tudi pomembno vlogo pri pranju denarja, saj je končni cilj kriminalcev denar, ki ga lahko uporabijo v legalnih transakcijah.

Kriptovalute v kibernetskem kriminalu

Slika 4 prikazuje razmerje nelegalnih transakcij po tipu kriptovalute. Kot vidimo so za nelegalne transakcije v zadnjih letih najpopularnejši stabilni kovanci, ker so manj podvrženi nihanju glede na prave valute. Stabilni kovanci so kriptovalute, ki imajo vrednost določene prave (se pravi fiat) valute. Pogosto je izbrana valuta ameriški dolar (USD). Primera stabilnih kovancev, vezanih na USD, sta Tether USDt in USDC.V zadnjih petih letih opažamo premik od pretežne zlorabe bitcoina (BTC) do pretežne zlorabe stabilnih kovancev (ang. stablecoins).

Slika 4

Nelegalne transakcije glede na vrsto kriptovalute od 2018 do 2023
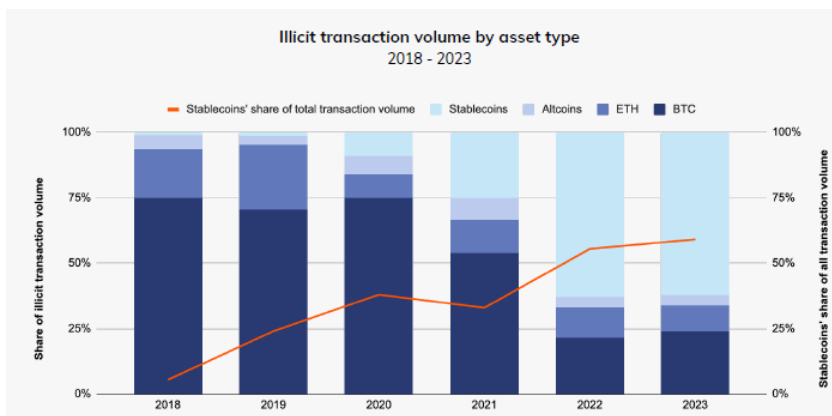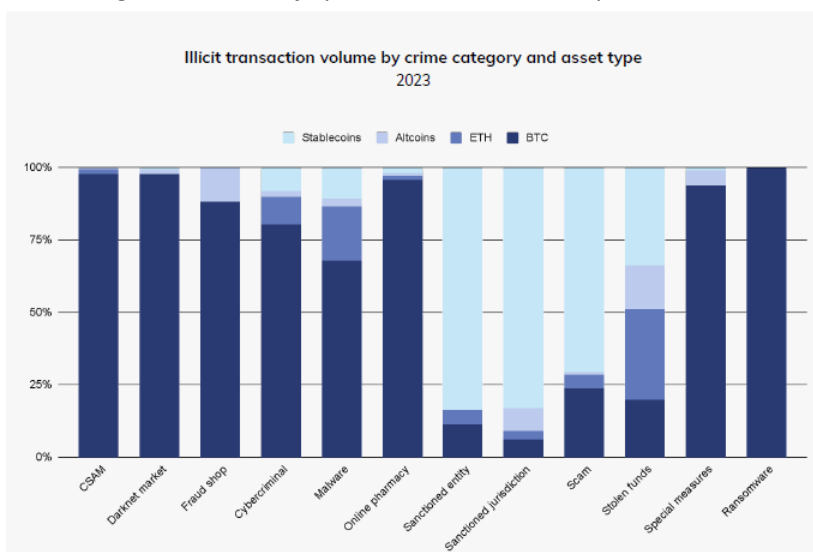

Vir: Chainalasys Team, februar 2024

Ker imata BTC in ether (ETH) najvišjo tržno kapitalizacijo, ju v statistikah pogosto navajajo posebej. Ostali kriptokovanci so alternativni kovanci (ang. altcoins).

Statistike prikazujejo, katere kriptovalute so najbolj priljubljene pri izvajanju posameznih vrst kriminalnih aktivnosti, kar prikazuje Slika 5.

Slika 5

Nelegalne transakcije po vrsti kriminala in kriptovalute v letu 2023

Vir: Chainalasys Team, februar 2024.

Za trgovanje z nelegalnimi sredstvi: CSAM[2], trgovina na temnem spletu (ang. darknet market), trgovino z orodji za goljufanje (ang. fraud shop), škodljivo kodo (ang. malware), kibernetske kriminalne storitve (ang. cybercriminal), lažne lekarne (ang. online pharmacy) in izsiljevanje z virusi, ki šifrirajo žrtvine podatke (ang. ransomware), se največ uporablja valuta bitcoin. Podjetja in območja, ki so pod sankcijami (npr. Rusija), najpogosteje uporabljajo stabilne kovance. Ukradena sredstva (ang. stolen funds) so iz različnih kategorij. Kriminalci ukradejo, kar lahko.

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[2] CSAM so materiali vezani na spolno zlorabo otrok

Ko so kripto sredstva nelegalno pridobljena, nastane za kriminalce naslednji problem: kako sredstva legalizirati oz. kako jih nakazati na legalne račune, ne da bi jih organi pregona prepoznali in zasegli. Potrebujejo učinkovit sistem pranja, ki očisti nelegalni (umazani) denar in ga s tem pripravi za uporabo v legalnem okolju.

Pranje denarja

Skoraj 70 % kriminalnih mrež, ki delujejo v EU, uporablja osnovne tehnike pranja denarja, ostale pa sodelujejo s profesionalnimi mrežami za pranje denarja in/ali uporabljajo podzemni bančni sistem (Europol, 2023). Pranje denarja je postopek, s katerim se skuša prikriti izvor nezakonito pridobljenega premoženja in ga vključiti v zakonit finančni sistem ter s tem omogočiti nadaljnje poslovanje ali investiranje (Investopedia, 2023).

Pranje denarja poteka v treh fazah: plasiranje, prikrivanje in integracija. Plasiranje je faza, v kateri se denar ali premoženje, ki izvira iz kaznivega dejanja, vnaša v finančni sistem, na primer z nakazili, menjavo valut, nakupom žetonov v igralnicah ali drugimi načini. Prikrivanje je faza, v kateri se skuša zakriti sledi in povezave med denarjem ali premoženjem in njegovim izvorom, na primer z večkratnimi prenosi, uporabo offshore podjetij, fiktivnimi pogodbami, nakupom nepremičnin ali drugimi načini. Integracija je faza, v kateri se denar ali premoženje, ki je bilo oprano, vključi v zakonito gospodarsko dejavnost, na primer z nakupom delnic, nepremičnin, podjetij, umetnin ali drugimi načini (Urad RS za preprečevanje pranja denarja, 2024).

Pranje denarja je kaznivo dejanje, ki se preganja in kaznuje po kazenskem zakoniku. V Sloveniji je za preprečevanje in odkrivanje pranja denarja pristojen Urad RS za preprečevanje pranja denarja, ki je del Ministrstva za finance. Zbira in analizira podatke o sumljivih transakcijah, ki jih morajo sporočati zavezanci, kot so banke, menjalnice, zavarovalnice, notarji, odvetniki, računovodje, davčni svetovalci, nepremičninske agencije, ponudniki storitev virtualnih valut in drugi.

Januarja 2023 so organi kazenskega pregona odstranili kriptoplatformo Bitzlato, za katero so sumili, da so jo kriminalci uporabljali za pranje nezakonitih sredstev v lasti ruskih subjektov, ki so pod sankcijami EU. Na Bitzlatu so omogočali hitro pretvorbo različnih kripto sredstev v ruske rublje. Analiza je pokazala, da je bilo približno 46 % sredstev, izmenjanih prek Bitzlata, v vrednosti približno ene milijarde EUR, povezanih s kriminalnimi dejavnostmi (Europol, 2023).

Za pranje denarja se lahko uporabijo poštene menjalnice, na katerih so denarnice, ki služijo v procesu pranja denarja. Kriminalci se poslužujejo številnih transakcij, da bi zakrili izvor premoženja in razpršili sredstva pomočnikom, ki za provizijo sodelujejo v procesu pranja denarja in so v luči zakonodaje prav tako kriminalci. Z razprševanjem denarja kriminalci zmanjšajo tveganje izgube in otežijo delo organom pregona, ki so praviloma usmerjeni na nadzor večjih zneskov.

Kriminalci vabijo ljudi, da bi jim pomagali pri pranju denarja in obljubljajo zaslužke. Provizije res plačajo, vendar pa v luči zakonodaje vsak pomočnik v procesu pranja denarja izvaja nelegalno dejavnost in je kazensko odgovoren. Kazni so zaporne.

Zaključek

Namen članka je osveščanje strokovne in laične javnosti za večjo odpornost proti kibernetskemu finančnemu kriminalu. Možnosti hitrih zaslužkov in medijske zgodbe o uspešnih vlagateljih pogosto preslepijo ljudi, da verjamejo goljufivim naložbenim priložnostim. Zapletena tehnologija, nezadostno poznavanje kriptovalut in naivnost so razlogi, zaradi katerih so kriminalci iz leta v leto uspešnejši. Zakonodaja

ne nudi zadostne zaščite oškodovancem. Še večji problem pa je, da organi pregona težje ujamejo kriptokriminalce kot navadne kriminalce, saj so kripto kriminalci tehnološko napredni, dobro organizirani in tržijo storitve na temnem spletu. Zaposlujejo strokovnjake, ki delujejo v zavetju anonimnosti, odlično zaslužijo, a si rok ne mažejo neposredno. Kot storitve so na voljo mreže prevarantskih agentov in denarnih mul, ki sodelujejo v procesu pranja denarja.

Glede na nizko verjetnost, da se kriminalce odkrije in ukradena ali prigoljufana sredstva prejme nazaj, so edina učinkovita sredstva v boju proti kibernetskemu finančnemu kriminalu osveščenost, znanje, previdnost in nezaupljivost potencialnih oškodovancev.

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Marketing Strategies in the Digital Landscape

IMPACT OF DIGITALIZATION ON MARKETING AND ADVERTIZING

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Abstract. Technology has played a critical role in transforming the landscape of digital marketing. Integrating technology into digital marketing has revolutionized how businesses work now. Digital marketing empowers businesses to reach the right people with the right message. The introduction of digitalization in the daily life of individuals has allowed companies to communicate between themselves and consumers, proposing the values and characteristics of products or services, on a large scale, in an increasingly efficient way (Benes, 2018, p. 4). Digital marketing provides an abundance of data, allowing businesses to make informed decisions, optimize strategies in real-time, and predict trends accurately. However, marketing managers have often lost sight of the objective of creating and communicating quality content that can be positively received by consumers, and this creates a "distance" between the latter and the company's products or services. To answer the research questions, a survey was conducted on a sample. A questionnaire was designed based on the key marketing activities and their transformation in the digital revolution as identified in the literature. The purpose of the paper is to present an empirical study that examines the impact of digitalization on marketing activities. Advertizing and Artificial Intelligence (AI) has significantly impacted in digital marketing, revolutionizing how businesses approach marketing strategies.

Keywords: Digital Marketing, digital advertising, native advertising, customer value

Introduction

Digitalization and customer satisfaction are central goals for all enterprises wishing to create and maintain a competitive advantage in the market (Sundararajan et al., 2022). To achieve these goals, enterprises should urgently integrate new digital technologies with traditional business strategies (Ardito et al., 2019). Literature reviews on digital marketing have investigated the phenomenon from different perspectives; for example, how digital marketing has evolved over time (Cham et al., 2022), themes and trends in the sector (Rosario & Dias, 2022) and, more specifically, artificial intelligence (AI), machine learning (ML) and Industry 4.0.

The term Marketing 4.0 may be considered a synonym of digital marketing as it is described as the new generation of marketing strategies that combine offline and online interactions for a seamless consumer experience (Sundararajan et al., 2022). Kotler et al. (2021) define Marketing 5.0 as the use of human-mimicking technologies to create, communicate, deliver and enhance value in the overall customer experience. According to the Authors, companies should balance human and computer intelligence and use technology to appease all generations, thus avoiding the creation of divides or resentment.

Digitalization has strongly impacted marketing and all business functions (Almada-Lobo, 2016); it has

also increased the productivity of the company and the role of customers (Bettiol et al., 2017). The emerging technologies that primarily impact marketing focus on information processing; they include the Internet of things (IoT), cloud computing, big data analytics and customer profiling and AI (Rosario & Dias, 2022).

Digital Transformation

Digital Transformation, before being a change in the way of doing business, was simply a cultural change (Stoleterman & Croon Fors, 2004). For this reason, to define unambiguously the term "Digital Transformation" is not simple. In general, it is possible to identify Digital Transformation as "*the integration of technology in all areas of business"* (Bartholomae, 2018). The physiological consequence of this integration is a profound change in the way companies produce value and how it is delivered and communicated to the customers.

Therefore, the introduction of digital technology in various business sectors has changed the way we do business. In particular, it has decided for companies, a global evolution starting from the organizational structure, leading to changes at the level of leadership and production, distribution, competitive and communication strategies (Bartholomae, 2018).

The introduction of the "*Digital Supply Chain"*[1] has allowed companies to manage business processes more efficiently, improving their adaptability, speed of response and risk management capabilities. Through the adoption of digital technologies and the automation of productive processes, companies have been able to modify and improve their corporate performance. In particular, on the production side, through a reduction in variable costs [2] and an increase in production volumes. On the distribution side, through a significant increase in the levels of effectiveness and efficiency of the logistics process obtained through the use of strategies of many communication channels, which are enabled by the online world or E-commerce, by the digitization of contents and by the evolution of strategies of communication.   The presentation of products, services and the image of companies has changed, and with it the competition in business sectors has undergone changes (Ad, 2014; Bilgihan & Bujisic, 2015). Let's just think for a moment about the world of music, cinematography or even the hotel and tourism industry. Businesses today find themselves facing different competitors: an illustrative example is the case of hotel chains which have as competitors not only other hotels, but also online sites such as Airbnb.com or Booking.com, which also rent out rooms and accommodations at lower prices than most traditional competitors. Another example is DVD or CD distribution chains such as Blockbuster that have found themselves competing with online streaming sites and have failed to offer a *value proposition* in line with the demands of an emerging market which, not being modernized, have not managed to survive. It is therefore vital that companies understand the revolution that is taking place and evolve to adapt to the new models dictated by the market.

The Purpose of the Study

This will be realized through analyzing the causes and effects of the process of "losing" customers from some of the companies, due to wrong marketing strategies, which are increasingly less aggressive and less significant, as well as the proposal of the other alternative, that of digital and native advertising, as practices that restore a more direct, stronger and more loyal connection between the consumer and the company. Analysis of the work is the practical case of one of the most famous and well-known companies, such as

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[1]The digital supply chain.
[2] due to higher initial investments, but which have often led to economies of scale.

NETFLIX. Research questions are:

- What is digitization?
- Why digitization and the Web has transformed the world of business and the environment?

The Spread of the World Wide Web

Digital transformation has had an impact not only on businesses, but also on society in general. In the thirty years since its introduction to the public, the Internet has been able to revolutionize the lives of billions of people and, above all, a large part of the world economy.

The World Wide Web (WWW) is currently exploding and developing into many applications around the world. The WWW provides interactive texts, images, sounds, and motion pictures by communication via computer network. It makes integration of databases to produce a more fancy and more friendly network media. In March 1989 Sir Tim Berners-Lee wrote the first proposal for the creation of an *internet-based hypertext system* for connecting and allowing access to information between different computers (CERN, 2019).

A few years later, on April 30, 1993, CERN announced that *the World Wide Web* was usable and developed by anyone without any commission being applied, a fundamental factor in the impact it would have on the world. In over 30 years, the " *Web* " has entered the homes and above all the daily lives of billions of people. It is an organization, named the World Wide Web Consortium (W3C), which was developed for further development of the web. CERN, where Tim Berners worked, is a community of more than 1700 researchers from more than 100 country. A Web browser is used to access web pages. Web browsers can be defined as programs which display text, data, pictures, animation and video on the Internet.

Hyperlinked resources on the World Wide Web can be accessed using software interfaces provided by Web browsers. Initially, Web browsers were used only for surfing the Web but now they have become more universal.56.8% of the world's population currently has access to the Internet, however globally the rate of spread of Internet connections is not homogeneous. The majority of reported Internet connections are mobile, according to GSMA intelligence statistics [3].

Figure 1

The percentage of individuals with an Internet connection to the total population in each country.

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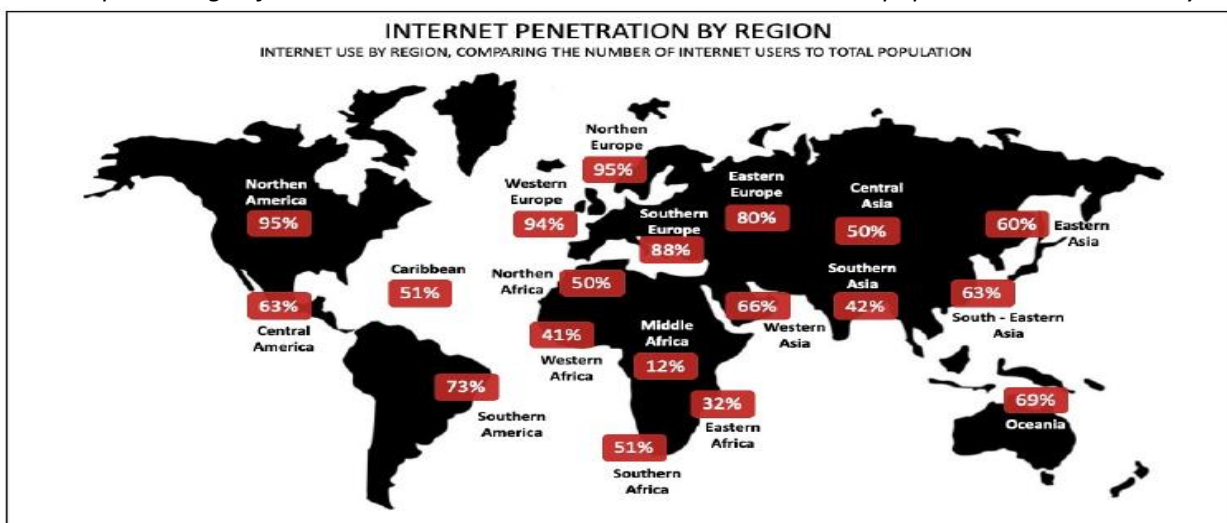
[3] Global System for Mobile Communication Association

At the end of 2018, about 3.6 billion people, or 47% of the world's population, signed up for mobile internet service. According to GSMA estimates, a 4.8% increase in the use of these services is expected by 2025, when the total number of mobile Internet subscribers is expected to be 5 billion people, or 61% of the global population (GSMA, 2019). The spread of the Internet, combined with all the changes and implications that the new technologies involved have had the effect of a major revolution in the world of marketing.

Digital Marketing

With the advent of the Internet, the methods of communication between users and businesses have been distorted, and this has certainly had an impact on marketing. With the spread of the digital world, the birth of email, the first search engines like Yahoo! (1994) and Google (1997) and *e-commerce* sites such as Amazon (1994) and eBay (1995) and the publication of the first advertising *banner* on the website hotwired.com[4] (Ad, 2014), came what is now known as "*digital marketing*".

By " *digital marketing* " we mean the totality of marketing processes that use digital technologies to capture and create consumer preferences, promote brands and increase sales (Financial Times, 2015). According to *the Digital Marketing Institute,* digital marketing is about " *using digital channels to promote or sell products and services to target groups of consumers or businesses,*" (DMI, 2013). Another definition was offered by *the American Marketing Association:* "*Digital Marketing is the set of activities, institutions and processes, facilitated by digital technologies to create, communicate and deliver value to consumers and other interested parties*".

The use of digital channels or technologies in marketing has fundamentally changed the relationship between the company and the customer. The relationship between these two entities, for at least twenty years, is no longer unilateral, but bilateral and reciprocal. Consumers and businesses have developed, thanks to the digitization of research and purchase processes, new capacities. The former have the means to search for information on products or services, compare their prices and features, and make purchases at any time and in any place. They can also interact directly with companies and share thoughts and experiences with other users, via *social media* or *online communities,* to a much wider audience of listeners. At the same time, companies can speed up and make direct communications with customers more efficient, listen to customer opinions and evaluations of their work, and gather in-depth information on markets, current and potential buyers, and competitors more quickly and efficiently. less money spent.

Many businesses, moreover, they have long offered the possibility of personalizing the *online products* that users will go to buy, offering them the opportunity to be "participant" in the production process and feel closer to the final product. In fact, the Internet offers the customer the possibility of active and direct communication with brands.

Through *social media, blogs*, brand communities or, in general, through the Internet, consumers can express their preferences and express their needs and desires. Businesses can take advantage of this opportunity by catering to the needs of the individual customer and offering personalized products and services to each customer.

Brands can use interactive platforms to allow the customer to customize the product offered in every aspect or use *software* to recommend to its customers, products or content similar to those already seen [5]. Furthermore, through simple online browsing, users leave "traces", *Big Data technologies* collect these traces

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[4] October 27, 1994

[5] it is the case of *the recommendation engine* of sites like Amazon or platforms like Netflix and Spotify

and create a customer profile in such a way as to be able to offer the user a better search experience or purchase. The result of these practices is usually greater customer satisfaction and, in some cases, a meaningful brand approach.

By marketing products and services *online,* expanding its distribution network, companies can reach more customers in less time, thus reducing costs and increasing revenues.

The business opportunities offered by digital marketing are diverse: first of all, it represents an *advertising tool* that allows the company to receive a direct response from consumers from advertising campaigns or communication strategies, thanks to the analysis of data provided by digital platforms. Digital marketing is also a " *relationship building method* ", that is, it allows building more solid and long-term relationships between the brand and customers, with positive effects on the company's income.

Companies can identify customer needs more easily and in real time, thus being able to satisfy them both at the stage of product or service development, production and distribution through a more targeted *value proposition, as in the post-purchase relationship.* with a continuous online assistance service for any problem the customer may encounter. The availability on the Internet of large amounts of data, often provided by consumers through the use of *social media,* allow companies to obtain strategic and specific information for different scenarios (Chaffey & Smith, 2013).

The collection and analysis of this data allows us to understand customer preferences, identify the most profitable market segments, customize the offer in order to be more in line with the specific individual profile of the customer as well as build relationships between the company and customers, so that they are strong and sustainable. It also allows to obtain information about the popularity and sustainability of the brand and, in some cases, predicts future trends.

The use of digital channels for the promotion and marketing of a brand, product or service facilitates the process of *lead generation,* i.e. a series of actions and marketing techniques aimed at attracting foreign individuals to the brand, with the aim of generating interest and acquiring qualified contacts[6].

As predicted, online retailing allows companies to reduce the costs associated with distributing and marketing products, often including an increase in profits. *Online* commerce also facilitates purchasing operations with the result for the customer of a greater inclination towards *online shopping.* The greater willingness to buy *online* is due to the speed with which the purchase takes place, and to the ease that the consumer has in receiving, in a very short time, the purchased product with as little expenditure of energy and time as possible.

Digital Advertising

Digital Advertising is a paid marketing strategy that implies "to capture attention". Digital advertising is a promotional messaging used to identify your business across various online channels. It typically lasts between 15 and 30 seconds. In addition to providing vital information, it also helps improve consumers' knowledge of the brand, drives sales, and effectively targets your audience with relevant ads that will make them more likely to buy your product or service. This includes social media, search engine marketing, and mobile advertising.

You engage in digital advertising when you utilize the internet to market your products, services, brand, or company.

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[6]By "qualified contact" we mean a subject's specifications and contact methods (personal data, phone number, email...)

Digital Marketing Mix

The combination of factors that the firm controls to encourage the consumer to purchase, the traditional "4Ps" of Marketing (*Product*, *Price*, *Placement* and *Promotion)[7]*, have been integrated into a digital marketing context by moving to the "4Cs" (*Content*, *Community*, *Communication* and *Commerce)[8]*.

- *Content:* Today more than ever, in an increasingly competitive and constantly changing, rapidly evolving market, it is essential for the company to create content that produces value for the customer. The company's communication methods, in order for them to be effective, must have such an impact on the customer that they allow the brand not only to be remembered, but also to be taken into account when making a purchase decision. Since each individual has his own subjectivity in evaluating a product and each consumer evaluates the effectiveness of a given message differently, the company can send targeted communications to each subject, so that they can have a better effect. large in each of the receivers. This is possible thanks to the solutions offered for example by e-mail marketing or other direct communication systems and the amount of data that companies can collect on the purchasing habits of the consumer as an individual.

- *Community:* The concept of community is defined as a network of social relations characterized by emotional and mutual ties (Bender, 1978). Communities play a key role in social sciences, they are characterized by three aspects: the internal connection between group members, the presence of common "rituals" and traditions, a sense of moral responsibility and duty to the community itself (Munitz & O'Guinn, 2001). In marketing, *brand communities* are defined as " specialized *online communities,* not limited geographically, based on a communication social and relationship between consumers and admirers of a brand". The prerequisite of communities are *networks,* a group of socially important nodes connected to each other by one or more relationships and behavioral links in which they are created, between members, exchanges of resources and information. The members of *the brand community,* their real engines, develop a sense of participation towards the group, characterized by a continuous exchange of ideas and experiences and by sharing a common language, creating a bond that often becomes one with true affectivity as the customer becomes associated with the group, and therefore with the brand, and so will the promoter himself. In 2012, the concept of "*Social Media-based Brand Community*" was introduced by Michel Laroche, through a study on members of the brand community on four different *social media, from which it was found that this type of online community* was growing. This is due to the very nature of social networks, the feeling of inclusion and belonging on the part of members, as well as trust and *engagement* in the brand (brand *loyalty)*, creating value for both, both consumers and businesses.

- *Communication:* Companies have, thanks to digital technologies, a large amount of data which, as already underlined, allows the company to create more meaningful and sustainable communications and relationships with its customers. The company's external communication is thus oriented towards the customer through a process that is not only informative, but bilateral, with more modes of communication with a wider, more complete and more effective spectrum. Sending targeted and consistent messages with the consumer's buying habits or preferences allows for an optimization of costs by the company and, potentially, an increase in sales revenue.

- *Sale - Commerce:* Through the management of marketing channels, the implementation of *omnichannel strategies* and the creation of *a brand community,* the company aims to create or strengthen

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[7]Product, Price, Place and Promotion
[8]Content, Community, Communication and Sales

relationships of trust with the customer with the ultimate goal, increasing sales. For this purpose, attention to the customer is especially important when the purchase is made via the Internet. An *e-commerce site* is successful when, in addition to attracting and maintaining the interest of visitors, it also conveys their reliability and security (Liu & Arnett, 2000). Although the perception of online shopping has changed in recent years, the credibility of the brand and its *e-commerce site* is essential in this buying process. In fact, trust in the brand increases the customer's intention to make the purchase (Bilgihan & Bujisic, 2015). The reasons are clear: a rational customer would not provide his sensitive data if he was not convinced that these are secure, also not having the opportunity to verify the characteristics of the products, rather than the services offered, cannot be sure of their quality.

There are further aspects to consider in the *digital marketing mix,* to these "4Cs" can be added other "3Cs", such as:

- *Convenience* (ease of purchase and comparability of prices and the offer of different brands),
- *Costs* (monetary costs to the customer related to the product, and non-monetary such as the availability of information) and
- *Co-Creation* (the possibility for the company to adapt the offer to the individual customer through a joint creation process with the customer, listening to their needs and offering the customer the opportunity to customize the product).

Figure 2
Classification of communication channels
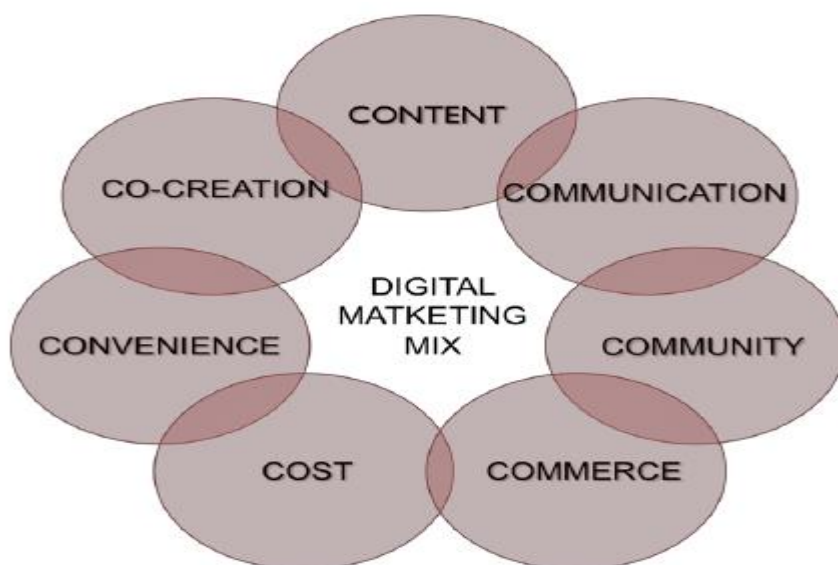
Online communication channels that the company can adopt can be divided into three distinct categories according to their nature and the ways in which they are managed:

- Paid Media – Paid Media
- Owned Media – Owned Media
- Earned Media – Earned Media

Paid Media - Media or paid advertising, are forms of paid advertising that the company implements to ensure the advertising of its products or services in certain contexts. This category includes, to name a few, *paid search marketing* (e.g. *pay-per click PPC)*, *display ad, retargeting, social media* advertising and *sponsorship*. These types of promotional messages are usually marked as "*paid ad* " or "*sponsored content*"

in such a way as to make clear to the user, according to the guidelines dictated by *the Federal Trade Commission,* their nature as paid advertisements presented according to an order or criteria default and not resulting from search engine classification.

The resulting advantage is obvious, thanks to this type of advertising a point of contact with the customer is created, the visibility of the brand increases, increasing *the brand awareness* with immediate impact and usually generate more traffic faster. In the case of *pay per click* advertising, for example, the sponsored page is guaranteed a greater visibility that would otherwise only be provided after some time if we use *SEO strategy* [9]. In the specific case of *PPC,* unlike *display ad,* there is a better chance to convert since the message is addressed to a qualified segment of users who, searching for a specific term in the search engine (e.g. "Marketing"), are classified as interested; so, the notification will be presented only to certain users and in a certain area.

Figure 6

Paid Advertising
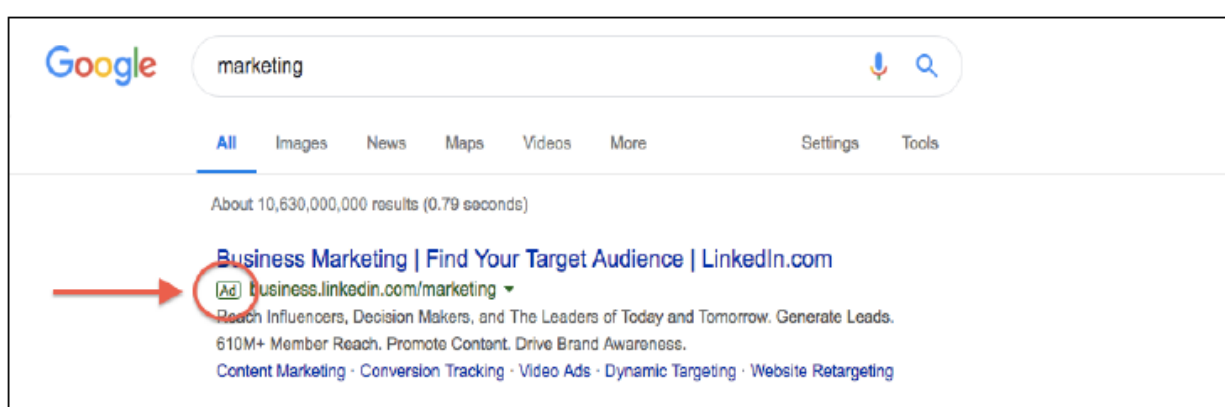
Owned Media – Owned media is media owned by the brand and completely controlled by it. The most common example of *owned media* is the company's website, *but mobile apps, branded social media accounts, brand sites,* brand *blogs* and other additions to the main *website* can be included in this category.

These *media* allow the creation of a relationship with the consumer, being the points of contact between the two parties, they also offer the company the possibility of having a platform in which they can tell their story, expose their values, and offer to customers information they may need, creating engagement and bringing the customer closer to the brand.

Through *owned media* companies can increase their visibility and income since these *media* are means of communication (for example *social media pages) and/or sales (online* sales pages).

Earned Media – Earned media are the channels that the company manages to "earn" when the customers themselves, creating *buzz* around the brand, talking about it and sharing their experiences, become promoters of the brand itself. Typical channels belonging to this category are *online comments, fan pages, social media* shares and "likes" received or other recommendations from users and third parties. *Earned Media* is the result of an optimal integration between *paid* and *owned media* and can be considered a tool to generate traffic, *engagement* and involvement around the brand. If used properly, they allow direct interactions with consumers and strengthen business-customer relationships.

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[9]SEO – Search Engine Optimization: A set of strategies aimed at improving the visibility of a website by improving its position in search engine rankings in unpaid results

Online communication techniques

Companies have various tools available to communicate their value proposition to consumers, and when these tools include the use of digital platforms, they are defined as "online communication techniques".

This category includes the following:

- *Email Marketing* – Email marketing is a form of direct marketing that targets a specific target audience. It is the promotion of one's products or services by sending messages, news, promotions to one's customers and to those who have left their specifications.

- *Search Marketing* – Search marketing is the process by which a company gains visibility and traffic through search engines, both through paid and unpaid means. It is the result of SEO[10] and SEA[11].

- *Internet Public Relations (Internet PR)* – Internet PR is defined as the set of company communications in the Web industry and the use of digital technologies to communicate effectively with stakeholders.

  It is a very broad set of communication techniques that primarily result in an increase in brand awareness, customer awareness of the company's online profile, products and services, contributing positively to the online community. Through online PR, the company can get a better online reputation by monitoring, evaluating, responding to online conversations about its offering, while also being able to interact with customers.

- *Online Partnerships* – Establishing long-term complementary agreements between companies, often referred to as co-marketing, allows for visibility, LEADS generation (contacts) and sales targets to be achieved more quickly.

- *Display Advertising* – Display advertising is part of paid communication channels, it is a form of advertising that consists of publishing, for a fee, advertising on websites, applications or other digital platforms of third parties. The advertisement is displayed to the user in the form of a banner and may include text, images, video and audio messages. The process of buying advertising space and publishing ads is called programmatic advertising, the negotiation takes place automatically through Real Time Bidding, a series of algorithms that optimize transactions and publish ads in real time. RTB allows a company's message to reach specific consumer targets depending on demographic, psychographic and behavioral factors.

- *Social Media Marketing* – Social media marketing is defined by the Digital Marketing Institute as the process of generating traffic and awareness through marketing activities on social media platforms. The growing popularity of social media and its wide spread make communication on social networks a fundamental element component of all marketing strategies implemented by the company.

Forms of online presence

Website - The first contact between the customer and the company, if there is no possibility of a direct meeting with the product or service of the same, is by consulting the website of the company. As a first function, then, the Web site facilitates the meeting between producers and consumers, providing information and being a true digital communication channel.

There are many forms of Website, classified into:

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[10] Search Engine Optimization - activities that allow a Web page to be visible among the first unpaid results of a search engine for certain keywords

[11] Search Engine Advertising - paid sponsored content, also known as pay per click

- *Transactional e-commerce sites* – sites primarily aimed at marketing products or services, which also provide information on the company's offering in case the customer wants to buy offline. Some of the most famous sites that belong to this category are Amazon.com or Ebay.com.

- *Building service-oriented relationships Website* – sites oriented toward building positive relationships with customers; they provide information to increase brand awareness and encourage purchase. Typically, no products or services are marketed on this type of platform, so the main function of these sites is informational and relational.

- *Brand building sites* – sites that aim to create and maintain brand awareness through the development of meaningful online experiences. They are places in which goods are not usually traded, they are also usually created for "fast moving consumer goods", relatively cheap goods that are sold quickly such as food, drinks, and other short-lived goods. Websites of brands such as Coca-Cola, Pepsi and Snickers belong to this category.

- *Portal or Media Site* – pages that provide the user with information on a wide range of topics, such information can be accessed directly on the website or by clicking on the *link* present on the page. They offer businesses multiple opportunities to generate profits, including collecting data on user habits, advertising space, and *commission-based sales.* Some examples of *portal sites* are search engines such as Google.com or Yahoo.com.

- *Social Network or Community Site* – Sites that allow users to interact with each other (C2C marketing). They can be useful for the company as *earned media* as they can constitute a channel through which users exchange opinions and evaluate the offer of companies.

- *Social media – For a business, social media* presence is an essential element in gaining visibility. The term "*social media*" refers to communication platforms created and supported through communication between users through digital means. They can be considered as one of the main representations of globalization and the merging of borders between cultures and countries (Global Digital Report, 2019).

The ability to connect and communicate in real time with other users, to feel part of a group and the ability to share one's experiences has certainly favored the spread of social media. In February 2021 (Digital Report, 2021), there were reported 3.48 billion users registered on *social platforms,* corresponding on a global scale to 45% of the population, with an increase of 9% compared to the previous year. However, the distribution of the number of users is not homogeneous, the peaks are recorded in North America, South America, Northern Europe and East Asia, while the central areas of Africa and Asia have a *penetration rate* significantly lower than the average. Through the presence and promotional activity in *social media,* brands have, especially in relation to the most developed countries, the opportunity to communicate on a large scale, thus reaching an ever-increasing number of consumers. This type of platform can create connections with customers by engaging them, increase the number of *leads,* increase *brand awareness* and, as a final result, increase sales. The presence on "*social*", moreover, constitutes for brands the opportunity to create *buzz* around it and to benefit from *earned media.*

Discussion/Conclussion

As we see in this article digital marketing is very important in modern economy. Digital marketing as we have underline above and conclude in our article involves many of the same principles as traditional marketing and is often considered an additional way for companies to approach consumers and understand their behavior. Digital marketing has become hugely popular in such a short period, and for a good reason.

Today's customers and clients spend an increasing amount of time online, and they expect their favorite companies to be online, too.

In recent years, digital marketing has exploded onto the marketing scene, and its effects have been anything but small. Traditional marketers and old-school companies have struggled to keep up with the ever-changing world of internet marketing while customers, leads, and clients have become more adept in this new landscape. But companies can't afford to ignore changes in the way people look to buy, and that is why they have stepped into the modern way of marketing.

This paper has explored some aspects of digital marketing, examining the advantages derived from the use of technology in the processes of communication and promotion to the public and knowing its limits. Digital marketing is a type of marketing that is widely used to promote products or services through digital technology in order to attract and retain consumers.

We conclude that Marketing encompasses a wide range of techniques and media that companies can use to promote their products and services to potential consumers and improve their market share. Digital marketing goes beyond Internet marketing, including channels that do not require the use of the Internet. Marketing managers need to evaluate the role of the Internet in their marketing strategy. The Internet has changed the way the marketing strategy is formulated and executed in a number of ways. As studied in the second part of the work chapter, the saturation of the advertising environment and the creation of promotional messages less and less relevant, has caused a process of distancing consumers from businesses, which has caused a growing mistrust and, in in some cases, a feeling of almost "disgust" of the client towards traditional advertising.

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NATIVE DIGITAL ADVERTISING, A PROPER TOOL FOR DIGITAL MARKETING EFFECTIVENESS. NETFLIX BRAND

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Abstract. Native advertising has grown in popularity with both publishers and advertisers, because native ads blend seamlessly with the surrounding content. Digital advertising is a key marketing tool for reaching and engaging target audiences. But as people become more sophisticated in how they discover and interact with content, native advertising provides brands with a new way to get their message out. Native advertising is paid media designed to match the content of a media source. An example of mobile native advertising would be paid video content on the Youtube app. This media is designed to match the visual design and function of natural content, appearing in your feed of recommended videos. Communication is one of the fundamental elements for building human relationships both between individuals and, in the consumer society, between consumers and businesses. The introduction of digitalization in the daily life of individuals has allowed companies to communicate between themselves and consumers, proposing the values and characteristics of products or services, on a large scale, in an increasingly efficient way. This also becomes a valuable tool by reducing the necessary costs needed to physically reach each customer, as well as increasing the speed of message propagation (Campbell & Evans 2018; Ad, 2014). We have use a analytical approach based on statistical data with focus of digitalization of information on marketing process. In this article, we'll explore the world of native advertising, its benefits and challenges.

Keywords: Digital Marketing, Digital Advertising, Native Advertising, Social Media, Communication Channels

Introduction

The digital transformation has a considerable influence on the individual phases. International knowledge spillovers shorten development times, as new technologies disseminate more rapidly and international exchange increases. Digital transformation also has a major impact on the international competitiveness of firms. The impact of digitalization on informative and strategic marketing activities. In recent years, digital technologies have continuously increased the complexity of customers' tastes and preferences; they have also improved businesses' capacity to analyse customers, competitors and the external and internal environments (Rosario & Dias, 2022).

Today, the collection of data on customers and competitors, as well as its accurate and timely analysis (key informative marketing activities), and market segmentation and brand positioning (key strategic marketing activities) are facilitated by the availability of huge amounts of data and new digital technologies,

such as big data analytics and customer profiling techniques (Sundararajan et al., 2022).

Theoretical Background

Nowadays, we experience the transformative impacts of mobile, big data, social media, cloud, analytics and other technologies at faster pace (Kaur et al., 2020a, 2020b). From marketing to digital marketing Kotler and Keller (2016) define marketing as the process of identifying and satisfying consumers' human and social needs while maintaining the company's profitability, in the same time Marketing can also be defined as "the art and science of choosing target markets and getting, keeping, and growing customers through creating, delivering, and communicating superior customer value" (Kotler & Keller, 2016). Marketers create, communicate, deliver and exchange offerings that provide customers, partners and society with value based on their specific needs (Rajagopal, 2020). To answer the research questions above, a survey was conducted on a sample of Italian manufacturing companies. A questionnaire was designed based on the key marketing activities and their transformation in the digital revolution as identified in the literature. To improve the questions, a pilot test was carried out on three entrepreneurs; the questionnaire was also reviewed by academics.

The company's activity was initially focused on the sale and rental of DVDs, only after a year of operation, however, the founders decided to focus only on the rental business, abandoning the sales service. In 1998, when the company's online platform was officially launched, Netflix had only thirty employees and offered only 925 movie titles, but it was very successful for its unique value proposition in the market. In fact, the company gave consumers the ability to consult an extensive catalog of movies online, watching trailers for each movie for free and renting them online, receiving them at home via the postal service at a cost of $ 4 each, plus a $2 shipping fee (Fundinguniverse, 2004). Due to lower costs compared to its main competitors [1]and thanks to its unprecedented value proposition, Netflix gained a significant competitive advantage. This advantage became more apparent in 1999, when the first registration plan on the platform was introduced. By paying a monthly fee, the customer was free to rent an unlimited number of DVDs over the Internet (Fundinguniverse, 2004). Another element of differentiation compared to competitors was the possibility of keeping any DVD for an unlimited time, and therefore the absence of penalties for prolonged keeping of films. Under the selected rate plan, the user could only hold a limited number of DVDs at a time, thus having an incentive to return the rented movies despite the fact that no penalties applied. Notable among the features that allowed Netflix to differentiate itself from its competitors and gain audience attention is the company's "Movie Title or Genre Recommender System." In the early 2000s Cinemath, Netflix's recommendation engine, was actually a great innovation. Based on the preferences expressed at the time of registration, the DVDs already watched, and the ratings assigned by the customer for each movie, the company's recommendation system offered the customer a series of defined categories of movies to rent. This feature particularly interested many independent Hollywood producers, as they saw in Netflix a potential marketing channel for those types of films that were difficult to promote through mass media, but which, through Netflix's recommendation engine , could have been taken into consideration by consumers (O'Brien, 2002).To improve the recommendation system, in 2006, Netflix offered a prize of one million dollars to those who managed to increase the accuracy of the recommendation engine by an amount equal to 10%

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[1]To rent a single movie, to be held for a maximum of three days, Netflix's main competitor, Blockbuster, offered a cost of $5. The advantage of Netflix is obvious: the consumer was not forced to leave the house to rent and return the film, he could also rent more than one title at the same time, amortizing the costs of transport and, as we shall see, he is not required to pay arrears for not returning the DVD on time.

[2]. This initiative is called the "Netflix Prize" and, although the idea of the winning group was not implemented in practice, it helped to draw attention to the brand, generating significant visibility (Jackson, 2017).

In 2007, the company decided to evolve its value proposition by introducing an online streaming service called "Watch Instantly". the ability to stream over 17,000 movies for just $8 per month. For American consumers, the ability to watch unlimited movies directly on their computer was revolutionary (Marazzo, 2016). In just one year, Watch Instantly allowed the entertainment company to get almost two million subscribers and about $15.3 million in revenue. Thanks to the spread of the Internet in the homes of American consumers and thanks to the subsequent introduction of technological innovations [3], the service has spread rapidly and the broadcasting function of the platform has become the main business of the company, although there still continues to be a section entirely dedicated to the delivery of DVDs in customers' homes. In the years after 2007, Netflix recorded further growth, when in 2010 the company expanded the streaming service to the Canadian territory, then to Latin American countries, reaching in 2019 almost all countries of the world. As it presented in the figure 1, the company has experienced progressive growth in the number of subscribers, also thanks to global expansion.

Figure 1

Netflix streaming subscribers globally from 2011 to Q1 2019 (in millions)
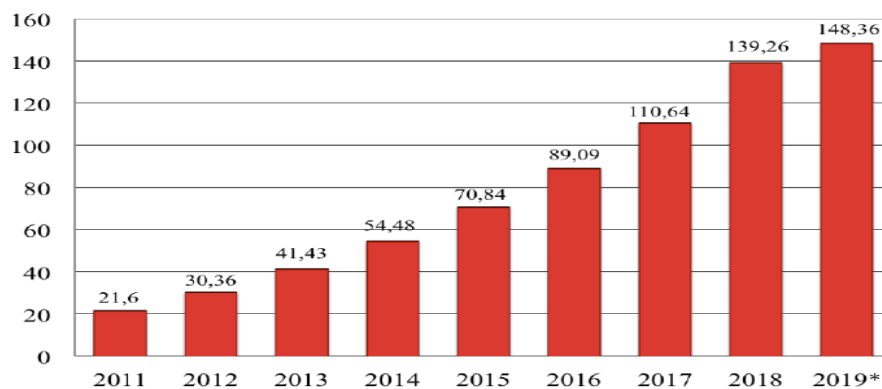
The turning point in the evolution of the brand was the production of Netflix original content. In 2013, the American company launched the famous series "House of Cards" and "Orange is the New Black".

The two series, receiving several nominations for the Emmy Awards, have allowed the broadcasting giant to participate for the first time in one of the most important television awards at the international level and, in just one year from its release, to double own profits. The company has also significantly revolutionized the distribution model for TV on demand, where the uniqueness of Netflix original series actually consists in the fact that often the entire series is released at once, and not through the release of a single episode per week as is often the case with traditional competitors of the media in the cases of other series. Some experts argue that this particular characteristic has caused the so-called "*binge-watching*"[4] phenomenon. Netflix originals have been very successful, and currently most of the titles offered on this platform are now original productions, and it is rare to find movie titles that are produced outside of Netflix.

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[2]Compared to the level of accuracy of the recommendation system at the time the competition started
[3] such as Smart TV and smart phones
[4] Watching a large number of episodes of a television series in rapid succession

Marketing Analysis: Marketing Mix of the Company (in This Case 4 P)

The company is currently the leader in the streaming market, in fact it holds 26.58% of the traffic generated globally for video playback and 15% of the Internet traffic worldwide (Bartholomae, 2018). To achieve its tremendous success, the company has often changed its marketing mix over the years, adapting it to the times.

Product

Since 1998 the company Netflix has been able to identify itself as an excellent seller. Thanks to its unique value proposition, Netflix has been able to far surpass its competitors, offering an unprecedented service. First through delivery, in its "iconic" red envelopes, of DVDs directly to consumers' homes and then through the Internet streaming service (Netflix, 2018).

In the early 2000s, the DVD shipping service was something of a revolution, no other entertainment distribution chain had ever adopted a similar strategy. Customers were immediately enthusiastic about the service, to the point that they described themselves as excited when they opened their mailbox, hoping to find the "Famous" envelope with the company's logo printed on it. The wrap itself has been a source of popularity for Netflix, as well as an effective marketing tool.

First in white, then in yellow and finally in the characteristic red, it gave the company a way of relating to the consumer, managing to create a connection that went beyond the commercial relationship and reached the emotional level of its members.

Evidence of this connection is shown in a video published in 2018 by the section related to the company's DVD distribution service (DVD Netflix) on its section's Facebook page. Thus, one employee tells, for example, how one day she found on her desk a package containing dozens and dozens of Netflix-branded envelopes collected over the years by a loyal customer (DVD Netflix, 2018). The woman had noted in the respective envelopes the plot of each film and all the ideas that had been offered to her, becoming part of her life. The brand decided to publish the story on its blog to share the emotional connection its customers show to the company, cleverly managing to generate a lot of shares and therefore a significant buzz around the brand.

Further evidence of the connection customers have demonstrated with the signature red wrapper was the large amount of Netflix envelopes users decorated with illustrations, related to the film and not, sent back to the company to demonstrate consumers' willingness to communicate with the brand. Inspired by the idea, the company began to produce wraps decorated with different illustrations according to the time of year.

Figure 2

User illustrations on DVD wrappers distributed by the company

In 2016, to stimulate its customers' creativity and create engagement, DVD Netflix (figure 2) launched its first art contest: users who submitted the best Halloween-inspired wrapper design would see their work printed on all bags distributed during the months of September and October[5]. The initiative created a great deal of engagement among users, and thousands of proposals were actually submitted, with some of the winning designs featuring as promised on the company's bags and envelopes. However, the company's core business remains online streaming, the company currently offers a library of more than 6,000 movies and around 2,500 TV series. The interest shown by users for the latter has led the brand to increase the offer of series by reducing the number of films, compared to 2010. In fact, to meet the preferences of its users, Netflix tripled the number of series available and reduced with 30% the number of films on the platform.

After the release of the first Netflix original series, given the success achieved, the company increased the production of unpublished works, which today form an integral part of the offer. In fact, the company offers over a thousand original productions, which make up about 33% of the total offer of titles offered on the platform. The impact that these original series have on the brand is remarkable, where a study conducted in 2016 by Cowen and Company revealed that around 58% of Netflix users signed up to the platform precisely to access unreleased content. before (SEITZ, 2016). Depending on the price plan, the company offers different streaming services, offering for the standard plan the possibility of viewing most titles in high definition, with a resolution of at least 720p.

In late 2016, the company further improved its offering, launching the "download" option that allows users to download digital movies and TV series to their devices to then watch them offline, without internet. In this way, Netflix offers its users the opportunity to watch some of the proposed content without the need for an Internet connection and without any increase in the costs of the tariff plan, significantly improving the experience of its customers. The company has also created a special "available for download" section to make it easier for the user to identify titles to download.

Promotion

Promotion is one of the key components in a company's marketing mix. Over the years, Netflix has adopted various advertising strategies, starting in 1999 with flyers. The flyers distributed by the company,

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[5] The success of the initiative was such that the company revived other contests, around the end of 2018 to celebrate twenty years since the launch of the delivery service. Initiatives like this show how Netflix has managed to take advantage of product packaging, turning it into an integral part of the offer

which they reproduced in the form of a movie ticket, and the company offered a free trial month to anyone who signed up for the Netflix service, was a super find. The company then evolved by moving into different advertising strategies, such as TV commercials, traditional billboards or more innovative digital marketing campaigns. The company currently adopts various marketing strategies both online and offline. Without losing respect for its competitors, direct or even indirect, the broadcasting giant invests a lot of money in the marketing sector, where, for example, in 2018 alone, it spent two billion dollars (Lynch, 2018). A portion of the budget was allocated to offline strategies, such as the purchase of an exhibition space on the billboards of the Sunset Strip, one of the busiest streets in the city of Hollywood. The decision to advertise their television series immediately on one of the most famous streets of the world capital of cinema represents for Netflix an important symbolic move, defined as an investment in prestige marketing and showing a marked aggressiveness of the brand.

Figure 3

An advertisement for the final season of Netflix's House of Cards is featured on a Netflix-owned billboard along the Sunset Strip in West Hollywood.

Tom Nunan, former president of NBC and UPN studios, has pointed out that many don't realize the extent to which these billboards are actually aimed at artists, rather than end consumers. According to him, the goal of the broadcasting giant is actually to create a corporate self-image where artistic creation is not only appreciated, but also prominently promoted, and the billboards along the Sunset Strip (as it presented in the figure 3), which are the most tangible part of this strategy (NG, 2018).

Particularly prominent among the company's offline strategies are the guerrilla[6] marketing campaigns that the American company has implemented. A great example was the 2017 ad campaign to promote the second season of the Netflix original series Stranger Things.

The company decided to take the strange events of Hawkins, the Indiana town where the series takes place, overseas, to Italy, to the city of Milan (as it presented in the figure 4). Elements reminiscent of the series were scattered around the city, such as old, abandoned vans and broken phone booths, where everything was covered in traces of the Demogorgon, the series' terrifying monster. Next to each "clue", there was a Netflix poster inviting passers-by to call a phone number, where the answer was the voice of

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[6]Guerrilla marketing is a promotion strategy that uses unconventional and often low-cost means to create buzz around the brand and thus maximize the results achievable from the campaign.

Dustin, one of the series' most beloved characters, who gave the interlocutors clues to finding the fearsome Demogorgon (Sandor, 2018).

The initiative has definitely surprised the city's residents and managed to create engagement with consumers. The company was able to organize a very successful communication campaign without ever leaving the spirit of the series, managing to involve an entire city and increase interest and anticipation for the release of the series.

Figure 4

Some of the places "haunted" by "Sottosopra" in Milan
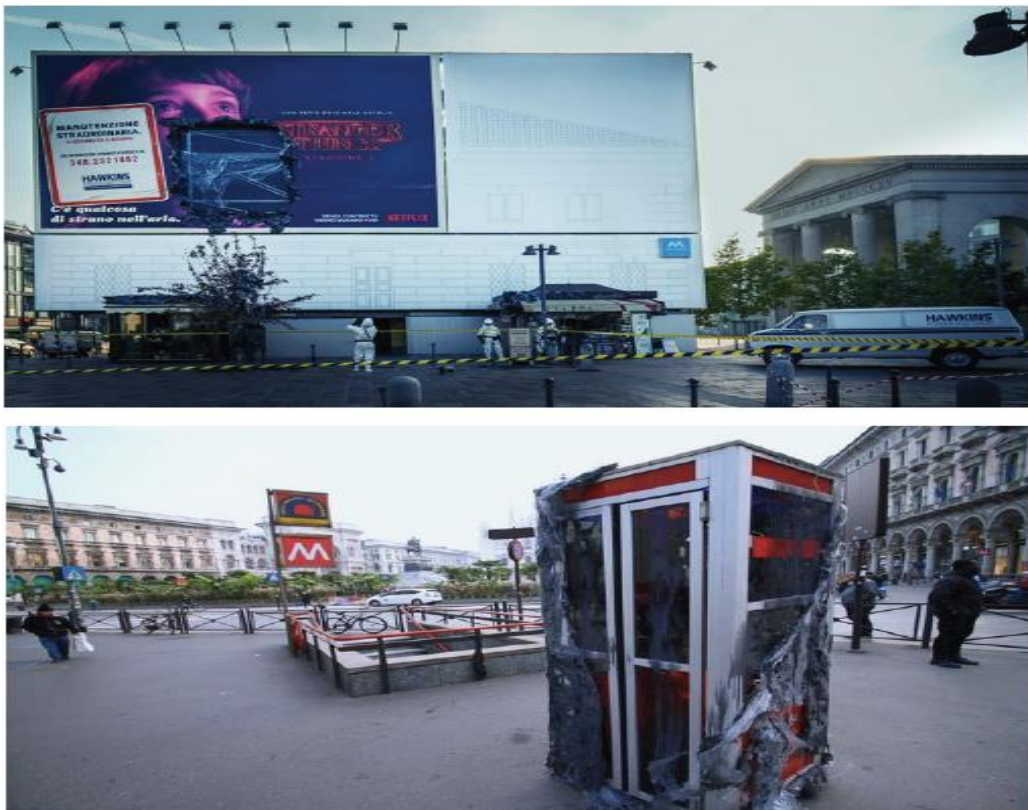
Price

Netflix follows a value-based pricing strategy, where according to the value offered to the customer, the company applies a different price. Three plans are offered to meet the needs of different types of users. The basic plan has a lower price, in parallel with the increase in price, the quality of service and available features also increases. The value-based pricing system gives the brand an edge over its competitors, the ability to choose a different tariff plan according to one's needs differentiates Netflix's offering from that of many other streaming companies, which often apply a single price in different market segments.

Distribution/ Placement/ Place

The American company operates with a multi-channel distribution system. The DVD shipping section works through the postal service of one of the 50 countries where the service is offered. On the other hand, the streaming service is supported by various devices, both mobile and non-mobile. Some of the devices that allow playback of Netflix content are smartphones and tablets, computers, smart TVs, game consoles, and other Internet-connected devices. The company also launched its first mobile app in 2010 for the Apple iOS operating system and in 2011 for Android so users can take Netflix with them anytime.

Netflix's Digital Marketing Mix

As analyzed in the first chapter of the paper, a company's digital marketing mix integrates the traditional marketing mix and consists of the "4-Cs", which stand for Content, Community, Communication and Commerce[7].

In the case of Netflix, they are:

Content

The content provided by the company is what first reaches the customer, it is the vehicle through which the company's value proposition is transmitted to the end consumer. For the customer to remain loyal to the brand, the proposed content must be relevant to him. Through big data analysis tools and through the collection of information on customers' consumption habits, companies can offer a better value proposition and therefore more meaningful content.

In the case of Netflix this is possible thanks to its analytical system, which allows the company to obtain detailed information about its users to help the brand make decisions in accordance with the expectations and needs of its customers.

Being a brand that primarily operates online, Netflix has access to millions of data provided by users browsing the platform. The data that the brand manages to collect is analyzed to improve its offer, for example the company can know how many users access the service every day and for how long, how many watch a certain series, how many complete it, at which point it is possible to abandon by users or how long it takes before, after closing, the application is reopened, and so on (Dougherty, 2019). Therefore, the company may wonder why a large percentage of users, for example, interrupt a series in the middle, or may decide to cancel a content that does not generate enough interest, may conversely decide to re-propose a content that had been canceled by the platform, but often requested by users. Thus, by analyzing the data provided by users through the use of the service, it is possible for the company to adapt its value proposition, and therefore its content, to the preferences of its customers.

Another tool that allows the American broadcasting company to offer the customer the product that is closest to their preferences is the company's aforementioned recommendation engine.

When registering on the Netflix platform, it asks the user to provide information about the movie genres he prefers and, after watching each piece of content, the consumer can rate the movie, documentary or TV series he just watched. The company's recommendation algorithm allows the brand to recommend content similar to what was just viewed if the rating was positive or different content otherwise in case the view was not rated. The company's system is very effective, 75% of user activity is actually based on suggestions provided by the algorithm. The "picked for you" title content list provided by the company allows consumers to find titles that match one's preferences, this feature takes on special importance as it keeps the customer loyal. This is because if the latter, in fact, had no idea what to watch, it would probably be canceled from the platform, causing damage to the company.

Community

Creating a brand community is a tool for the brand to create engagement and bring customers closer to the brand. Thus, the American broadcasting company has managed to create numerous online communities in which its users can comment on TV series, share opinions and communicate with other passionate

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[7]Content, Community, Communication, Commerce

filmmakers. The result of creating online communities is often an increase in brand awareness of users' interest in the company. Some examples of online communities created by the company are the specific "community" section on the Netflix Facebook page or the Twitter account dedicated entirely to the series "Narcos", where users can interact with other fans of the series, exchanging comments of others with each and different opinions. Communities are often created spontaneously by users, as was the case with the online community dedicated to the Netflix original series Sense8 (as we see in the figure 5). Here the users came together to ask the streaming giant to produce a third season of the series, which otherwise if not done then will be left without a conclusion. The community thus launched a real campaign, which has spread on the most important social networks, for Netflix to decide to give a decent end to the beloved series.

Below are some of the ideas proposed on the dedicated page, of particular importance is the last of the three images displayed, in which the reader is expressly asked to donate Netflix gift cards for Christmas or for their birthday, in order to subscribers are added to the platform, and the audience of the program receives the third final season.

Figure 5

Campaigns proposed by fans of the series "Sense8" to get a third TV

season

The community has succeeded in its goal, as in 2017 Netflix announced the production of a final third season for the series. Such examples show how strong is the connection that the company manages to create with its users and how the introduction of digital and advertising there, has allowed a close and direct connection between consumers and companies (Krishna, 2017).

Communication

Corporate communication is one of the main means through which the brand transmits its value proposition to the outside world. Netflix skillfully manages to communicate its offer, combining online and offline strategies.Netflix's online communication takes place on several levels, starting from the same platform with which the user interfaces. It can be considered as a means of communication, even the layout of the site and its functions are redesigned periodically to make the user's browsing and search experience an optimal experience, in order to communicate the brand's attention to the needs of its customers.

The company also has an effective e-mail marketing system, and communicates with its younger users through its presence on major social networks, through which it shares programmatic news or content that entertains and delights its followers.

<center>*Trade / Commerce*</center>

Creating a connection with your customers is essential to turn efforts in marketing campaigns and digital communication into profits. By offering the consumer a one-month free trial, Netflix manages to attract the attention of potential users, engage consumers and often convert a casual customer into a loyal customer. Offering a trial of the service allows Netflix to increase its subscribers, where according to some research, in fact, about a third of consumers who try the service convert to subscribers at the end of the free trial (Solsman, 2017).

<center>*Company digital advertising*</center>

Netflix's success stems from a number of factors, certainly one of them is the company's ability to do marketing through the use of a number of digital advertising strategies, both "traditional" and innovative advertising. As previously analyzed, the company's first means of communication is its Web site. According to some studies, the attention span for an average individual is only 8 seconds, after which the individual changes the activity. In the specific case of web browsing, if the content the user is viewing is not interesting, the website will most likely be closed. To prevent this from happening, Netflix has decided to communicate quickly, effectively and efficiently with the reader, offering only three sentences on the main page of the site. The choice of Netflix is intended to immediately attract the attention of the reader to simplify his relationship with the company.

Figure 6

Homepage of Netflix.catchy for eys

On the company's "Investor" page, Netflix pitches itself as a "*relief from the complexity and frustration that characterizes most MVPD relationships with their customers,*" and states that it strives to make the customer relationship "*extremely simple"* (as we see in the figure 6). A great example of how the company manages to entertain consumers through a simple email is the email marketing campaign it undertook to promote the Punisher series.

The email sent by the company to promote the series is consistent with content that sponsors and intrigues the consumer: the email, with the subject "Suspicious activity, Marvel on Netflix" includes a GIF (an animated image) that tells customers about a behavior of strangeness of the recommendation algorithm. Netflix's presence in the main social networks is very strong: the company's Facebook account has 87 million "likes", while the official Instagram account has almost 33 million followers 178, followed by the Twitter account with about 6 million followers. The company often shares content about available or upcoming TV series and movies, often posting the same post on different platforms in order to maintain some consistency across different social networks. The company's social media activity is not limited to publishing strictly "advertising" content, but often the company publishes content with the simple purpose of entertaining the customer, making fun of some movies or series and adding witty descriptions to their posts. The company's

goal is to emerge as a brand close to the audience that not only entertains customers through its streaming offering, but also through its pointed irony. Beyond the activity of publishing posts, the company interacts with customers in a direct way on social media, responding to almost every comment left by visitors, putting itself on the same level with its users and generating even more engagement.

Influencer Marketing, closely related to social media marketing, plays an important role in Netflix's strategy, brand promotion through social media celebrities generates a lot of brand awareness, especially among the company's youth audience. Related to social media activity is "viral marketing," an advertising strategy that uses social media to promote a product or service. The name of the strategy derives mainly from the rapid distribution of the campaign through the digital word of mouth. For Netflix, an exemplary case of this type of campaign was the distribution throughout the Web of a series of ironic images inspired by the movie "Bird Box", a horror film produced by the American broadcasting company.

Netflix is often able to combine online and offline strategies, for the promotion of the fourth season of the series "Black Mirror", where for example, the company has decided to integrate social media marketing to guerrilla marketing by making the city of Milan an even sometimes the protagonist of his campaigns. The series focuses on the relationship between man and technology and shows how, in the dystopian future in which it is set, it is often technology that takes the lead. Netflix, to promote the series, decided to transform a place in Milan into the "Black Future Social Club". Inspired by one of the episodes of the series, the company established rules to have access to that place and to be entitled to a drink. There was a fee to enter, with a minimum threshold of 1,000 Instagram followers and, to stay inside the Black Future Social Club and get a drink, it was a condition of posting a photo on Instagram with the hashtag "BFSC " and get a minimum of 50 "likes". The event gave great visibility to the business which, for each photo posted by the event participants, received even more publicity.

Conclussion

In fact, Netflix defines itself as "an authoritative online source for movie recommendations and selection based on personal preferences" (Netflix, 2000). Native Advertising is most often found on social media platforms. There are a numerous examples of native advertising. Also as we see is not limited to textual content in social media posts. Native Advertising is a Content Marketing Strategy where you pay to publish content that appears to readers as if it is one organic origin, thus increasing user engagement. In this article, we'll go over the basics of native marketing, how it differs from Content Marketing and how you can develop a successful Native Advertising strategy. Netflix was founded in 1997, offering online movie rentals with less than 1000 titles. Soon, it switched to the subscriber-based model, and in 2000 Netflix introduced a personalized movie recommendation system. By 2005 Netflix had over 4.2 million subscribers and started work on a video recommendation algorithm. And finally, in 2007, Netflix began its streaming services and original content creation. By 2016 Netflix had over 50 million subscribers; the story continues today as it is a worldwide presence in the video-on-demand industry. Netflix has been a transformational force in the quickly developing new media, altering how entertainment is delivered and consumed.

This essay examines Netflix's brand positioning and social media marketing strategies within the new media environment. The brand identity of Netflix, which is distinguished by its innovation, accessibility, and diversity, is what makes it successful. Netflix has established itself as a leading streaming service platform by providing binge-watching opportunities, ease, and a wide variety of material. In addition, its social media strategy promotes participation, community, and personalized recommendations, boosting the perception of its brand. However, difficulties continue. It can be challenging to balance user engagement and

advertisement, deal openly with critical comments, and keep users interested when there are gaps in content distribution. Transparent data practices must be followed in the face of data privacy concerns. This essay offers suggestions for practical action. Creating original content and adjusting to algorithm changes are key to maintaining interest. Clear disclosure and user consent for data use are necessary to build trust. Therefore, Native Digital advertising, after the analysis carried out during the work, and the research done on the NETFLIX case, it is concluded that it is an important tool to reach the consumer, without making him feel subjected to "traditional advertising pressure"!

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DRUŽBENA OMREŽJA SPREMINJAJO NAKUPNE ODLOČITVE: PRIMER KOZMETIKA | SOCIAL NETWORKS ARE CHANGING PURCHASE DECISIONS: THE CASE OF COSMETICS

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Povzetek. Družbena omrežja predstavljajo ključen kanal za interakcijo med blagovnimi znamkami in potrošniki, kjer se oblikujejo preferenčne nakupne odločitve. Digitalno oglaševanje na teh platformah omogoča natančno ciljanje potrošnikov, kar lahko močno vpliva na njihovo nakupno vedenje. V raziskavi bomo zajeli celoten nakupni proces, od prepoznavanja potrebe do končne odločitve za nakup kozmetičnega izdelka. Analizirali bomo vpliv različnih dejavnikov oglaševanja na družbenih omrežjih, pri čemer se osredotočamo na tiste, ki imajo največji vpliv na potrošniške odločitve. Preverili bomo, ali potrošniki aktivno spremljajo oglase in promocije kozmetičnih znamk in na katerih družbenih omrežjih najpogosteje iščejo te informacije ter katera vrsta oglaševanja je najučinkovitejša in najbolj ustrezna za spodbujanje nakupnih odločitev. Cilj je podati konkretne smernice in priporočila za marketinške strategije v kozmetični industriji ter prispevati k razumevanju vpliva družbenih medijev na potrošniške odločitve.

Ključne besede: družbena omrežja, nakupni proces, kozmetična industrija, strategij

Abstract. Social networks represent a key channel for interaction between brands and consumers, where preferential purchase decisions are formed. Digital advertising on these platforms allows precise targeting of consumers, which can have a profound effect on their purchasing behavior. In the research, we will cover the entire purchase process, from identifying the need to the final decision to purchase a cosmetic product. We will analyze the impact of various factors of social media advertising, focusing on those that have the greatest influence on consumer decisions. We will check whether consumers actively follow advertisements and promotions of cosmetic brands and on which social networks they most often look for this information, as well as which type of advertising is the most effective and most appropriate to stimulate purchase decisions. The aim is to provide concrete guidelines and recommendations for marketing strategies in the cosmetics industry and to contribute to the understanding of the influence of social media on consumer decisions.

Keywords: social networks, buying process, cosmetics industry, strategies

Uvod

Družbena omrežja so postala pomemben del marketinških strategij kozmetičnih podjetij, Instagram, Facebook in Twitter predstavljajo novo priložnost za moderne lepotne blagovne znamke, ki z dvosmerno komunikacijo dovoljujejo porabnikom komentiranje in deljenje vsebin s prijatelji. Z raziskavo (Global Web Index, 2019) so ugotovili, da so družbena omrežja pomembna za odkrivanje novih kozmetičnih znamk. Največ uporabnikov zazna blagovne znamke preko oglasov na družbenih omrežjih, sledijo priporočila in komentarji, objave blogerjev, objave na spletni strani določene blagovne znamke, ter objave zvezdnikov. Youtube postaja

vedno bolj popularen za objavljanje ocen kozmetičnih izdelkov, priporočil in trendov. Pri ženski populaciji je kar v 62 odstotkih najbolj gledana kategorija lepote in stila (Roberts, 2022).

Cilji raziskave so bili, ugotoviti, če porabnike oglaševanje na družbenih omrežjih spodbuja k nakupu kozmetičnega izdelka. Zanimalo nas je, kateri je najpomembnejši dejavnik oglaševanja preko družbenih omrežij, ki vpliva na nakupno odločitev porabnika, ob predpostavki, da porabniki spremljajo oglase in promocije kozmetičnih znamk na družbenih omrežjih. Zanimalo nas je tudi, katera družbena omrežja so glede kozmetičnih blagovnih znamk najbolj popularna in kaj je tisto, kar jih v očeh uporabnikov dela uspešne, ko gre za oglaševanje.

Blagovne znamke kupcem v svetu medijev, družbenih omrežij, poplave dražljajev…predstavljajo ključne elemente kakovosti, doslednosti in zaupanja, olajšajo nakup in obljubljene koristi, ki jih bodo pridobili z izdelki priznane blagovne znamke. Močna in uveljavljena blagovna znamka poleg funkcionalnih koristi zagotavlja potrošnikom tudi emocionalne koristi (Vukasovič, 2017). Ta koncept je lepo izražen v izjavi kozmetične hiše Revlon: "Proizvajamo kozmetiko, vendar prodajamo upanje" (Pompe, 2017).

Proizvodnjo kozmetičnih in lepotnih izdelkov nadzorujejo številne multinacionalne družbe - med njimi L'Oréal, Unilever, Procter & Gamble Co., The Estee Lauder Companies, Shiseido in Lancôme. Leta 2021 je bilo francosko kozmetično podjetje L'Oréal vodilni proizvajalec kozmetike na svetu, saj je tisto leto ustvarilo približno 35 milijard ameriških dolarjev prihodkov. Podjetje ima v lasti vodilno svetovno blagovno znamko za osebno nego L'Oréal Paris, ki je bila leta 2022 ocenjena na skoraj 48 milijard ameriških dolarjev (Statista, 2023).

V svetu nenehnih sprememb in inovacij je kozmetična industrija med tistimi, ki nenehno spreminja trende. Med inovacijami kozmetičnih izdelkov v zadnjih letih je mogoče zaslediti dva trenda: varčevanje s časom in dolgo obstojni izdelki. Izdelki, ki prihranijo čas, so odgovor na potrebe današnjih nenehno zaposlenih ljudi, ki želijo omejiti čas, ki ga porabijo za vsakodnevno lepotno rutino. Posledično je bilo narejenih veliko raziskav, ki so prispevale k temu, da so podjetja razvila izdelke, kot so hitro sušeči se laki za nohte ali večnamenski laki za nohte, gel za prhanje 3 v 1, sredstvo za umivanje obraza s peno za britje ali kombinirani izdelki za obraz, ki vključujejo elemente ličil, nege kože in zaščite pred soncem.

Dolgo obstojna kozmetika ima dobro razmerje med ceno in vrednostjo, saj jo je mogoče uporabljati pogosteje kot običajne kozmetične izdelke. Tako so dolgo obstojne šminke in laki za nohte ter 24-urne vlažilne kreme za obraz vedno bolj priljubljene pri uprabnikih kozmetike.

Na svetovnem trgu so vse bolj prepoznavni ekološki kozmetični izdelki – tisti naravni, ki so izdelani v skladu s filozofijo pravične trgovine. Razvili so se iz niše, ki jo je prej zavzemalo majhno število podjetij, zdaj pa zavzemajo pomemben in velik del ponudbe kozmetičnih izdelkov (Łopaciuk, 2013).

Vedno bolj popularni so tudi *''clean beauty''* kozmetični izdelki. To se nanaša na kozmetiko brez škodljivih kemikalij, kot sta propilparaben in butilparaben. Obdobje Covida je ta trend še okrepil, saj se je zaradi znatnega upada družbenih stikov poraba preusmerila s kozmetike na izdelke za nego kože in osebno nego. Še en vidik v zvezi s *''cleanbeauty''* izdelki je bil etični koncept, ki se nanaša na testiranje na živalih. Sčasoma se je zamisel *''cleanbeauty''* razširila tudi na trajnost v celotnem proizvodnem procesu.

Vedno večje zanimanje za netoksične izdelke ali *''cruelty free''* kozmetiko kaže, da bodo potrošniki iskali blagovne znamke, ki proizvajajo več izdelkov, skladnih z njihovimi vrednotami. Zato se pričakuje, da bodo v skladu s tem vedenjem potrošnikov *''clean beauty''* izdelki glavno gonilo v kozmetični industriji (Statista, 2023).

Eden izmed trendov je tudi trajnostna kozmetika. Proizvajalci ob predstavitvi novih kozmetičnih izdelkov vse pogosteje poudarjajo, da so bili ti proizvedeni na način, ki ni škodljiv za okolje, medtem ko je njihova učinkovitost ostala primerljiva s prejšnjimi različicami izdelkov.

Kozmetični izdelki se proizvajajo na podlagi vedno bolj naprednih raziskav, formul in tehnologij.

Visokotehnološke inovacije se pojavljajo v vseh kategorijah izdelkov in vseh cenovnih segmentih. V segmentu izdelkov za nego kože so vodilni primeri tega tehnološkega premika izdelki, ki temeljijo na genetskem testiranju, kar vključuje analizo genskih zaporedij, odgovornih za proces staranja, v segmentu dekorativne kozmetike pa je to razvoj izdelkov za rast trepalnic (Łopaciuk, 2013).

Razvoj svetovnega spleta in drugih digitalnih tehnologij je spremenil tudi trženje kozmetičnih izdelkov. Za podjetja digitalni mediji in nove tehnološke platforme dajejo priložnost za širitev na nove trge, ponujanje novih storitev, uporabo nove tehnike spletnega komuniciranja in enakopravnejše tekmovanje z večjimi in konkurenčnejšimi podjetji (Chaffey, 2019). Dvosmerna komunikacija igra ključno vlogo pri vzpostavljanju zaupanja in zvestobe med potencialnimi in obstoječimi porabniki (Vukasovič, 2017). Nakupni proces je z rastjo uporabe digitalnih medijev in interneta postal kompleksnejši, saj na porabnikove nakupne odločitve vplivajo razne spletne točke stika, npr. številni viri informacij, kot so spletna stran podjetja, rezultati iskanj, prisotnost in komunikacija na družbenih omrežjih, mnenja in komentarji strank. Vse te informacije, ki jih porabniki zbirajo, vplivajo na nakupno odločitev (Simetinger, 2019). Za podjetja je zelo pomembno, da gradijo odnose med strankami in blagovno znamko prek družbenih medijev, da bi da bi preživeli v trenutni marketinški konkurenci. Število všečkov ali sledilcev na določeni strani blagovne znamke ni odvisno le od njene priljubljenosti, temveč tudi od njene stopnje aktivnosti in komunikacije s strankami.

Družbena omrežja zelo učinkovito pritegnejo in angažirajo kupce kozmetičnih izdelkov. Večina strank na družbenih omrežjih raje izbira luksuzne blagovne znamke kozmetičnih izdelkov. Te znamke si prizadevajo vključiti in vplivati na stranke v vseh fazah nakupnega procesa. Kupci iščejo luksuzno blagovno znamko z namenom, da bi izrazili svojo podobo in imidž ter poudarili ekskluzivnost kozmetičnih izdelkov, ki jih uporabljajo (Suresh, 2016).

Kupci kupujejo kozmetične izdelke na podlagi priporočil strokovnjakov (dermatologi, kozmetologi …) in tudi cene. Personalizirani in osebni oglasi so privlačni za kupce, saj v njih vzbudijo pozornost, čustva, vedenje in interakcije strank, vse to pa jih motivira za nakup kozmetičnih izdelkov prek družbenih medijev. Kozmetične znamke si prizadevajo ustvariti skupnosti in se na osebni ravni povezati z uporabniki družbenih omrežij, kar vpliva na nakup kozmetičnega izdelka. Spletna mesta družbenih omrežij uporabljajo funkcijo priporočil, da bi virtualni skupnosti zagotovila boljše informacije in uporabniške izkušnje, ki vodijo k odločitvam za nakupu kozmetičnih izdelkov. Priporočanje kozmetike s strani prijateljev in bližnjih se je izkazalo za učinkovit način nakupa izdelka prek družbenih medijev (Suresh, 2016).

Metodologija

S kvantitativno metodo raziskovanja smo zbrali podatke s pomočjo anketnega vprašalnika v spletnem programi 1ka in jih analizirali. Vprašanja so bila zaprtega tipa, nekaj pa tudi odprtega tipa vprašanj ter vprašanja z Likertovo lestvico. Vprašalnik vključuje 19 vprašanj, ki se osredotočajo na oglaševanje kozmetičnih izdelkov na družbenih omrežjih, poleg tega pa še 4 demografska vprašanja, ki zajemajo podatke o spolu, starosti, izobrazbi in poklicnem statusu anketirancev. Podatke in rezultate smo predstavili s tabelami, grafi ter opisno. Anketiranje je potekalo v času od 3. 9.–11. 9. 2023. V raziskavo smo vključili izključno fizične osebe, starejše od 18 let, ki imajo prebivališče v Sloveniji ter so aktivne na družbenih omrežjih. Vprašalnik smo poslali v izpolnitev preko elektronske pošte, SMS sporočil in družbenega omrežja Facebook. Odgovorilo je 121 posameznikov, od tega 98 (81 %) žensk, moški pa so izpolnili 23 (19 %) vprašalnikov. Največ anketiranih je starih od 25 do 34 let (43 %), sledijo anketirani stari od 35 do 44 let (20 %), najmanj je starih nad 65 let (2 %). Največ anketiranih (41%) ima zaključeno srednjo ali poklicno šolo. Sledijo anketirani z zaključenim dodiplomskim študijem (36%), medtem ko je najmanj anketiranih z doktoratom (2%), največ je zaposlenih

(73 %), nato sledijo samozaposleni (19 %), ter nezaposleni in študenti (4 %).

Med omejitve raziskave lahko štejemo, da so sodelovale le fizične osebe v Sloveniji, ki uporabljajo in kupujejo kozmetične izdelke ter so aktivne na družbenih omrežjih, pa še to starejše od 18 let. Vzorec ni reprezentativen, saj je bilo v anketiranje vključenih premalo oseb, da bi rezultate posplošili na celotno populacijo.

Hipoteze

Oblikovali smo naslednje hipoteze:
- H1: Oglaševanje na družbenih omrežjih k nakupu kozmetičnega izdelka bolj spodbuja ženski del populacije kot moški
- H2: Ženske pogosteje uporabljajo družbene medije za pridobivanje informacij o kozmetičnih znamkah in izdelkih kot moški
- H3: Med oglaševanjem na družbenih omrežjih in nakupnimi odločitvami uporabnikov kozmetike ter njihovim zaupanjem kozmetičnim znamkam obstaja pomembna povezava.

Rezultati

Empirični del raziskave je preučeval povezavo med oglaševanjem na družbenih omrežjih ter nakupnimi odločitvami v kontekstu kozmetičnih izdelkov. V raziskavo smo vključili osebe, starejše od 18 let, ki uporabljajo in kupujejo kozmetične izdelke ter so aktivne na družbenih omrežjih. Sodelovalo je 121 anketirancev, pri čemer je bilo 98 žensk in 23 moških. Večje število ženskih sodelujočih je pričakovano, saj prevladujoči delež kozmetičnih izdelkov kupuje ženska populacija.

Slika 1
Platforme družbenih medijev, ki jih anketiranci uporabljajo za pridobivanje informacij o kozmetičnih blagovnih znamkah in izdelkih
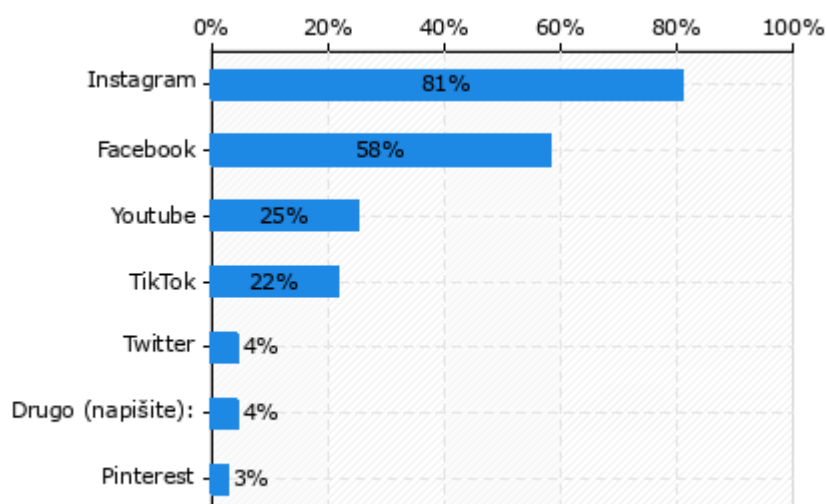
Ugotovili smo, da skoraj polovica (44 %) anketirancev družbena omrežja uporablja manj kot eno uro dnevno, medtem ko 39 % porabi 1-2 uri (Slika 1). 55 % anketirancev na družbenih omrežjih sledi profilom kozmetičnih blagovnih znamk. 82 % anketirancev je potrdilo, da so v preteklosti že kupili kozmetični izdelek po tem, ko so ga odkrili preko oglasov na družbenih omrežjih. Najpogosteje so anketiranci oglase kozmetičnih znamk opazili na Instagramu (86 %) in Facebooku (52 %).

Najpomembnejši dejavnik pri nakupu kozmetičnega izdelka za anketirance predstavljajo sestavine izdelka (42 %), cena pa se uvršča kot drugi najpomembnejši dejavnik (24 %). 75 % anketirancev je odgovorilo, da jih oglaševanje na družbenih omrežjih spodbuja k nakupu več kozmetičnih izdelkov, kot bi jih sicer kupili.

Dnevno družbene medije za pridobivanje informacij o kozmetičnih znamkah in izdelkih uporablja 8 % anketirancev, večkrat na teden 22 %, enkrat na teden 33 %. Instagram je najbolj priljubljena platforma, uporablja jo 81 % anketirancev, takoj za njo je Facebook z 58 %.
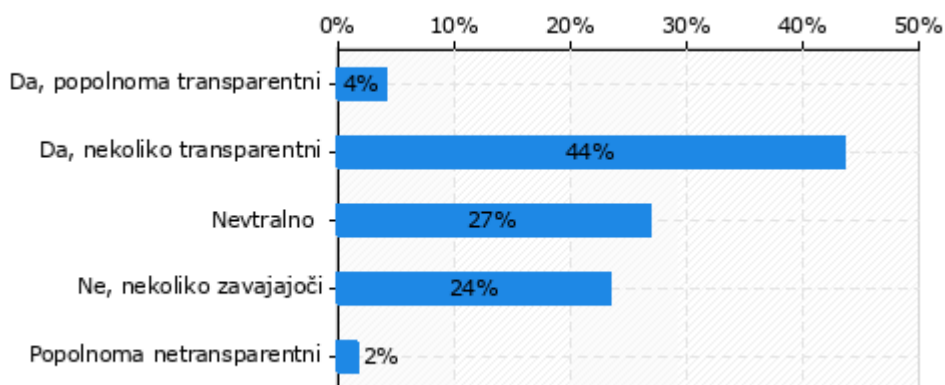
Slika 2

Informacije o kozmetičnih izdelkih, ki jih anketiranci običajno iščejo na družbenih omrežjih

Kupci najpogosteje iščejo ocene kozmetičnih izdelkov (74 % - Slika 2) in jih zanimajo popusti ter promocije (63 %). Največ anketirancev (52 %) pridobi informacije o novih kozmetičnih izdelkih preko oglasov na družbenih omrežjih. Samo 4 % anketirancev popolnoma zaupa oglasom za kozmetične izdelke, nekoliko jim zaupa 48 % anketirancev. 8 % anketirancem se zdi, da so ti oglasi zelo informativni, medtem ko jih 54 % vidi kot nekoliko informativne. Mnenja strank pred nakupom kozmetičnega izdelka vedno prebere 24 % anketirancev, občasno pa kar 55 %.
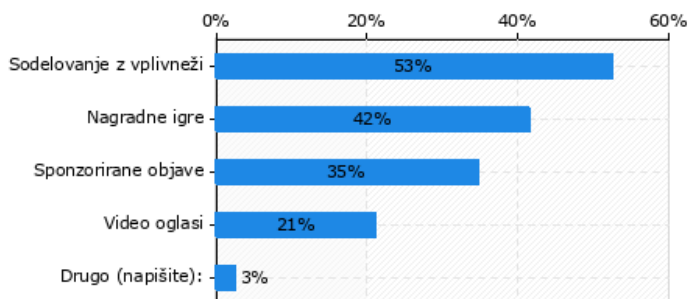
Slika 3

Transparentnost oglasov za kozmetične izdelke na družbenih medijih glede svojih tržnih namenov

Kar 53 % anketirancev meni, da je najučinkovitejši način oglaševanja na družbenih omrežijh sodelovanje z vplivneži, medtem ko je 42 % izpostavilo nagradne igre (Slika 4). Največji delež anketirancev (42 %) je izrazil zanimanje za video oglase, medtem ko se je 32 % odločilo za oglase s sliko.

Slika 4

Najučinkovitejše vrste oglaševanja na družbenih omrežijh glede na mnenje anketirancev

Največ anketirancev (68 %) spodbujajo k vključevanju v oglase za kozmetične izdelke na družbenih omrežijh popusti in promocije, medtem ko 47 % omenja značilnosti in prednosti izdelka kot nakupni dejavnik (Slika 5).

Slika 5

Kaj spodbuja anketirance k vključevanju v oglase za kozmetične izdelke na družbenih omrežij
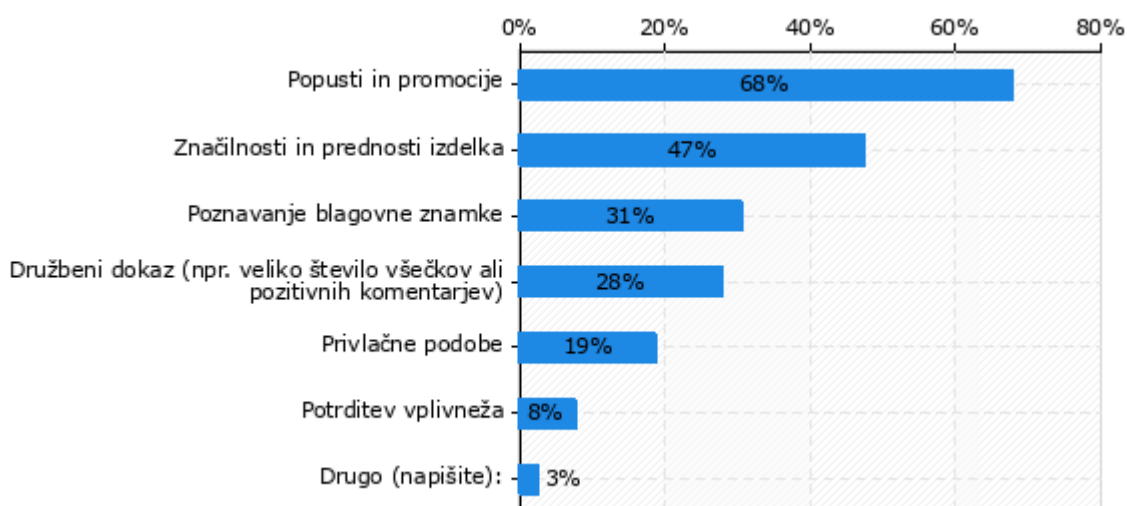
Preverjanje hipotez

Prvi korak je bil oblikovanje hipotez, v skladu z zastavljenimi raziskovalnimi cilji. Pripravili smo tri hipoteze, ki smo jih nato vsebinsko vključili v anketni vprašalnik in jih kasneje preverili.

- H1: Oglaševanje na družbenih omrežijh k nakupu kozmetičnega izdelka bolj spodbuja ženski del populacije kot moški

S statističnim testom Hi kvadrat smo preverili povezanost dveh spremenljivk ter ugotavljali ali so razlike v porazdelitvi med spremenljivkami statistično značilne. Na ta način bomo potrdili ali ovrgli hipotezo. Predpostavljamo, da sta spremenljivki nakup kozmetičnega izdelka zaradi oglaševanja na družbenih omrežijh in spol povezana pri stopnji tveganja 0,05. Izračunani X^2 je0,220. Mejni X^2 pri 0,05 oz. 5 % stopnji tveganja pri stopinji prostosti 1 je enak 3,84. Izračunani X^2 je manjši od te vrednosti (3,84), kar pomeni da spremenljivki

med seboj nista statistično značilno povezani. Hipotezo 1 zavrnemo.

Podatki kažejo, da oglaševanje na družbenih omrežjih k nakupu kozmetičnega izdelka ne spodbuja bolj ženski del populacije kot moškega, kar lahko razberemo tudi iz Slike 6, kjer so odgovori na razdeljeni glede na spol.

Slika 6

*Odgovori na anketno vprašanje razdeljeni glede na spol*
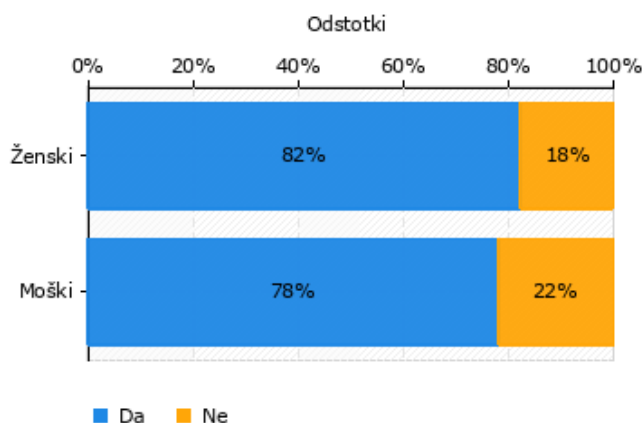
Hipotezo 1 lahko preverimo še z vprašanjem ankete, kjer nas je zanimalo, ali potrošnike oglaševanje na družbenih omrežjih spodbuja k nakupu več kozmetičnih izdelkov, kot sicer. Predpostavljamo, da sta spremenljivki spodbujanje k nakupu kozmetičnega izdelka zaradi oglaševanja na družbenih omrežjih in spol povezana pri stopnji tveganja 0,05. Izračunani X^2 je 3,891. Mejni X^2 pri 0,05 oz. 5 % stopnji tveganja pri stopinji prostosti 2 je enak 5,99. Izračunani X^2 je manjši od te vrednosti (5,99), kar pomeni da spremenljivki med seboj nista statistično značilno povezani. Hipotezo 1 zavrnemo.

Podatki kažejo, da oglaševanje na družbenih omrežjih k nakupu kozmetičnega izdelka ne spodbuja bolj ženski del populacije kot moškega, kar lahko razberemo tudi iz Slike 7, kjer so odgovori na anketno vprašanje razdeljeni glede na spol.

Slika 7

*Odgovori na dvanajsto anketno vprašanje razdeljeni glede na spol*
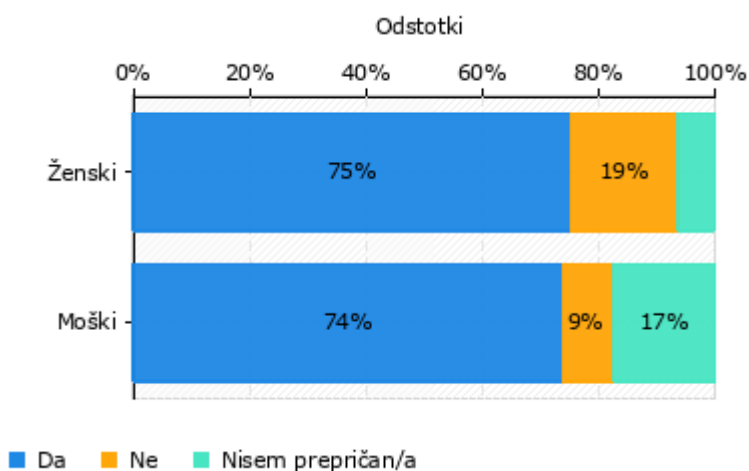
- H2: Ženske pogosteje uporabljajo družbene medije za pridobivanje informacij o kozmetičnih znamkah in izdelkih kot moški

S statističnim testom Hi kvadrat bomo preverili povezanost dveh spremenljivk ter ugotavljali ali so razlike v porazdelitvi med spremenljivkami statistično značilne. Na ta način bomo potrdili ali ovrgli hipotezo. Predpostavljamo, da sta spremenljivki uporaba družbenih medijev za iskanje informacij o izdelku in spol povezana pri stopnji tveganja 0,05. Izračunani X^2 je 14,291. Mejni X^2 pri 0,05 oz. 5 % stopnji tveganja pri stopinji prostosti 4 je enak 7,81. Izračunani X^2 je večji od te vrednosti (14,291), kar pomeni da sta spremenljivki med seboj statistično značilno povezani. Hipotezo 2 potrdimo.

Podatki kažejo, da ženske pogosteje uporabljajo družbene medije za pridobivanje informacij o kozmetičnih znamkah in izdelkih kot moški, kar lahko razberemo tudi iz Slike 8, kjer so odgovori na trinajsto anketno vprašanje razdeljeni glede na spol.

Slika 8

*Odgovori na trinajsto anketno vprašanje razdeljeni glede na spol*
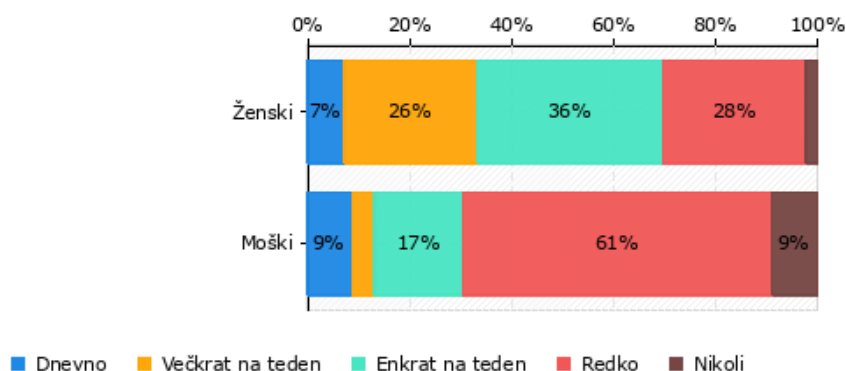
- H3: Med oglaševanjem na družbenih omrežjih in nakupnimi odločitvami uporabnikov kozmetike ter njihovim zaupanjem kozmetičnim znamkam obstaja pomembna povezava.

S statističnim testom Hi kvadrat smo preverili povezanost dveh spremenljivk ter ugotavljali ali so razlike v porazdelitvi med spremenljivkami statistično značilne. Na ta način bomo potrdili ali ovrgli hipotezo. Predpostavljamo, da sta spremenljivki nakup zaradi oglasa in zaupanje oglasom kozmetičnih znamk povezana pri stopnji tveganja 0,05. Izračunani X^2 je 30,736. Mejni X^2 pri 0,05 oz. 5 % stopnji tveganja pri stopinji prostosti 4 je enak 9,49. Izračunani X^2 je večji od te vrednosti (9,49), kar pomeni da sta spremenljivki med seboj statistično značilno povezani. Hipotezo 3 potrdimo.

Podatki kažejo, da obstaja povezava med oglaševanjem na družbenih omrežjih in nakupnimi odločitvami uporabnikov kozmetike ter njihovim zaupanjem kozmetičnim znamkam.

Slika 9

Povezava med oglaševanjem na družbenih omrežjih in nakupnimi odločitvami uporabnikov kozmetike ter njihovim zaupanjem kozmetičnim znamkam
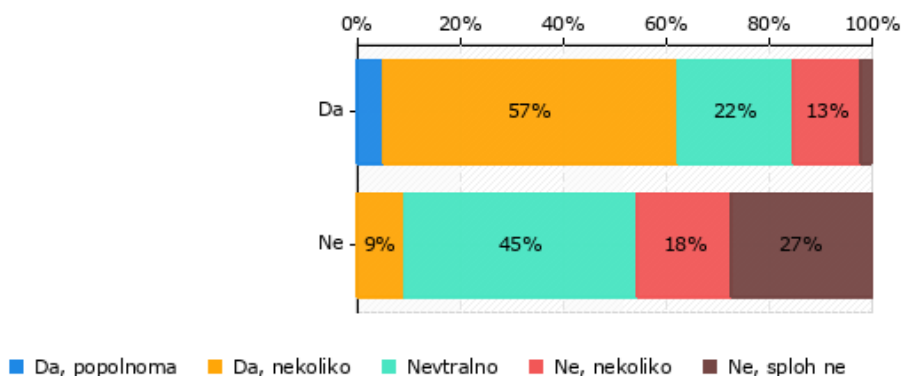
Diskusija

Raziskava je pokazala, da naj se kozmetična podjetja osredotočijo na to, kako izboljšati svoje marketinške strategije za bolj učinkovito komuniciranje s svojo ciljno publiko preko družbenih omrežij. Ključne ugotovitve naše raziskave, ki se tičejo strategij pozicioniranja, vloge družbenih medijev in pojavljanja tam (kot oglas, skupnost, deljenje vsebin ali sporočilo vplivneža), pomena kakovosti kozmetičnega izdelka v trendu trajnosti in kvalitete komuniciranja v smislu etičnih in transparentnih vrednot, so:

Pomembna je kakovost pozicioniranja, medijskih strategij in natančnega ciljanega oglaševanja. Rezultati kažejo, da je ključno, da marketinške kampanje ciljajo na žensko populacijo, saj prevladujejo v nakupovanju kozmetičnih izdelkov. Glede na jasno določeno ciljno skupino je nujno razmišljati tudi o prilagajanju sporočil in ponudb, ki bodo najbolj pritegnile to specifično ciljno skupino.

Pomemben faktor, ki vpliva na nakupne odločitve, so sestavine izdelkov, ki jih je izpostavilo 42 % anketirancev. To odraža rastočo trajnostno ozaveščenost potrošnikov o sestavinah v kozmetičnih izdelkih in pomenu varnih ter naravnih formulacij.

Ko gre za zaupanje potrošnikov, iz naše raziskave izhaja, da Instagram prevladuje kot glavni družbeni medij, preko katerega anketiranci najpogosteje odkrivajo kozmetične izdelke. Ta trend ni presenetljiv, glede na vizualno naravo kozmetičnih izdelkov, saj se ti najbolje predstavijo preko fotografij in kratkih videoposnetkov. Ključno je, da se kozmetične blagovne znamke kreativno, verodostojno in kontinuirano predstavljajo na tej platformi.

Omeniti velja še en zanimiv trend, namreč, da je le 4 % anketirancev popolnoma zaupalo kozmetičnim oglasom, čeprav vemo, da so oglasi na družbenih medijih vsesplošno sprejeti. To nakazuje naraščajočo potrebo po transparentnosti in verodostojnosti v oglaševanju, kar je trend, skladen z zavedanjem o etičnih trajnostnih praksah v oglaševanju. Kozmetična podjetja lahko gradijo zaupanje s potrošniki skozi iskrene in verodostojne marketinške kampanje.

Poudariti kaže tudi pomembno vlogo vplivnežev v oglaševanju kozmetičnih izdelkov. Kar 53 % anketirancev meni, da je sodelovanje z vplivneži najučinkovitejši način oglaševanja. To nakazuje na moč osebnih priporočil in verodostojnosti, ki jo prinašajo vplivneži.

Družbeni mediji ključno vplivajo na nakupne odločitve potrošnikov, saj je bilo 82 % anketirancev, ki so potrdili, da so že kupili kozmetični izdelek po tem, ko so ga zaznali preko oglasov na družbenih omrežjih. Kar 75 % anketirancev je potrdilo, da jih oglaševanje na družbenih omrežjih spodbuja k nakupu več kozmetičnih

izdelkov, kot bi jih sicer kupili. To nakazuje na moč oglaševanja na družbenih omrežjih pri spodbujanju potrošnikov k povečanemu nakupu kozmetičnih izdelkov.

Nadalje, kar 52 % anketirancev pridobi informacije o novih kozmetičnih izdelkih preko oglasov na teh platformah. To pomeni, da so družbena omrežja eden izmed ključnih virov informacij za potrošnike glede novosti na trgu kozmetičnih izdelkov.

Rezultati kažejo, da so za potrošnike mnenja drugih uporabnikov ključna pri odločanju o nakupu kozmetičnih izdelkov. To je izjemno pomembno za marketinške strategije, saj kaže na potrebo po ustvarjanju pozitivnih izkušenj s produktom in vzpostavljanju zadovoljstva strank, kar bo spodbudilo pozitivna mnenja in priporočila ter grajenju skupnosti. Ni zanemarljivo, da potrošnike zanimajo ugodnosti, kot so popusti in promocije. Zato je modro v marketinške strategije vključiti elemente, ki potrošnikom prinašajo dodatno vrednost, kar lahko močno vpliva na njihovo nakupno odločitev.

Upoštevati velja, da gre na družbenih omrežjih za aktivno prisotnost. Glede na to, da sta Instagram in Facebook najbolj priljubljeni platformi za odkrivanje kozmetičnih izdelkov, je nujno, da podjetja ohranjajo živahne in odzivne profile na teh omrežjih. To je neposredna linija komunikacije s potrošniki in prostor, kjer se vzpostavlja pristna povezava med blagovno znamko in kupcem.

Naslednji pomemben faktor je poudarek na ključnih elementih izdelka. To vključuje tako sestavine kot tudi konkurenčno ceno. Sodeč po rezultatih, sta to ključna dejavnika, ki vplivata na končno nakupno odločitev. Zato bi morala biti marketinška strategija usmerjena v izpostavljanje teh atributov.

Ključno je izobraževati potrošnike o prednostih in značilnostih izdelkov. Bolj informirani potrošniki so bolj naklonjeni k nakupu in zvestobi znamke. To lahko vključuje izobraževalne vsebine o pravilni uporabi izdelka, ali pa preprosto poudarjanje koristi, ki jih prinaša.

Sodelovanje z vplivneži in organizacija nagradnih iger se je izkazala kot izjemno učinkovita strategija na družbenih omrežjih. To je odličen način za gradnjo zaupanja in povečanje prepoznavnosti blagovne znamke.

Transparentnost postaja vse bolj pomemben vidik, ki vpliva na odnos med podjetji, potrošniki in blagovno znamko. Priporočilo v tej smeri je, da podjetja jasno in iskreno komunicirajo o svojih izdelkih. To vključuje pošteno predstavljanje sestavin, učinkov in morebitnih omejitev. Kadar gre za kozmetične izdelke, želijo potrošniki vedeti, kaj natančno uporabljajo, zato je ključno, da so informacije dosegljive in razumljive. Poleg tega je priporočljivo, da podjetja jasno označijo plačane oglasne vsebine. Transparentnost na tem področju ne le krepi zaupanje, temveč tudi izpolnjuje etične smernice.

Vendar pa se svet družbenih omrežij hitro spreminja in zato je nujno spremljati in prilagajati tržne strategije. To vključuje redno spremljanje trendov potrošniškega vedenja in novosti na družbenih platformah. Podjetja, ki so prilagodljiva in odzivna na te spremembe, bodo imela veliko prednost pri oblikovanju učinkovitih marketinških strategij.

Največji izziv za kozmetična podjetja ostaja, kako doseči potrošnike na način, ki ni le informativen, ampak tudi avtentičen in privlačen. Kljub močnemu vplivu oglaševanja na družbenih omrežjih, je ključno, da podjetja ostanejo pregledna in se odzivajo na potrebe in vprašanja potrošnikov.

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Globalization for Growth and Development in Management, Economics, and Informatics

THE IMPACT OF THE E-COMMERCE MARKET ON THE TRADE VOLUME: AN EMPIRICAL STUDY BASED ON TRANSACTIONS TECHNOLOGY TOOLS ANALYSIS IN SAUDI ARABIA

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Abstract. This study examines the short- and long-run impact of e-commerce technology payment methods in terms of point-of-sale transactions using near-field communication (NFC) and e-commerce transactions using Mada Cards on the aggregate trade volume of KSA. The main objective of the study is to highlight the relationship of e-commerce payment to the overall trade volume of the country. The study uses a time-series analysis approach, the ARDL model, to estimate short- and long-run relationships among variables. Monthly data from January 2019 to March 2023 has been used. The long-run finding indicates that point-of-sale transactions using near-field communication technology negatively impact trade volume in KSA, while e-commerce transactions using Mada Cards have a positive but insignificant impact. In this regard, policymakers should support growth in the size and activity of e-commerce transactions to increase the trade volume of the KSA economy.

Keywords: E-Commerce, Trade Volume, NFCT, Mada Cards

Introduction

Electronic commerce, sometimes called e-commerce, is acquiring and selling things and services over the internet (Taher, 2021). E-commerce has the potential to be an upcoming business model that makes it easier for customers to purchase and sell basic and diversified requirements from the comfort of their own homes. The application of e-commerce increased during and after the COVID-19 pandemic, which has impacted the country's economies (Genc & Arzaghi, 2024).

One of the main ways that e-commerce would have a direct impact on the economy as a whole is by affecting productivity and inflation (Willis, 2004). E-commerce offers both businesses and consumers a cost reduction in terms of time and effort needed to search for products, services, and financial transactions, which causes better productivity. An even more considerable increase in economy-wide productivity levels may result from productivity gains by firms not engaged in e-commerce as they respond to this new source of competition (Nikčević, 2023). Moreover, this persistent increase in e-commerce may cause a reduction in inflationary pressure by enhancing competition, cost-cutting, and changes in the price-setting behaviour of sellers (Bădîrcea et al., 2021; Willis, 2004).

The rapid growth of digitalization and new technology is presently one of the most important elements influencing the economies of many countries (Abroskin, 2018; Bogdan, 2023). Their significance has expanded due to the emergence of a worldwide pandemic crisis of a scale that humanity has not seen in many years (Cheba et al., 2021). Using modern technology and an Internet connection, we may continue to

carry out our professional and social responsibilities regardless of our isolation and the need to maintain social distance from others (Feng et al., 2021).

E-commerce provides advantages and chances for both emerging and established nations (Gupta et al., 2023). It is a win-win situation. In recent years, the Kingdom of Saudi Arabia has strongly emphasized long-term growth and development, including exploring additional sources of revenue other than oil-related income (Yusuf & Nasrulddin, 2023). Because of this, concentrating on e-commerce applications has emerged as a top objective for the Saudi government to develop the country's economy further. So, the Saudi government has devised legislation and regulations to aid in establishing e-commerce apps, which are now being tested (AlGhamdi et al., 2012).

Moreover, the political action committee on environmental sustainability of the Saudi government made the first attempt in 2018 to review the current state of sustainable development priorities to align them with the 2030 Vision (Yusuf & Nasrulddin, 2023). To achieve the goals of the 2030 Vision for Sustainable Growth, the governmental, private, and non-profit sectors must all come together to work together. It has assessed the company's performance in 17 categories, one of which is to enhance the business climate and make technological investments, including e-commerce (Nations, 2018).

E-commerce in Saudi Arabia represents a small and growing share of overall commerce, but it is anticipated to continue to rise swiftly in the upcoming years. However, the Saudi Arabian government set up several initiatives to assist small and medium-sized businesses (SMEs) to adopt e-commerce. Small and medium-sized companies (SMEs) in Saudi Arabia have an opportunity to make the shift from traditional trade to the new trend that combines technology. On the other hand, E-commerce does not come without its difficulties, especially in emerging countries such as Saudi Arabia (Alzahrani, 2018).

As Internet technology has progressed and people have become more comfortable with online banking, they are now more likely to do transactions online. The core of Internet banking is electronic payment (e-payment), which relates to the online platform for online shopping, online auctions, and Internet stock trading. People who utilize the Internet can profit from Internet banking since it is far more efficient than conventional payment methods, including long waits, physical visits, and the usage of cash or checks (Cheba et al., 2021).

The objective of this study is to examine the relationship between e-commerce transactions using two different platforms available inside Saudi Arabia and the country's overall trade volume. This study aims to answer two primary questions: First, it examines the overall growth of e-commerce transactions within Saudi Arabia and their impact on the country's total trade volume. Second, it investigates which types of e-commerce transactions have the most significant influence on the overall trade volume of the country. Since Saudi Arabia is one of the fastest-growing economies, so the importance of e-commerce transactions, which are growing momentarily, cannot be denied (Nazir & Roomi, 2020); furthermore, their linkage to the country's overall trade is an important aspect to study. This study addresses a notable gap in the existing literature by being the first to explore the relationship between e-commerce transactions and overall trade volume in a growing economies context. Furthmore, study has made significant contributions to the existing body of research. Firstly, it serves as a pioneering investigation into the relationship between e-commerce transactions and overall trade within Saudi Arabia, which is among the world's fastest-growing economies (IMF, 2023). Secondly, by employing a dummy variable that distinguishes between the pre-COVID and post-COVID periods, this study provides a detailed analysis of how e-commerce transactions have influenced the overall trade volume, an essential factor to consider. The study has important implications for country policymakers to chalk out far-sighted policies for promoting e-commerce transactions to boost overall trade.

The rest of the study is divided into the following parts: Part two covers the previous literature, and Part three discusses the data and methodology. Part four presents the study's results, whereas in Part five,

concluding remarks are given.

Literature Review

Recent studies have found that the e-commerce industry in urban areas is one of the fastest-growing sectors globally (Faccia et al., 2023; Vyas et al., 2023). By examining the current changes that are taking place, we have a once-in-a-lifetime opportunity to learn about the company's future development routes, which can be learned at breakneck speed. Some of the recent changes brought about by the present COVID-19 outbreak may influence the expansion of this industry in the coming years on a long-term basis.

 the correlations between elements that can significantly affect sustainable e-commerce development in cities, primarily environmental concerns, in nations within the European Union (Cheba et al., 2021). They find that for the study's environmental conditions, the researchers look at e-commerce drivers (such as internet and smartphone access, economic and financial needs in the country, and societal factors in the region), prerequisites for trying to explain the e-commerce industry in urban centers, and requirements for evaluating the environmental consequences of the development of the e-market in cities as criteria for the study (Faccia et al., 2023). As a result of following the authors' advice, it was discovered that the linkages between these groups of components were true when the network model of connections was considered. This was done using the Promethea approach in conjunction with a multi-criteria decision-making process. The research outcomes provided in this article suggest that the interactions between the analyzed sets of criteria are very intricate in their natural environment. When high rankings, including parameters identifying the so-called drivers of the e-commerce market, are achieved in most nations, these high positions are transferred into high parts that define the expansion of the e-commerce business in that country. However, countries with high e-commerce activity in metropolitan areas tend to have poorer environmental circumstances than other countries in the same category (Gupta et al., 2023).

Furthermore, Tang and Wang (2020)Tang and Wang (2020) employ regional network economics as the study object for their investigation into the subject. Priority one is that they link to critical regional logistical hubs and e-commerce information sources using wireless networks. Second, they give an empirical assessment of the current evolution of the logistics industry and e-commerce in terms of the role of information acquisition, as well as an explanation of how these businesses contribute to regional economic development (Nazir & Roomi, 2020). Last but not least, this research presents ideas for remedies that will aid in increasing the contribution of logistics and e-commerce to economic growth in the future. As a model for creating a regionally coordinated logistics e-commerce system and attaining regional economic integration, this study serves as a guide for other researchers.

The development and effect of digital technology on e-commerce firms. Elena and Natalia are concerned about the evolution and influence of digital technology on e-commerce businesses (Bădîrcea et al., 2021). They look at the many forms of digital technologies used in this industry and the features and functionality of modern e-commerce in the Russian Federation, among other things. Regarding user numbers and product assortment, Russia's contemporary e-commerce sector is still lagging behind worldwide markets (Alharthey, 2021). Still, its growth rate is increasing at a quick pace.

Likewise, Dumicic et al. (2018)Dumičić et al. (2018) explored the influence of development indicators on e-commerce, that is, on individual online purchases in several European countries. All of the independent variables and the central variable under investigation are included as standardized variables when doing analysis. After doing a principal component analysis with varimax rotation for a total of nine variables, they used the two most significant components to construct regressors for multiple regression analysis. Statistical significance is achieved at the one percent level of importance for both factors in the regression model:

Factor 1 (which includes seven variables referred to as prosperity, investing in education and IT infrastructure, and awareness), and Factor 2 (which contains two variables referred to as IT skills). Individual online purchases are influenced by each of these characteristics positively (Vyas et al., 2023). Using nine independent variables representing two separate aspects influencing e-commerce, this paper makes a significant new addition by incorporating and evaluating the distributions and impacts of these independent variables.

Another area that many academics investigated was the relationship between client happiness and consumer spending to promote Internet commerce usage by small and medium-sized businesses in developing regions. According to Nazir and Roomi (2020), small and medium-sized enterprises (SMEs) in emerging markets face various challenges when attempting to integrate e-commerce. Furthermore, they investigate several new dynamic and contextual hurdles that have been discovered, categorizing them into four themes: technical, organizational, environmental, and extended entrepreneurial (human) qualities of owner-managers, respectively, and categorizing them into four categories: Furthermore, according to the researchers, the theoretical model introduces a new hindrance related to "entrepreneurial (individual) characteristics of owners/managers, as well as local business institutions' support for e-commerce," which has an impact on the adoption of e-commerce by SMEs in emerging economies (Alzaydi, 2021).

The coronavirus outbreak in 2019 and corresponding lockdown rules in 2020 sent blast waves across the supply networks of food sector enterprises in emerging nations. Businesses "pivoted" their focus to e-commerce to reach customers, as well as e-procurement to contact processors and farmers (Bădîrcea et al., 2021). "Delivery intermediaries" worked with food companies to assist them in delivering and procuring. The ability of the food companies to pivot was critical to their survival. The global epidemic served as a "crucible," causing a wave of fast-tracking innovations to emerge, including the widespread adoption of e-commerce and delivery intermediaries (Cheba et al., 2021). It also enabled food industry firms to redesign, at least temporarily and potentially forever, their supply chains to be more resilient, weather the disease outbreak, supply consumers, and contribute to food security. Reardon et al. (2021)Reardon et al. (2021) explained these business strategies before using the framework to categorize the practical strategies of organizations. We are mostly interested in situations in Asia and Latin America. Firms were able to pivot and co-pivot with ease because of favorable policy and infrastructural conditions.

By investigating the impact of the development level of the e-commerce industry on China's export trade, Feng et al. (2021) evaluated existing difficulties in China's e-commerce sector. The study begins with a description of the development scale of China's e-commerce sector and the current state of export trade and then measures the overall index of the development level of China's e-commerce sector from 2008 to 2018 using empirical methods to determine its effect on the country's export trade. The findings indicate that the e-commerce business's growth has a statistically significant favorable influence on China's export commerce.

Zhang et al. (2018) explored the influence of cross-border e-commerce on conventional Chinese exports and imports. Also included in this study was the total value of cross-border e-commerce trade, GDP, the financial crisis, and foreign direct investment (FDI) to construct a model of impact factors for exports and imports in China. Moreover, they demonstrate that the expansion of cross-border e-commerce in China is closely related to the rise of traditional exports and imports in China. The latter is significantly impacted by the former in the short term and demonstrates an opposite shift in the long run. The authors also investigate the effects of cross-border e-commerce on international trade in China, mainly from the point of view of money transfer cost economics in combination with the conventional competitive advantage model, by analyzing different expenses, ability to negotiate expenses, transportation costs (including tariff barriers), and intermediary costs separately. Cross-border e-commerce has a favourable influence on China's international trade growth each year (Yin & Choi, 2023). However, the beneficial impact does not exhibit

incremental expansion over time, presumably due to the slow adoption of advantageous trade policies and the global trade decline. However, according to the new theoretical model, cross-border e-commerce may play a beneficial role in increasing international trade only when the adverse impact of tariffs and transportation costs is offset (Zhang et al., 2018).

Furthermore, Western customers might take shopping for granted, with money being their major constraint (Roper & S. Alkhalifah, 2021). The causes of purchasing fashion goods online in Saudi Arabia's culturally conservative environment, which imposes significant fashion and behavioral limitations, especially on females. The study utilizes two theoretical lenses to analyze and evaluate client behavior: psychological reactance theory and system justification theory. The reasons for purchasing items over the Internet change dramatically in a constrained culture (Feng et al., 2021). The concept of utilitarian incentives in online purchases is being improved to better capture the motivations that drive consumers to cross-cultural boundaries or change their shopping habits to fit the online environment (Bădîrcea et al., 2021). In the same way, hedonic motives for online purchases are broadened to include subtleties that are only experienced in such groups, whereas hedonic reasons include enjoying the transgression of cultural restriction.

When it comes to online to offline quality of service, Alzaydi (2021)Alzaydi (2021) examines how the consumer's perceived risk and confidence in the store are influenced and how these characteristics affect customer satisfaction and intention to return to Saudi Arabia during the COVID-19 epidemic. Empathy and mobility are examples of intangible service quality qualities that may be found offline as well as online in this research. Although the intangibility of service quality has a beneficial influence on perceived trust, this research reveals no evidence to establish a direct association between the intangibility of service quality and perceived risk. The results of the study support the assumption that a satisfied customer has a positive influence on the intention to return and the theory that receiving trust has a favourable impact on customer satisfaction (Nazir & Roomi, 2020). Results have ramifications for service managers in the retail and e-commerce industries, and they provide a deeper knowledge of how diverse channels of service impact consumers' impressions of and inclinations to return again and again.

The effectiveness of a newly suggested B2C e-commerce model based on credibility factors and needs in the context of Saudi Arabia is examined by Asiri and Alshamrani (2021)Asiri and Alshamrani (2021). To develop a model for assessing the viability of an effective online business strategy in the Kingdom, two groups of trust variables, namely, governmental, and nongovernmental types, were identified. A substantial contribution to e-commerce growth in the Kingdom has been proven by adaptable government methods, legislation, guidelines, buyer rights insurance, and a banking network situation with lower online expenditures, as indicated by the findings. According to the proposal, implementation of the suggested model is expected to increase customer self-confidence and dependence, as well as e-commerce development in Saudi Arabia.

It is interesting to investigate how online video advertisements can influence consumer online purchase intentions for beauty and healthcare products in Saudi Arabia, while customer satisfaction will be evaluated as a mediator between online video advertising and customer purchase intention. The outcomes of the research Alharthey (2021) demonstrated that online video advertisements have a positive effect on customer satisfaction, which in turn has a favourable influence on customers' intentions to purchase online; in addition, gender, age, and profession all play a role as moderators in the development of online shopping intentions for cosmetics and health-care products, respectively.

Data and Methodology

Data and Varibales Used

This study uses a time-series analysis approach to examine the short and long-run Impact of E-Commerce technology payment methods in terms of Points of Sale Transactions Using Near Field Communication Technology (SNFCT) and E-Commerce Transactions Using Mada Cards (SECTMC) on Trade volume (TRADEV) in the KSA, to investigate the nature of the relationship that exists between them. We use monthly data for the period 2019M1-2023M3 gathered from the KSA Ministry of Commerce and central bank websites. This research uses the Autoregressive Distributive Lag (ARDL) model to conduct a short and long-run relationship analysis.

The point of sale, also known as the point of transaction, is the spot in a merchant's enterprise where the sale is completed by exchanging money for the products or services received. Near Field Communication (NFC) is a wireless technology that enables data to be transmitted between two different devices (a smartphone and a credit card terminal) from a short distance apart. It is becoming more popular.

All operations that impact a deposit account undertaken at the account holder's request are included in Sale Transactions Using NFC technology and E-Commerce Transactions (also known as e-commerce transactions). All events that result in a change in the assets, liabilities, or net worth of a business, as well as any action between a cardholder and a merchant or between a cardholder and a member that results in activity on the cardholder account, are included. Furthermore, Mada Card is the new brand identity for SPAN (Saudi Payment Network). Known as the "Innovative Generation of Electronic Payments in Saudi Arabia," this is designed to spur the expansion of ATMs and POS terminals by providing new levels of flexibility, speed, security, and acceptance. Mada cardholders will benefit from the system's ability to link with other payment services such as GCC Net (Gulf Credit Card Network), VISA, MasterCard, and American Express, giving them a broader range of acceptability both locally and internationally (Mada, 2021).

In this study, the Trade Volume (TRADEV) indicator is constructed by aggregating measures of the volume of Non-oil Exports and Imports of KSA. The Non-oil Exports (NOIEX) measure the overall exports minus the exports of fossil fuel energy, mineral oils, and results of their distilling, bituminous substances; and mineral waxes items (which are excluded from this measure). The imports (IMP) variable refers to all goods entering the KSA country after passing through the customs procedures to meet its local needs, which are evaluated on a Cost, Insurance, and Freight (CIF) basis (Commerce, 2021).

The study investigates the performance of trade volume in KSA during the COVID-19 pandemic by creating a dummy variable (COVID) that shows zero before March 2020 and one in the remaining period.

Following the earlier equations, the model can be described as follows:

$$\text{Ln(TRADEV)} = \alpha_1 + Ln(\text{SNFCT})_t + Ln(NOIEX)_t + \text{Ln}(IMP)_t + Ln(SECTMC)_t + COVIDD + \varepsilon_i \qquad (01)$$

ARDL Model

Pesaran and Shin (1995) advocated the use of bounds-testing patterns to evaluate long-run relationship estimates. The ARDL co-integration technique was based on the F-test result to determine the starting level of the co-integration method. The test outlines no co-integration criteria (H_0: $\beta\_0^i = \beta\_1^i = 0$), which were maintained following the results. The limits test yielded two critical values: I (0), which represented the bottom band of the variables, and I (1), which represented the upper band of the variables (10). In this case, the estimated f-statistics were more significant than the upper critical values, suggesting co-integration, as

explained in more detail below. As a result, if the t-values fall between two crucial bands (values), the test is inconclusive; nevertheless, if they go below a critical value, the test is deemed to lack co-integration. Below, you can see an example of a particular equation in which each variable follows the dependent variable:

$$\Delta \ Ln(TRADEV)_{t-1} = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} \ \Delta \ Ln(TRADEV)_{t-1} + \sum_{i=0}^{p} \alpha_{2i} \ \Delta \ Ln(SNFCT)_{t-1} +$$
$$\sum_{i=0}^{p} \alpha_{3i} \ \Delta \ Ln(NOIEX)_{t-1} + \sum_{i=0}^{p} \alpha_{4i} \ \Delta \ Ln(IMP)_{t-1} + \sum_{i=0}^{p} \alpha_{5i} \ \Delta \ Ln(SECTMC)_{t-1} + \beta_1 \ Ln(TRADEV)_{t-1} +$$
$$\beta_2 \ Ln(SNFCT)_{t-1} + \beta_3 \ Ln(NOIEX)_{t-1} + \beta_4 Ln (IMP)_{t-1} + \beta_5 Ln (SECTMC)_{t-1} + \beta_6 (COVIDD)_{t-1} + \mu_i \quad (2)$$

Error Correction Model

A combination of relatively brief and error correction estimates (ECTs) is used to get the relevant equation, which is as follows:

$$\Delta \ln (TRADEV)_{t-1} = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} \ \Delta \ln (TRADEV)_{t-1} + \sum_{i=0}^{p} \alpha_{2i} \ \Delta \ln (SNFCT)_{t-1} +$$
$$\sum_{i=0}^{p} \alpha_{3i} \ \Delta \ln (NOIEX)_{t-1} + \sum_{i=0}^{p} \alpha_{4i} \ \Delta \ Ln (IMP)_{t-1} + \sum_{i=0}^{p} \alpha_{5i} \ \Delta \ \ Ln (SECTMC)_{t-1} + \theta \ ECT_{t-1} \quad (3)$$

The wide speed adjustment is described by equation (7). In contrast, the ECT equation is derived from the estimated co-integration model. It was decided to use this framework and equation to examine the long-term causal link between variables. The tests were mainly developed to identify dynamic mobility links between time-series variables. They are now widely utilized in economic research.

The ARDL model analysis in this research consisted of three stages that were adapted from (Kouakou, 2011). The variables are first identified and computed using a unit root test, which is performed first. The ARDL bound testing cointegration approach confirms the validity of the long-run relationship among the variables. The Granger-causality test is being used to analyze and determine the linkages between the variables.

Results and Empirical Findings

The results of the unit root test of stationarity for the variables are shown in Table I. Some variables are level stationary, whereas others are stationary at first differences. The suitable analysis technique used is the ARDL model.

Table 1

Unit Root Tests

Variables	Levels	First Differences
	ADF	ADF
LTRADEV	-0.966	-6.927***
LSNFCT	-4.398***	-5.553***
LNOIEX	1.615	-8.858***
LIMP	-1.38	-12.215***
LSECTMC	-3.506***	-4.918***

Next, we examine the results of the bounds test. Table II shows the F-statistic values of the Trade Volume indicator model, TRADEV, exceeded the upper bound of 1%, indicating a significant co-integration relationship between variables at the 1% significance level.

Table 2

Bound Test Result

Dependent Variable	F-statistics	10%		5%		1%	
		I (0)	I (1)	I (0)	I (1)	I (0)	I (1)
TRADEV	7.47***	2.2	3.09	2.56	3.49	3.29	4.37

Long-Run Estimated Model:

$$TRADEV = -2.66 - 0.03\ LSNFCT +\ 0.02\ LSECTMC + 0.75^{***}LNOIEX + 0.67^{***}LIMP \qquad (5)$$

The long-run results indicate an insignificant relationship between trade volume and E-Commerce technology payment methods in KSA. Furthermore, Points of Sale Transactions Using Near Field Communication Technology (SNFCT) have a negative and insignificant impact on trade volume, contrary to short-term model analysis results, while E-Commerce Transactions Using Mada Cards (SECTMC) show an insignificant positive impact on trade volume.

In addition, Non-oil Exports (NOIEX), and Import (IMP) show a positive significant impact on trade volume. Moreover, if the Non-oil Exports (NOIEX) increase by 1 percent, the trade volume is expected to increase by about 0.75 percent. In addition, if the import (IMP) increases by 1 percent, the trade volume is expected to increase by 0.67 percent.

Table 3

Long-run results using the ARDL approach.

Variables	Coeff.	t-stats	Prob
LSNFCT	-0.0301	-2.953528	0.0131
LNOIEX	0.7500	3.107600	0.0100
LIMP	0.6720	2.057625	0.0019
LSECTMC	0.0211	0.641544	0.1289

Source: Authors' estimations

Short-Run Estimated Model:

$$LTRADEV= + 0.36\ D\big(LTRADEV(-1)\big)^{***} + 0.11\ D(LSNFCT)^{***} + 0.33\ D(LIMP)^{***} -$$
$$0.26\ D(LIMP(-1))^{***} - 0.04\ COVIDD^{***}. \qquad (4)$$

Based on the short-run estimated model, trade volume (TRADEV) lag (-1), Sale Transactions Using Near Field Communication Technology (SNFCT), and Import (IMP) have a significant positive impact on trade volume (TRADEV). Furthermore, if sales transactions Using Near Field Communication Technology (SNFCT) increased by 1 percent, the trade volume rose by 0.1 percent at a 1% significance level. In addition, if Import increases by 1 percent, the trade volume decreases by 0.33 percent, respectively, at a 1% significance level. However, the short-run estimated model shows that trade volume had a negative performance during the COVID-19 pandemic period in Saudi Arabia.

Table 4

Diagnostic test of the FC long-run equilibrium.

Test Statistic	Probability F
A: Normality	0.84>5%
B: Serial Correlation	0.52>5%
C: Heteroscedasticity	0.17>5%

Table 4 also shows that the model TRADEV = f (LSNFCT, LSECTMC, LNOIEX, LIMP) is devoid of issues related to heteroscedasticity, serial correlation, and normality and that the lag order is (2, 1, 0, 2, 0) based on the Akaike information criterion. Furthermore, the ECM coefficient (-0.42), which is negative and significant at a 1% level, indicates that a long-run relationship exists between the variables of the study.

Conclusion

This study uses a time-series analysis approach to examine the short and long-run Impact of E-Commerce technology payment methods in terms of Points of Sale Transactions Using Near Field Communication Technology (SNFCT) and E-Commerce Transactions Using Mada Cards (SECTMC) on Trade volume (TRADEV) in the KSA. This study is being undertaken in a nation with a very rapidly growing E-commerce volume. Western literature on e-commerce is not entirely adequate for comprehending the mechanisms of a rapidly emerging economy like KSA (Roper & Alkhalifah, 2021).

The study primarily aimed to investigate the influence of e-commerce payment technologies and non-oil economic activities on trade volume in Saudi Arabia, assessing both long-term and short-term impacts. The clear answers provided below aim to close the research gap by summarizing and interpreting the findings:

In terms of long-term relationship results, there is an insignificant relationship between e-commerce payment methods overall and trade volume in the long run. The result suggests that while e-commerce is proliferating in Saudi Arabia, its impact via specific payment technologies does not significantly influence overall trade metrics. Further, the long-term impact of SNFCT on trade volume is negative and insignificant, suggesting that its effect may diminish or become less predictable over extended periods. At the same time, both non-oil exports and imports demonstrate a significant positive impact on trade volume.

In the short run front, NFC technology has a significant positive impact on trade volume, with a 0.1% increase for every 1% increase in transactions using this technology, indicating immediate benefits from adopting NFC in retail and commercial transactions. The pandemic period showed a negative performance on trade volume, highlighting the susceptibility of trade activities to global crises and the immediate adverse effects of lockdowns and travel restrictions on trade flows.

The mixed results in short-term versus long-term impacts of e-commerce technologies suggest that while short-term adoption can boost trade volume, long-term effects may require further technological integration and consumer adoption to sustain impact. These results advocate for policies that support technological advancements in trade and commerce and strengthen economic resilience against global disruptions like the COVID-19 pandemic.

In summary, the study fills a crucial research gap by providing empirical evidence on the differential impacts of e-commerce technologies and economic variables on Saudi Arabia's trade volume. These insights are vital for policymakers, business leaders, and scholars interested in the interplay between technology adoption and economic performance (Akhundzada & Rzayeva, 2023).

The study's findings provide weight to the notion of enabling a firm to have access to a larger quantity of data, with part of that data coming from the e-commerce business (Yu et al., 2021). The findings support the notion that adaptable government methods, legislation, laws, buyer rights insurance, and a banking network scenario with lower online expenditures are all critical factors in the rise of e-commerce in the Kingdom. Implementing the suggested model is expected to increase customer self-confidence and dependence, as well as e-commerce development in Saudi Arabia (Asiri & Alshamrani, 2021).

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EUROPEAN BANKING UNION SINGLE RESOLUTION MECHANISM – ITS PRESENT STATE AND DEVELOPMENT POTENTIAL

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Abstract. Since its start in 2015, Single Resolution Mechanism (SRM) came a long way from fragile framework to the presently rather important mandate within the European banking sector. By the same token, impact and modus operandi of the European Banking Union (EBU) have progressed considerably so that national authorities (NRAs) nowadays closely cooperate with the Single Resolution Body (SRB). EBU itself was established in 2014 as a key part of the economic and monetary Union. SRB is empowered to ensure effective functioning of the SRM. Its objective is to strengthen the integration within the Banking Union and to implement the strategy for the next five years, called SRM Vision 2028. This document focuses mainly on resolution planning system's resilience in the face of the crisis, crisis management and regular testing of emergency plans and procedures. It also covers governance, organisation and digital transformation. Finally, it encourages recruiting, professional development and inclusion of talented human resources. The implementation of this strategy will provide an established agency, together with NRAs, capable of withstanding evolving challenges. The aim of this paper is to offer closer insight in the SRM development outcome, its effectiveness and the areas covered by the strategy and its further work. The authors highlight the complex structure and legal framework of the SRM and the importance of the newly adopted strategic documents for the future effective functioning of the EBU.

Keywords: European Banking Union, bank resolution, Single Resolution Mechanism, Single Resolution Body, E(M)U.

Introduction

The Single Resolution Mechanism and Single Resolution Board (hereinafter: SRB) were established by Regulation (EU) No 806/2014 of the European Parliament and of the Council on July 15th, 2014, thereby establishing uniform rules and a uniform procedure for the resolution of credit institutions and certain investment firms under the framework of a Single Resolution Mechanism and a Single Resolution Fund and amending Regulation (EU) No 1093/2010 (hereinafter: SRMR). Before that, in October 2011 the G20 adopted „Key Attributes for Effective Resolution Regimes" for the Financial Stability Board (FSB) (Financial Stability Board (FSB), Key Attributes for Effective Resolution Regimes for Financial Institutions, 2011). The EU Parliament and Council adopted in May 2014 the Bank Recovery and Resolution Directive 2014/59 (EU BRR Directive 2014/59). Since 1 January 2015, SRB represents the central resolution authority within the European Banking Union. It has its seat in Brussels and has around 400 employees. From 2016 it renders

decisions and measures on bank resolution. In cooperation with National Resolution Authorities of the member states, the EU Commission, and the Council of the European Union, it composes the Single Resolution Mechanism. The cooperation with NRAs is regulated by the Cooperation Framework Agreement (CoFra) (Decision of the Single Resolution Board on Cooperation Framework Agreement (SRB/PS/2018/15)). Within the Banking Union and outside, it provides an orderly resolution of failing banks with minimum impact on the real economy, the financial system, and the public finances. It also works on preventive resolution planning and strengthens the bank resolvability. Thus, it prevents possible negative influence of a financial crisis on macroeconomic stability and preserves prosperity of the EU and social welfare of its citizens. Unavoidably, SRM closely cooperates with the Single Supervisory Mechanism (hereinafter: SSM). Besides, SRM remains in coordination with other institutions as well as national authorities outside E(B)U.

There are three pillars of the European Bank Union: Single Resolution Mechanism (SRM), Single Supervisory Mechanism (SSM) and Harmonised Deposit Guarantee Scheme (DGS) (European central Bank, Banking Supervision). Their common objective is to provide a secured uninterrupted financial intermediation in the EBU. The objective of the Single Resolution Mechanism is to provide or approve sustainable, level-playing field resolution packages for too-big-to-fail banks and cross-border groups. The Single Supervisory Mechanism formulates and maintains a single supervision procedure of significant banks operating in European theatre. The Deposit Guarantee Scheme has a task of establishing the single deposit guarantee arrangement and equal protection of all deposit(or)s. Until now, there is no unanimity on implementation of the European Deposit Insurance Scheme (EDIS).

The establishing of the SRM was necessary because usual insolvency proceedings were not adapted for all banks failures and the effects of the bank failures can spread far beyond the national borders (Đurić et al., 2018, p. 131). That was especially the case since they provided no protection of critical functions nor financial stability ("too big to fail"). However, resolution is no liquidation, but planned restructuring of the bank. Therefore, bank resolution rules represent one of the most important segments of the EBU. The objective of these rules is to ensure the continuity of critical functions and to avoid more pronounced negative spillovers on the financial stability, through prevention of infection of market infrastructure, maintenance of the market discipline, protection of public funds through lower use of extraordinary financial support from public funds, protection of depositors and investors, protection of client funds and client assets.

Methodology

The methodology in this paper is based on a normative approach to the EU legislation in force and its implementing documents and strategic policies for securing the banking sector withing the EBU and beyond. This paper analysis the present state and development in the near future of the European Banking Union Single Resolution Mechanism. In the first part, authors analyse the general legal framework of the SRM. In the second part, competences of the SRB and its interference with NRAs will be discussed. Further will be presented the process of the decision-making in the SRB. As an important part of the SRM in the case of crisis, Single Resolution Fund will be observed. Also, further developments of the SRM will be analyed. In the final part, the objectives of the SRM Vision will be presented.

Competences Within the Framework of Single Resolution

The SRM functions under the following rules: EU Capital Requirements Regulation (CRR) 575/2013, EU Capital Requirements Directive (CRD) 36/2013 (EU CR Regulation 575/2013), EU Bank Recovery and Resolution Directive (BRRD) 59/2014 and the EU Directive on national deposit guarantee schemes 49/2014

(EU Directive 2013/36 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms). However, the main duties of the SRB are set by the SRM Regulation 1093/2010 (Regulation (EU) No 806/2014 of the European Parliament and of the Council of 15 July 2014 establishing uniform rules and a uniform procedure for the resolution of credit institutions and certain investment firms in the framework of a Single Resolution Mechanism and a Single Resolution Fund). SRM consists of Board which is competent for the single resolution SRB. Its competences are set by the Art. 7 al. 2 of the SRMR. SRB is a resolution body for all credit institutions under the supervision of the ECB, marked as "significant institutes" or SIs, and for cross-border groups. As centralized institution, SRB has resolution prerogatives and is responsible for effective and consistent functioning of the SRM. Other (residual) banks still remain under the jurisdiction of NRAs. Finally, SRB manages Single Resolution Fund (hereinafter: SRF), which provides efficient implementation of resolution instruments.

In the meantime, in November 2015 the FSB adopted decision on Total Loss-Absorbing Capacity (TLAC) Principles and Term Sheet (Financial Stability Board, Principles on Loss-absorbing and Recapitalisation Capacity of G-SIBs in Resolution, Total Loss-absorbing Capacity (TLAC) Term Sheet, November 2015). It was followed by the reform of Resolution regimes through Risk Reduction Measure Package (BRRD II, SRMR II und CRR II). Amendments and extension of the CMDI-Review (Crisis Management and Deposit Insurance Review) is planned.

Since it serves and represents a substantial benefit for the EU internal market, the EU Parliament and Council established the SRB as an agency on exceptional legal basis (Gulija & Singh, 2021, p. 14-15). The SRB as Resolution Authority is competent for institutions which are labelled as significant (SSM-Banks) or which have cross-border activity. Besides that, the SRB is empowered to take the competence from NRA under specific circumstances as a resolution authority. For all other institutions are NRA competent authority and they implement the decisions of the SRB on the national level in accordance with the national law. The NRAs are competent as supervision authority for determining of the failure of the banks under national supervision. They also provide Information and Consultation by resolution plan. The European Central Bank determines the failure of the SSM Banks. It provides information and consultation in case of failure of bigger banks in the EBU member states. The EU Commission and Council are competent for involvement in decision-making process in case of resolution (public interest and using SRF). Finally, European Bank Authority (EBA) and Financial Stability Board (FSB) are in charge for cooperation on further development pf principles, guidelines and standards. However, the established framework is criticized by some authors as ineffective, while resolution funds are considered as insufficiently available and requirements for own funds and eligible liabilities as relatively high (Asimakopoulos & Howarth, 2022, p. 264).

National Resolution Authorities in BU member states cooperating with the SRB are: in Austria Finanzmarktaufsicht (Financial Market Supervision Authority), in Bulgaria – Българска Народна Банка (Bulgarian National Bank and Комисия за финансов надзор (Financial Supervision Commission), in Belgium Nationale Bank van België/Banque Nationale de Belgique, in Cyprus ΚεντρικήΤράπεζατηςΚύπρου (Central Bank of Cyprus), in Germany Bundesanstalt für Finanzdienstleistungsaufsicht (Federal Financial Supervision Authority), in Greece Τράπεζατης Ελλάδος (Bank of Greece), in Spain Fondo de Reestructuración Ordenada Bancaría (Executive Resolution Authority) and Banco de España (Bank of Spain), in Estonia Finantsinspektioon (Financial Inspection), in Finland Rahoitusvakausvirasto (Financial Stability Authority), in France Autorité de contrôle prudentiel et de résolution (Prudential Supervision and Resolution Authority), in Croatia Hrvatska Narodna Banka (Croatian National Bank), in Ireland Banc Ceannaisnah Eireann (Central Bank of Ireland), in Italy Banca d'Italia (Bank of Italy), in Lithuania Lietuvos Bankas (Central Bank of Lithuania), in Luxembourg Commission de Surveillance du Secteur Financier (Commission for Supervision of the Financial Sector), in Latvia Latvijas Banka (Central Bank of Latvia), in Malta Awtoritàgħas-ServizziFinanzjarjita' Malta (Malta

Financial Services Authority), in Netherlands De Nederlandsche Bank (Central Bank of the Netherlands), in Portugal Banco de Portugal (Central Bank of Portugal), in Slovakia Národná banka Slovenska (National Bank of Slovakia) (Single Resolution Board, National Resolution Authorities).

The SRB is empowered to perform the assessment of resolution strategy proposed by the bank. It controls the effectiveness, time-frame, identification of impediments in its implementation as well as the credibility of the strategy proposed, its impact on the financial system and real economy in the EU member states and continuity of critical functions of the banks. If it determines the substantive impediments to the strategy motioned by the bank, the "proportionate and targeted measures" may be required by the SRB to remove them (Single Resolution Board, Expectations for Banks, 2020, p. 6). These measures may call for additional information at the more benign end of the spectrum all the way to the cessation of activities.

Decision-Making in the SRB

The SRB makes decisions both in executive and in plenary session. Participants in executive session are the members of the Board, president and four other full-time employees. The decisions are taken by means of simple majority. Their main tasks are to prepare all decisions for plenary sessions, to approve all decisions for implementation of SRMR, unless otherwise is foreseen, to produce and to decide on resolution plans, to implement simplified claims (proportionality), to determinate MREL, and to produce and submit resolution concepts. The SRB may also hold the session in special format – as extended executive session. In that case, participants are members of the executive session, the representatives of the national resolution authority of the concerned bank and representatives of the national resolution authority of the non-BU member states as observers. Extended Executive session makes decisions on a single bank. At this point, as a very important emerges the question, whether the EBU Member States have discretion right on determining the tool and the outcome of the bank crisis (Busch et al., 2019, p. 577-615).

The objective is to reach the decision by unanimity between SRB Presidency and national resolution authorities with right to vote. In case of dissent, the decision will be made by the SRB Presidency. Plenary session is composed of the members of the Board and representatives of each EBU member state. It renders decisions with simple majority and is competent for general decisions, ordinary business, year budget and decisions on using of the SRF over the specific limit. In cases where the amount provided by the SRF exceeds 5 billion euros for the resolution scheme, each plenary session member is authorised to require decision to be rendered in the plenary session, whereby 30 % of contributors represent a simple majority (Wiggins et al., 2019, p. 136-137). The working language between SRB and NRAs is English. SRB has its Internal Resolution Team. IRTs are responsible for preparing resolution plans for banks under the SRB's remit. SRB and NRAs work together in IRTs comparable to JSTs (Joint Supervisory Teams). CoFra regulates different cooperation documents that are drawn up between SRB and NRAs (Decision of the Single Resolution Board on Cooperation Framework Agreement (SRB/PS/2018/15)).

Tasks for companies under the direct responsibility of the SRB are processed with those national resolution authorities in which the company has a parent, a subsidiary or even just a branch. Depending on the form of the requirement, the creation, decision-making and compliance vary. Types of documents rendered by SRB include guidelines and general instructions, warnings and specific instructions. Guidelines and general instructions are aimed at the national resolution authorities and are intended to more precisely regulate the tasks and resolution decisions that are made by the national resolution authorities. Guidance notes are internal SRB documents that the IRTs use in their work for companies under the direct responsibility of the SRB. Warnings can be issued by the SRB if, in the SRB's opinion, national resolution authorities do not comply with the SRM Regulation or general instructions in the course of their direct responsibility for

companies. In the SRB's opinion, companies do not comply with the SRM Regulation or general instructions. Specific instructions, on the other hand, are decisions of the SRB that are issued by the national resolution authorities in accordance with the SRM Regulation implemented largely without any discretion, e.g.: MREL decision (Tröger, 2019, p. 70-72. Single Resoltion Board, Minimum Requirement for Own Funds and Eligible Liabilities, 2023, p. 11).

Single Resolution Fund

Single Resolution Fund is established to provide funds for purposes such as: to guarantee the assets or the liabilities of the institution under resolution; to make loans to or to purchase assets of the institution under resolution; to make contributions to a bridge institution and an asset management vehicle; to make a contribution to the institution under resolution instead of the write-down or conversion of liabilities of certain creditors under specific conditions; and to pay compensation to shareholders or creditors who incurred greater losses than under normal insolvency proceedings. SRF may not directly be used for absorbing of loss or for recapitalisation of institutions at hand.

In cases where an eligible liability or a category of eligible liabilities is completely or partially excluded from bail-in, a contribution from SRF to the institution in the resolution can be provided. It requires that two conditions are met: the owner and creditors of the institution have before a contribution a minimum of 8% TLOF given and the use of SRF has to be limited to the maximum 5% of the sum in the balance sheet of the institution in resolution. In case that the funds are paid from SRF, they have to be recompensated through national contribution (Single Resolution Board, Single Resolution Fund).

Its first potential use in the case of bank resolution in the euro area (Banco Popular Espagnol) was avoided since the business was sold (Lupinu, 2020, p. 16).

Further Development

Over the past nine years, organisational construction of the SRB as a decentralised agency has been completed with tight cooperation between SRB and NRAs. SRB contributed to a creation of a stable and crisis-resistant European banking system. Faced with emerging challenges, such as failures of the bank Credit Suisse and Silicon Valley Bank in 2023 (Harding, 2023), SRM established itself as robust pillar against both present and future developments risks. In the meantime, it set 12-month resolution planning cycle, which increased resolvability level of the banks within the EBU with provided minimum requirements for own funds and eligible liabilities (MREL), thereby having secured effective cross-border cooperation. The EU bank resolution framework relies on MREL, although their issuing proved itself as very difficult for many banks (Asimakopoulos & Howarth, 2022, p. 276). One of the main focuses of the aforementioned workload is achieving the banks' preparedness for potential resolution. Under its management, SRF collected required national contributions (1%). Reaching 78 billion EUR and in this year no contribution will be needed (Single Resolution Board, Single Resolution Fund).

Within the SRM framework and together with NRAs, the SRB develops strategic and policy documents for bank resolution. The most important are Expectations for banks, MREL policy, operational guidance, and playbooks. One of the main resolvability principles is "working together". Banks must develop the resolution plan and crisis management. Moreover, the SRB may require banks to assist it in the drawing up and updating of resolution plans (Single Resolution Board, Expectations for Banks, p. 6). An important part is also the sound risk management process in banks (Abramovic et al., 2021, p. 45-46).

SRM has as its mission to promote financial stability and to protect the taxpayer. It values are EU Spirit,

Respect, Professionalism, Transparency. The EU Spirit emphasizes the following: 1) to be driven by the European project and its highest values of peace, freedom and democracy, 2) to embrace teamwork and diversity of opinions, 3) to consider the impact of the SRM and industry actions on economy, people and the environment and 4) to act free of undue influence in pursuance of the SRM mandate, subject to being held accountable for own acts and decisions (Single Resolution Board, SRM Vision 2028, February 2024, p. 11). Under respect SRM values understands: 1) promotion of diversity and inclusion in all aspects, 2) prevention of any form of discrimination on the basis of sex, racial, ethnic or nationality origin, religion or belief, disability, age or sexual orientation, or any other grounds and 3) acknowledgement of others' contributions and achievements, promotion of merit-based culture (Single Resolution Board, SRM Vision 2028, 2024, p. 12). Within the value of professionalism, SRM strives: 1) to deliver the tasks in an excellent, flexible and efficient way, in keeping with the SRM mandate, ensuring the preservation of financial stability and protection of critical functions in the EBU, 2) to behave according to the highest standards of accountability and integrity, 3) to be loyal and driven by the need to maintain the SRM's good reputation and 4) to be open to innovation and not fearing to fail in order to succeed, while defining the appropriate risk appetite to respond in a timely way to emerging threats. Finally, transparency imposes expectations 1) to share information in a timely, secure and meaningful way, including all relevant internal and external stakeholders, 2) to substantiate its decisions and actions, so stakeholders are able to understand SRM's decisions and how these contribute to the delivery of SRM's tasks and 3) to consult the relevant stakeholders in a spirit of efficient information sharing, while preserving the necessary confidentiality (Single Resolution Board, SRM Vision 2028, 2024, p. 12).

However, there is still place for improvement especially in eliminating uncertainty about an institution's solvency, ensuring that resolution requires effective valuation, clearer treatment of creditors in resolution and encouraging creditors to out-of-resolution agreements through credible bail-in tools (McNamara et al., 2024, p. 28).

SRM Vision 2028

In February 2024, SRB adopted an important strategic document for its future endeavours. This document is entitled the "SRM Vision 2028" and set the SRB objectives for providing financial stability through resolution planning and crisis management. The main areas covered by the SRM Vision 2028 are: 1) core business, 2) governance, organisation and tools and 3) human resources. For each area, specific actions and potential measurements are foreseen.

The "SRM Vision 2028" set as the SRB's main focus the resolution planning to crisis readiness, placing resolvability and operationalisation of resolution plans at the core of the SRM's work. Since the resolution and insolvency law are deeply interconnected, all resolution instruments rely on respective national insolvency legislation. The resolution planning supports the principle of development of the global "rescue culture" (Didea & Ilie, 2018, p. 1-16). It will be realized by SRB and other authorities through regular testing on just how the existing resolution plans work in practice. This should strengthen the capabilities of the SRM as a framework to respond to a crisis. Also, more visits of the bank's premises in on- site inspections by the SRB staff and deep controls of bank organization regarding resolvability will be performed. For strengthening the SRM integration, enhanced coordination in the resolution planning process and testing will be realized, as well as support to development of consistent SRM policies and communication.

In the area of core business following measures are foreseen: 1) continuous crisis preparedness and management, 2) crisis-oriented resolution planning and resolvability and 3) SRM as reference in resolution.

Within the core business area, the continuous crisis preparedness and management lies at the centre

of the SRM mandate the SRB has decided to establish a new comprehensive crisis readiness approach. It sets the following actions for the period to come a) to revamp the centralised crisis management function and prepare for evolving threats, b) to develop tools for the operationalisation of resolution strategies and c) to develop a comprehensive approach to crisis readiness. These crises may be caused not only by financial factors but other as well, since banks become more vulnerable with the technological progress (Butcovan & Ivan, 2023, p. 30-31). The result of these actions should be measured through: a) percentage of implementation of lessons learned from dry runs and crisis cases, b) satisfaction level of participants in dry runs and simulations and c) percentage of addressed activities and recommendations from mitigation action plans for identified new threats (Single Resolution Board, SRM Vision 2028, 2024, p. 14-25).

Further, SRM Vision 2028 provides a crisis-oriented resolution planning and resolvability. This will require the simplification of the Resolution Planning Cycle and operationalisation of resolution plans to make it more efficient and better focused on the most important issues around resolvability and crisis preparedness. Therefore, the SRB will adapt the methodology for resolvability assessment to ensure that banks' resolvability capabilities continue to be in place and are updated over time, while also incorporating a more risk-based approach. This will strengthen further our capability to deploy the tools provided for in the SRMR (Single Resolution Board, SRM Vision 2028, 2024, p. 14-18). By following this objective, the implementation of the SRM Vision will provide support the further constructive certainty, respect the market, maintain the continuity of the bank services and look after liquidity (European Bank Resolution: Making it work, 2016, p. 34-35).

For reaching this objective, following actions are foreseen: a) to revamp the annual Resolution Planning Cycle and ensure resolution plans are fully actionable in resolution, b) to ensure banks' resolvability and develop a comprehensive plan for resolvability testing and c) to enhance capabilities for launching enforcement action to remove substantive impediments. Their outcome should be measured through: a) index of overall progress of banks' resolvability, b) percentage of deep dives carried out as planned, following coverage criteria and c) percentage ofimplementationof OSI recommendations (Single Resolution Board, SRM Vision 2028, 2024, p. 14-18).

Finally, within the business core area, SRM is planned as a reference in resolution. It is crucial to continue demonstrating the role of the SRM as a centre of expertise for resolution issues within the EBU. The SRM will be engaged with the production of specialised materials and the facilitation of discussion on resolution topics, including engagement with academia (Refrigeri & Manolescu, 2022, p. 57-64). The SRB, together with the NRAs, will also reach out to facilitate the understanding of resolution topics to more general audiences, thus further increasing the credibility of the system and therefore contributing to financial stability (Howarth & Schild, 2020, p. 6). SRM will work to have an open external dialogue and close collaboration with stakeholders, both inside and outside the EBU. This shoud establish a fully-fledged knowledge management function (Single Resolution Board, SRM Vision 2028, 2024, p. 14-18).

For this purpose, following actions should be undertaken: a) develop a knowledge management function for the SRM, b) demonstrate SRM's leadership in the resolution field and c) strengthen cooperation with EU bodies, and develop closer relations with third countries. Their effect should be measured by: a) adoption rate of knowledge management tools, b) audience outreach and c) stakeholder perception survey results.

In the area of governance, organisation and tools, following matters are covered by the SRM Vision 2028: 1) strengthening governance and streamlined structure, 2) strong and positive organisational culture and values and 3) digital transformation and use of best-practice technologies. The actions provided for this are: a) to streamline decision-making and increase efficiency of internal structures and processes, b) to streamline and update current organisational structure and c) to increase SRM integration (Ebner &

Westhoff, 2024). These actions should be measured by: a) average duration of decision-making processes, b) index of alignment of work programmes and c) coverage of methodology topics developed by joint NRA-SRB working groups.

Governance and organisation covers also a strong and positive organisational culture and values within the SRM. Environmental, social and economic sustainability are also important to deliver on the SRM mandate (McNamara, Mott et al. 2024, p. 22). In this section, it is provided: a) to establish managerial practices based on trust and shared values and foster a positive SRM culture and b) to promote sustainability withinthe SRB work. Potential measurements should be performed through: a) staff engagement survey indicators on engagement and work environment and b) carbon footprint (Single Resolution Board, SRM Vision 2028, 2024, p. 18-21).

Important matter for governance, organisation and tools are digital transformation and use of best-practice technologies as well (Hopt, 2021, p. 23-28). The SRB will use best-practice technologies and tools in its core processes. It already works towards an effective data management framework. Therefore, following actions are foreseen: a) to enable the SRB's digital transformation and b) to reinforce the SRM's and SRB's data capabilities. They should be assessed by: a) business alignment index and b) data management framework coverage (Single Resolution Board, SRM Vision 2028, 2024, p. 18-21).

The SRM Vision 2028 sets objectives in the area of human resources. It emphasizes 1) motivated and professional pool of talent, 2) learning and development and 3) increased focus on diversity and inclusion. For maintaining and developing motivated and professional pool of talent, it is necessary to ensure recruiting and retaining talented and motivated staff within the institution. The impact of investment in human resources is marked as vital in the general development and performance of any financial institution irrespective of technological progress (Rahman & Akhter, 2021). Therefore, it is important to: a) to develop a comprehensive internal and external mobility programme and b) to strengthen career development. The potential measurements should be performed through: a) staff turnover, b) percentage of vacant posts filled in internally and c) number of external mobilities (Single Resolution Board, SRM Vision 2028, 2024, p. 22-25).

Further, learning and development should be realised through effective training. It is important to revamp the SRM learning and development programme and develop initiatives to complement formal training. The effectiveness should be measured by: a) satisfaction rates on training and development offer and b) participation rate in development initiatives. This should provide the banks with competent personal required for performing serious tasks (Refrigeri & Manolescu, 2022, p. 59-60).

Finally, focus on diversity and inclusions key EU values should be increased. This should be achieved by developing and implementation a gender action plan and other diversity and inclusion measures. The effect of these measures should be proved by: a) gender ratios and b) staff engagement survey on diversity and belonging.

This key work is underpinned by some cross-cutting topics across the different objectives: transition of the SRB from its building up phase to becoming an established agency, the participation of the NRAs in the work of the SRM is a key topic, need to harness the potential of an ever more rapidly evolving world around us and take a longer-term perspective of the SRB's work (Single Resolution Board, SRM Vision 2028, 2024, p. 27).

All above presented objectives of the SMR Vision 2028 objectives for providing financial stability through resolution planning and crisis management appear to be high set and ambitious. Therefore, their reaching will require continuous monitoring and risk analysis.

Conclusion

EBU SRM introduced coordinated and harmonised proceedings for resolving failing banks on the EU level. Supported by the BRRD resolution instruments, SRM provided tools for an early reaction to the crisis and ensured continuity of critical and economic functions with minimised impact on the economy and financial system. At the moment of the establishment of the SRM in 2015, the world economy was faced with the periodical financial crisis which threatened its stability. The EU decided to introduce the framework which will provide stronger control of the banking sector, preserve the financial stability of the EBU members states and beyond and protect the money of the taxpayers.

For this purpose, the SRB was empowered to keep proper and effective functioning of the SRM. This meant that EBU Member States had to cede their entire right in decision making on bank resolution to the SRB. By 2024, the SRB became strong positioned EBU agency. For the case of crisis, a special Fund SRF is created. It reached in the year 2023 the targeted level of contributions for the amount of covered deposits of credit institutions, which might be used to for the efficient application of resolution tools in case of resolving failing banks. However, the SRM was criticised as ineffective, insufficiently available and complex. Above all, the decision-making of the SRB will surely need to be revised and simplified. This is the consequence of the fact that SRM functions as supranational as well as intergovernmental framework. That was the reason for inquiries how single the SRB truly is. Despite its complex structure the SRM proved itself as resilient in the practice.

The most recent bank failures proved importance of its existence. Moreover, it ensured equal treating of all EU creditors the same way (especially "no creditor worse off principle") and facilitated cross-border bank resolution. For further development, the SRB prepared the strategy SRM Vision 2028. This document set important objectives in the area of core business, governance, organisation and tools and human resources. Although these objectives appear to be very ambitious, their fulfilment will certainly strengthen the existing framework and provide it with important capacities. To reach the objectives set by the SRM Vision 2028 continuous monitoring and risk analysis will be required. It is important to measure identified key indicators, to provide necessary information for further activities, reviews and adjustments of the policy. Before the SRM stands a big work on implementation of the strategy. Since the SRM proved itself in the practice as a stable and robust framework confronted with the crisis situations, it can be expected that further development and implementation of strategy and other policy documents will not face bigger obstacles. In that sense, recent political statements of the Eurogroup encourage such a conclusion.

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RISKS RELATED TO ARTIFICIAL INTELLIGENCE'S LONG-TERM USE FOR THE ECONOMY

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Abstract. The article presents an analysis of long-term economic risks associated with the use of artificial intelligence technologies. There are two different levels of risks associated with implementing large-scale language models at the macro level. These incidental and existential risks can temporarily or permanently prevent humanity from realizing its long-term potential. By comparing the micro- and macro-level risks associated with AI, the article also sheds light on various ways to mitigate or prevent these risks. In particular, it highlights the political economy risks associated with the future implementation of AI models and advocates for a change in current economic ideology. An analysis of past projects of digital monopolies shows that they are focused on making a profit rather than solving humanity's problems. As a result, technologies developed from large-scale language models prioritize cost reduction rather than the development of human capabilities. The study concludes that a scenario approach is needed to analyze the risks associated with long-term implementation. AI and analytical criteria are established for comprehensive evaluation. Research methodology includes such methods as analysis of literature and existing research on the topic of risks of using artificial intelligence technologies at the macro level and in the long term, Comparative analysis of the risks of using A.I. at the micro and macro levels, a scenario approach to studying possible options for developing long-term interaction between humans and artificial intelligence.

Keywords: large language models, artificial intelligence, long-term risks, government regulation, risks

Introduction

In addition to the current risks of using artificial intelligence (AI) technologies, it is important to analyze the risks of AI in the long term. In many ways, these risks over a one-year time horizon are related to applying Large language models (L.L.M.s) at the macro level or developing Artificial Generative Intellect (A.G.I.). Both represent future risks that do not yet exist, but which will be vital over time. In the long term, artificial intelligence can become one of the ways to coordinate the economy along with the existing market and bureaucracy, since each method is based on processing huge amounts of information. The study aims to identify the long-term risks of using artificial intelligence models in the future and propose measures to prevent their negative consequences. The research hypothesis is that the identified risks of applying artificial intelligence technologies at the macro level require a new (not existing at the moment) level of state regulation.

Application of Artificial Intelligence Technologies at the Macro Level

Now, in the 21st century, science, education, and their embodiment in technology play an increasingly important role in economic development. Artificial intelligence is the technology that determines the progress of the modern economy. Science is a key driver of economic growth and social progress. If science can be accelerated - for example, by increasing the efficiency with which research money is converted into discoveries and commercialized inventions - then it can be accelerated by increasing the efficiency with which research money is converted into discoveries and commercialized inventions. The same can be done with national economic growth (Clancy et al., 2023).

As practice shows, there is no direct correlation between the increased use of modern technologies, such as AI, and national economic development. One of the reasons is the growing risks of using AI models for the economy and society as a whole. The authors analyzed the risks of short-term A.I. In this article, the emphasis will be placed on identifying the risks of using artificial intelligence in the long term at the macro level. In economics, the latter is traditionally understood as the level of the national economy. While the twentieth century was characterized by the opposition between the market economy and the planned economy, nowadays, the national economy is coordinated not only by market and state regulations but also by artificial intelligence (AI) models. All of them are impersonal distributed information processing systems. What A.I., market, and bureaucracy have in common is the processing of incoming economic information. The differences are in how they do it.

The application of large language models like ChatGPT and its analogs creates risks that, at first glance, seem insignificant but, in their application, carry existential threats to the existence of all mankind. At a superficial level, the practice of applying A.I. technologies have revealed the risks associated with their incorrect use by humans - erroneous data used for training and input, problems with the confidentiality of information, increased surveillance of citizens, problems of accountability and moral responsibility for the results of A.I. technologies. In addition, A.I. algorithms often have an inscrutable "black box" nature, which has already led to the loss of life due to malfunctioning machines (think of medical applications or autonomous cars) (Ayling & Chapman, 2022). Pandemics like the recent COVID-19 and the increasing frequency of man-made disasters show the danger of tail risks that are rare but very serious (Calum Chace, 2023). The latter is associated with a future, near or distant, in which even more intelligent and powerful A.I. models will be created, which may ultimately lead to the creation of artificial intelligence systems that are more powerful than we are. Let us distinguish between two qualitatively different levels of danger that these risks pose for the future of humanity. Tail risk is an unlikely risk that could have serious consequences. Existential risk or X-risk is a risk that could permanently limit the long-term potential of humanity. The question remains open: Is it always possible to transfer traditional risk analysis concepts to artificial intelligence models? In other words, are there specifics of L.L.M.s that do not allow us to fully rely on traditional risk analysis concepts? Maybe machine learning? For an objective answer to these questions, it is necessary to analyze the risks of the application of artificial intelligence technologies at the macro level. In our opinion, it is fundamentally important to distinguish between risks and opportunities to reduce the negative consequences of their occurrence at the micro level and at the macro level.

At the micro level, the negative impact of risks can be reduced. For example, at the individual level, the risk of being involved in a car accident can be reduced by driving slower (reducing Hazard), driving on less dangerous roads (reducing exposure), or wearing a seatbelt (reducing vulnerability). At the chemical plant level, the risk of chemical spills from an industrial plant can be reduced by using less hazardous chemicals (reducing Hazard), building the plant away from populated areas (reducing exposure), and providing workers with protective clothing (reducing vulnerability). In other words, incorporating risks into business practices

can reduce their negative impact.

At the macro level, there is a fundamentally different relationship between risks, their consequences, and people's ability to mitigate them.

The traditional risk equation can be extended as follows: Risk =
= Hazard × Exposure × Vulnerability / Ability to cope adjusted for the ability to cope with or recover from accidents.

"Hazard" refers to the severity and prevalence of the Hazard, while "×" simply indicates interaction. This applies to risks associated with artificial intelligence because if we lose control of a strong A.I. system, our ability to cope may be nil. Similarly, x-risks are constant by definition, so this equation shows that the risk of such events is infinitely large (Acemoglu & Restrepo, 2018).

The Dangers of the Coordinating Role of Artificial Intelligence at the Macro Level

Farrell and Shalizi introduced in 2023 a comparison of the effects of A.I. with the action of the market system and bureaucracy in coordinating of economics. Both govern modern society, providing a truly functioning modern economy. "Markets and bureaucracies seem familiar, but they are vast impersonal distributed information processing systems that turn the teeming chaos of our collective knowledge into useful simplifications. Markets and states may have enormous collective advantages, but they certainly seem hostile to people who have lost their jobs because of economic change or who are tangled up in silly clubs of bureaucratic decisions" (Farrell & Shalizi, 2023)

Like markets and bureaucracies, large language models are also something huge and incomprehensible for ordinary citizens. The logic of decision-making by artificial intelligence algorithms is not always clear to us at the micro level, and at the macro level, uncertainty will only increase. Nevertheless, as many functions of human thinking, such as computational functions, are weakening and dying out, the transfer of macro-level control functions to large language models will become more and more real over time.

Today's trends in the labor market show that artificial intelligence-driven nudging is penetrating business and society at an exponential rate. It is becoming more and more commonplace, replacing a growing proportion of decisions previously made solely by humans. For example, nudging is being used to achieve double-digit increases in customer retention, to improve workplace safety (Frey & Osborne, 2017) to increase retirement savings, to improve hygiene behavior during a pandemic, to improve health and safety, to improve health and safety, and to improve retirement savings.

As with Gopnik, L.L.M.s are not nascent individual intelligence but "cultural technologies" that reorganize and silently transfer human knowledge (Ford, 2015). For his part, political anthropologist James Scott has explained that bureaucracy is an information monster that devours rich, informal bodies of tacitly stored knowledge and releases a slurry of abstract categories that rulers use to "see" the world. More than half a century ago, economist Martin Weitzman suggested that "planned economies can use mathematical objects called 'separating hyperplanes' to adapt on the fly". Now, Farrell and Shalizi point out that "machine learning can find such hyperplanes, making planning more feasible than before" (Farrell & Shalizi, 2023). Technologically, this means the revival of the use of planned methods of managing the national economy.

In this sense, Large Language Models (L.L.M.s) can give a new impetus to (set the stage for) the development of a command economy to the detriment of the market, or at least provide bureaucrats with new tools to solve today's economic problems. The current "deglobalization" of the world economy initiated

by the United States objectively strengthens the position of the national bureaucracy, and artificial intelligence technologies provide it with unprecedented opportunities and power. In fact, instead of creating conditions for the development of the market, state regulation replaces it, redistributing responsibilities between them in a new way. This infringes on consumers' freedom of choice and business opportunities, and still, in fact, it is not the only way to create a new market.

Businesses want to maximize profits rather than provide poorly defined public goods for the citizens of a particular country. The application of A.I. technologies will increase the concentration of business in both national, and internationally, simultaneously increasing inequality between firms in terms of assets and income and inequality between countries, regions, and industries in terms of levels of economic development.

On the other hand, public expectations that state regulation of L.L.M.s will benefit entrepreneurship, the free market, and ordinary citizens are illusory. National states and the international community can create a certain framework for the use of L.L.M.s, but this will benefit the digital giants that dominate today and create barriers to entry for newcomers' "players". The very government regulation of artificial intelligence, as Daniel Solove astutely noted, risks creating a Kafkaesque world of a more mindless process of bureaucratic indifference, arbitrary error, and dehumanization, a world in which people feel powerless and vulnerable, without any meaningful form of participation in the collection and use of their information (Bostrom, 2014).

Political Economy Risks of Artificial Intelligence Application in the Future

The progress in the development of artificial intelligence models, especially evident after the launch of ChatGPT in November 2022, which has gathered over 100 million users in the two months since its launch, raises the question of the risks of moving to the next, qualitatively new stage - the stage of artificial general intelligence, or A.G.I. (artificial general intelligence, or A.G.I.). Yes, it does not exist yet, but researchers are getting closer to its creation. This leads us to the need to analyze the political and economic risks of using A.I. models in the future. What economic ideology will replace the existing one?

The lobby of scientists, investors, and entrepreneurs argues that once A.G.I. is safe, its use will be a boon to civilization. Silicon Valley technology investor Marc Andriessen, in a recent essay characteristically titled "Why Artificial Intelligence Will Save the World," even claims that A.I., "Like any other technology, owned by people and controlled by people." (Andreessen, 2023). But this has nothing to do with reality: techno-Logies were and are controlled by big businesses in order to maximize profits. As Y. Harari pointed out, the liberal political system was formed in the industrial era to rule the world of steam engines, refineries, and television sets. It finds it difficult to adapt to the continuous revolutionary changes associated with the development of biotechnology and information technology (I.T.). Any ideological system, be it communism or liberalism, relies on certain technologies and certain systems of machines. The crisis of liberalism now is due to the fact that it is not ready to accept artificial intelligence, biotechnology, and digitalization as the basis of its development. Therefore, Harari concludes that either modernization or a "new project" is needed. However, instead of modernization, the ideology of A.G.I.-ism, which combines artificial intelligence with neoliberalism, appears. The distinctive feature of this project is its non-alternativeness.

Recall that when one knows a topic, one has doubts; when one does not know, one has strong opinions. Therefore, according to E. Morozov, author of To Save Everything, Click Here: The Folly of Technological Solutionism and host of The Santiago Boys podcast, the A.G.I.- ism is designed to reinforce and reproduce the main prejudices of neoliberalism. Morozov, the A.G.I. ism is designed to reinforce and reproduce the

main biases of neoliberalism: that private actors are superior to public actors (market bias), that adaptation to reality is more important than transforming it (adaptation bias), and that efficiency is superior to social problems (efficiency bias).

This problem is aggravated by the lack of progress in explaining the actions of artificial intelligence models themselves. This not only prevents the creation of full-fledged teamwork between humans and AI (Autor, 2015). but also requires the introduction of strict state regulation measures to prevent "extreme scenarios". As Norbert Wiener, the creator of cybernetics, warned in his essay, "To effectively prevent catastrophic consequences, our understanding of our artificial machines must generally evolve in step with [step by step] the characteristics of the machine. Because of the very slowness of our human actions, the effective control of our machines may be reduced to zero." Unfortunately, the logic of commerce often leads in the opposite direction: for example, Microsoft recently fired its AI ethics team. Indeed, some researchers believe that the true problem of "alignment" is that A.I. firms, like polluting factories, are not aligned with society's goals. They benefit financially from powerful models but do not consider the costs to the world of their formerly temporary output.

The risks of using artificial intelligence in the long term are amplified by the "alignment problem". An A.I. model may purposefully pursue a goal set by the user but, in the process, do something harmful that was not wanted. Since human values are not inherent in A.I. algorithms, the side effects of achieving a goal may exceed the useful result many times over. The most famous example is the "paperclip maximizer," a thought experiment described by philosopher Nick Bostrom in 2003. Artificial intelligence is tasked with making as many paper clips as possible. This unlimited goal forces the maximizer to take whatever measures are necessary to cover the Earth with paper clip factories, exterminating humanity along the way.

All previous projects promoted by digital giants have a "bad reputation". All of them promised a qualitatively new solution to human problems but then became a means of profit-making. Uber, with its low fares, offered cities to become their public transportation systems, and Soylent, a meal replacement cocktail, took on the task of "solving" global hunger, and Facebook promised, to "solve" communication problems in the Global South, and Tesla's electric cars were seen as a means to fight the warming of the planet. None of these companies saved the world. This approach has rightly been called "digital neoliberalism". This worldview reinterprets social problems in the light of commercial technological solutions. As a result, problems that belong to the public domain are redefined as entrepreneurial opportunities in the marketplace. Therefore, the often-proposed increase in spending on artificial intelligence, as a means for human progress seems unjustified. Might states be better off increasing investment in the human capital of their citizens? Consequently, a reasoned choice is needed: what should society invest in for its development: in improving the human capital of its citizens or in improving artificial intelligence technologies?

Comparison of Risks of Artificial Intelligence Application at the Micro Level and at the Macro Level

If we consider the risks from the application of artificial intelligence technologies not only at the level of the national economy but also in the sectoral aspect, for example, in finance, a similar picture emerges in the long term.

At the micro level - that is, at the level of financial institutions and micro control A.I., where there are clear rules for observing recurring relationships and a framework in which a large language model knows what it is allowed to do and must be able to infer meaningful associations and relationships embedded in the data - the application of artificial intelligence can save costs and provide significant benefits. The risks

involved can be categorized as unknown, and they can be reasonably considered as risks of external origin. Emerging problems will be relatively minor and easily diagnosable as long as the economy develops on a rolling track, and standard models are suitable for their resolution, as shown in as shown in the book (Trajtenberg, 2018). In general, this approach allows the development of cost-cutting innovations rather than innovations of the second kind that improve human capabilities (Trajtenberg, 2018).

In the long term, the situation is fundamentally different. Quantitative changes accumulate and lead to qualitative changes. As soon as stability ends and a crisis begins, the existing rules are broken or fundamentally improved, the accumulated data lose their value, relationships change, and risk begins to be endogenous. All this will make qualitatively higher requirements for artificial intelligence models. According to Danielsson, to work effectively in this environment, artificial intelligence must understand cause-and-effect relationships, reason on a global rather than local basis, and identify threats that have not yet led to adverse consequences. All of this is far beyond current capabilities HLEG AI (High-Level Expert Group on Artificial Intelligence 2019). In addition, let us emphasize that world economic science has not yet provided a satisfactory explanation and effective policy of state regulation after the global financial crisis of 2008 and the current crisis caused by the consequences of the pandemic. As Nobel laureate Paul Romer noted, "Over the past three decades, the methods and conclusions of macroeconomics have deteriorated to the point where much of the work I n t h the field no longer qualifies as scientific research" (Cavallo, 2018). Therefore, the stability of the national financial system will be jeopardized, and large losses for banks and insurance companies will be possible. Macro hazards, as shown by the global financial crisis and the crisis of 2021-2023, do not have satisfactory explanations among economists and in the field of macroeconomic policy. Governments of all countries are now moving "by feel" in their macroeconomic policies. Therefore, in our opinion, it is naive to hope that the artificial intelligence model will "create a bicycle" in macroeconomics.

Right now, three technological hurdles are preventing A.I. from moving into the long term:
- Insufficient computing power,
- A deficit in the availability of data for machine learning,
- Lack of investment for further research in artificial intelligence.

Computational power, the cost of which is forcing developers to be more efficient, has triggered two new directions of A.I. progress. On the one hand, the proliferation of much smaller models that are trained on specific data to perform specific actions. On the other hand, the expansion of the creation of open-source models also makes it easier for people and companies to immerse themselves in the world of generative artificial intelligence. Hugging Face, an artificial intelligence company, estimates that there are about 1500 versions of such refined models. The struggle for data to train large language models has intensified due to the practical exhaustion of data on the Internet. The growing need for investment in further development of A.I. has also generated two new directions. First, many producers of large language models are already abandoning ChatGPT-style bots for the general public and are instead turning to serve large businesses. This raises the problem of whether it is "closed A.I." or "open A.I.". An example of "closed A.I." is the shift in Open A.I.'s operations. Not only has the company licensed its models to Microsoft, but it also builds custom tools for companies such as Morgan Stanley and Salesforce. Second, the increased use of open-source models like llama, created by Meta, to attract software developers and produce network effects. As we can see, the creation of open-source models is promising for solving the first and third problems. In our opinion, these three technological barriers will be overcome shortly, and the stage of general artificial intelligence will open.

The biggest economic risk is whether research into the possibilities of using artificial intelligence in the economy will turn out to be the "Star Wars" of the 21st century. That is a waste of money for the future instead of solving today's acute problems. The area where A.I. is most used is robotics. However, the actual

use of robots in the world is less expensive than the sale of erotic toys.

Measures to Mitigate the Long-Term Risks of Using Artificial Intelligence Technologies

These measures should be divided into two groups: 1) measures that can be taken now to prevent the consequences of long-term risks of artificial intelligence applications; and 2) anticipated long-term risks that will be possible in the future.

Mankind is advancing in the prevention of long-term risks by creating more and more regulatory documents, which, all other things being equal, provide an advantage to the existing digital giants. It should be emphasized that the analysis of the risks of the application of artificial intelligence technologies at the macro level in the long term cannot be carried out by the previous methods and tools but requires the creation of fundamentally new analytical tools. The previous tools focused on finding a specific failure, identifying the "root causes" causing subsequent negative consequences. But this doesn't work now in A.I., requiring a systematic approach for risk analysis, because purely direct examination of failure types has well-known white spots. Older analysis tools often assume that a "root cause" triggers a sequence of events that directly and ultimately cause failure, but such models capture only linear causality. Modern systems are replete with non-linear causality, including feedback loops, multiple causes, cyclic causality, self-reinforcing processes, butterfly effects, micro- and macroscale dynamics, emergent properties, and so on. The requirement that researchers erroneously and implicitly establish a direct link between their work and the failure mode requires stories with linear causality and excludes nonlinear, remote, or indirect causes (Brynjolfsson, E., & McAfee, A. 2014). As the complexity of large language models grows and their use in economic practice increases, the problem of mismatch between the existing tools for analyzing the risks of the consequences of artificial intelligence and the necessary tools will only increase.

Results

- Long-term risks of using artificial intelligence models have been identified, associated with the possibility of transition to the creation of artificial general intelligence (AGI) and its use as a coordinating mechanism of the economy on a par with the market and bureaucracy.
- It is shown that existing risk analysis tools are not suitable for studying long-term AI risks at the macro level due to non-linear cause-and-effect relationships and the complexity of modern AI systems.
- Measures are proposed to reduce the long-term risks of using AI, divided into preventive measures that can be taken now, and measures for the future as AGI develops.
- Two "polar" scenarios for the development of interaction between humans and AI in the long term are identified: a ban on the use of AI and the "WALL-E" scenario, when people completely rely on AI in all spheres of life.
- It is concluded that a new approach to government regulation of AI at the macro level is necessary due to the inability of existing mechanisms to cope with long-term risks

Conclusion

The prospects of researching the problem of artificial intelligence application risks over a long period

are connected with the elaboration of a scenario approach to the development of interaction between workers and large language models. The criterion is the level of human capital development. That is necessary for a worker to study, improve his/her qualifications, to improve himself/herself to work with A.I. This criterion is built based on how much progress in the application of artificial intelligence will affect the need to improve human capital and the need for government regulation. The problem is that with the progress of A.I. and the creation of A.G.I., the motivation to learn may disappear. As Hamilton et al. warn, the serious risk is that we will lose education and become disconnected from managing the future.

Today, two "polar" scenarios can be seen:

- prohibition (complete or temporary) on the use (improvement) of artificial intelligence;
- "a variant of WALL-E", where people recognize the advantage of the B.L.M.s (L.L.M.s).

In all types of labor as low-skilled and high-skilled, their ability to create an abundance of goods, and are eliminated from active work like the characters in the WALL-E cartoon. Intermediate options involve either a conscious slowing down of the use of artificial intelligence through increased government regulation on a national or global scale or transhumanism, in which people begin to modify themselves extensively using the human-machine interface.

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Digital and Trendy Learning Approaches: Building an Inclusive Knowledge Management Society

FACTORS AFFECTING THE ADOPTION OF OCCUPATIONAL SAFETY AND HEALTH (OSH) IN UNIVERSITIES: AN EMPIRICAL STUDY FROM SAUDI ARABIA

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   Abstract. *This study endeavours to fill the research gap by empirically examining the factors that influence the adoption of occupational safety and health (OSH) in higher education institutions (HEIs) in Saudi Arabia. Using a quantitative research method, data was collected through an online survey from 288 respondents who are employed or studying at universities. The data was analysed in SmartPLS to test the research hypotheses in addition to the validity and reliability of the measurement scales. The results revealed that the adoption of OSH practices in high-education institutions like universities is likely to be affected by several factors. These factors include perceived usefulness, perceived complexity, self-efficacy, cost, top management commitment, formal policy, formal training, encouragement, regulatory pressure, mimetic pressure, social factors, and competitive pressure. However, in contrast to previous research, factors such as perceived usefulness, cost, and top management commitment appeared to be insignificantly related to the adoption of OSH practices in the context of Saudi universities. These findings have important theoretical and practical implications, as discussed in the end.*

   Keywords: *higher education institutions, occupational safety and health, occupation safety and health, regulatory pressure, management commitment*

Introduction

   Occupational Safety and Health (OSH) refers to the complete mental, social, and physical well-being at the workplace (Schulte et al., 2019). However, the issues of safety and health are often not prioritized due to a lack of resources Wong et al. (2015). OSH is a serious concern across all organizations, including higher education institutions such as universities (Ahmad & Iqbal, 2022). Since many people (mainly students and staff) spend a considerable amount of time at universities, their safety and health become the prime responsibility of the organizations (Hossain et al., 2015). A high number of incidents related to OSH have been observed, which raises attention globally (Jilcha & Kitaw, 2016). In the context of universities, along with the quality of education, the infrastructure and physical environment of a university also matter to the people (Hossain et al., 2015). Beyond anything, a safe environment and established building infrastructure are the major requirements for a sustainable educational system (Dufour et al., 2021). For establishing a sustainable and safe educational environment, occupational safety and health are major factors that need to be acquired or maintained (Koonmee et al., 2010). In this regard, Reason (2016) stated that a safe and healthy working environment leads to the quality management of human resources, along with the assurance of

high-quality education. Likewise, Leggat et al. (2011) also argued that occupational safety and health in high-education institutions have a significant positive effect on their quality assurance. However, Westgaard and Winkel (2011) stated that OSH is now not considered an important factor for a sustainable education system but is considered a people's right within an organization. Thus, OSH is equally important for both the organization and the employees.

However, OSH-related regulations and legislation and their implementation are still weak in many developing countries (Ahmad & Iqbal, 2022) including Saudi Arabia. The global literature on what influences organizations, particularly universities, to adopt OSH practices is abundant, see for instance, Ahmad and Iqbal (2022), (Hossain et al., 2015), Dufour et al. (2021), and Lestari et al. (2019), to mention a few. These and other Scholars from various geographic contexts have identified numerous factors affecting OSH adoption in higher education. However, the body of knowledge lacks similar empirical evidence from Saudi Arabia, which is emerging fast in the global economic and political landscape, and its universities are attracting global attention (Moser et al., 2015). Amidst this economic transition, it is imperative to explore existing and potential factors that force or encourage Saudi universities to adopt OSH practices, thus positioning themselves competitively on the global stage.

Accordingly, this study aims to fill this gap by investigating the factors influencing OSH adoption in Saudi universities. The study contributes to the body of knowledge by providing the first empirical evidence on the subject matter from a geographical context that faced scholarly neglect until recently in almost all domains. As an emerging nation, it attracted researchers' attention in the past few years, who contributed to several areas. However, OSH practices, especially in higher education, remain untouched. In addition, the findings of this study aim to have important practical implications for universities and regulatory authorities, as well as for future researchers.

Theoretical Foundations

While prominent international universities, mostly from the developed world, have been proactive and forward-thinking in adopting modern OSH practices, the majority of institutions from developed and developing countries have fallen behind significantly (Hossain et al., 2015). Previous researchers (de Castro Maia et al., 2016; Famakin et al., 2023; Lestari et al., 2019) have professed that internal factors of the organization as well as external factors are important for the adoption of OSH practices. For instance, Hossain et al. (2015) examined three main constructs of external pressure that impact an organization's adoption of OSH; these include mimetic pressure, competitive pressure, and government pressure. Whereas, Ahmad and Iqbal (2022) focused on both external and internal factors of OSH adoption and examined their impact on organizational OHS sustainability performance. The external factors included regulatory, mimetic, social, and competitive pressures, whereas internal factors included management commitment, formal policies, training, and encouragement.

Within the field of OSH, there are various circumstances in which firms must comply with the legal and regulatory standards; the regulatory environment of any organization impacts its practices associated with OSH adoption (Chambers et al., 2013). Regulatory pressure has been serving as a powerful force that inclines organizations to adopt the practices and policies of OSH (Lakhiar & Lakhiar, 2021). On the other hand, the research of (de Castro Maia et al., 2016) has asserted that mimetic isomorphism is the notion that occurs when a firm is prone to imitating the activities of others and, most probably, the practices of its competitors to reach the horizons of legitimacy success. The mimetic forces have also been considered important in previous studies (Pilbeam et al., 2016) because firms often face situations where they have to prioritize their

goals and the use of their resources to achieve these goals. Hossain et al. (2015) that firms often find it easier to mimic other organizations to develop their safety programs.

Another main external pressure that impacts the firm's adoption of OSH practices is competitive pressure Ahmad and Iqbal (2022). The study by Hermanus and Hermanus (2001) stated that the introduction of safety and health measures within the organization is associated with competing concerns, and the adoption of the consistent and coherent policies of OSH is possible if the firms can compete ostensibly in the market. Lamm et al. (2017) also stated that intense competition is one of the major categories that entails the adoption of OSH practices by the firm. The study by (World Health Organization, 2002) has also validated competitive pressure as the one affecting the adoption of OSH practices. Private universities have been facing more competition than public universities, and for this, a better working environment is important to establish with the help of OSH policies (Hossain et al., 2015). In addition to this, the construct of social pressure has also been included to claim that it can impact the adoption of OSH. Wong et al. (2015) have identified that societal pressure is regarded as one of the major reasons as well as motivations behind the adoption of the policies of OSH.

Hossain et al. (2015) have referred to the social cognitive theory and stated that, as per the theory, social recognition is one of the main motivators for adopting such measures that can lead to respect and a better image and prestige of the organization, and it can also impact their adoption of OSH policies. In addition, for identifying the factors affecting the adoption of OSH policies, the organizational factors cannot be overlooked (de Castro Maia et al., 2016). The attitude of the management plays a very significant role in the adoption of OSH policies within the firm (Mohammadfam et al., 2016). Private universities, however, face the issue of the lack of readiness of the management despite the presence of many resources (Hossain et al., 2015). Other prior studies (Ahmad & Iqbal, 2022) (Bayram, 2018; Tzempelikos, 2015) have also regarded the commitment of top management as one of the factors that impact the adoption of OSH policies within the firm.

The attitude of the management is often reflected in how much it is to adopt, disseminate, and develop formal policies, encourage participants, and engage in formal training regarding OSH Bayram (2018). The use of formal policies as a part of the commitment of top management to adopt OSH has also been identified in the study of Nelson and Zega (2021), according to which formal policies are the espoused values of the firm reflected in its implementation of OSH. Berhan (2020) supported this claim that organizations that are engaged in incorporating good safety performance also believe in controlling the risk through incorporating formal OSH policies. According to the study conducted by Laberge et al. (2014), the performance of OSH is associated with the training of the employees and other workers, whereas the commitment of top management towards the implementation of OSH is associated with how it is prone to train its people. Hence, the need for preparing and training the workers to perform is linked with top management's commitment towards the implementation of OSH and further impacts the performance of OSH in the firm.

It is noteworthy that organizations that can incorporate the full practices of OSH are often prone to encouraging and motivating their people to perform as per OSH rules and standards (Hossain et al., 2015). According to Farouk (2017), the management is responsible for encouraging employees and their participation in OSH management. The study further stated that this participation increases the performance and effectiveness of OSH. Haslam et al. (2016) also supported this notion and professed that an adequate level of safety management impacts OSH adoption in the organization and offers satisfactory results in safety management. Thus, the implementation of the policies and practices of OSH has a significant impact on OSH adoption.

Hence, based on these scholarly arguments that provide theoretical support, this study proposes the following hypotheses and consequently develops the conceptual framework given in Figure 1.

- H1: Perceived usefulness has a positive significant effect on the adoption of OSH practices in universities.
- H2: Perceived complexity has a significant negative effect on the adoption of OSH practices in universities.
- H3: Self-efficacy has a significant positive effect on the adoption of OSH practices in universities.
- H4: OSH Cost has a significant negative effect on the adoption of OSH practices in universities.
- H5: Top management commitment has a significant positive effect on the adoption of OSH practices in universities.
- H6: Formal policy has a positive significant effect on the adoption of OSH practices in universities.
- H7: Formal training has a significant positive effect on the adoption of OSH practices in universities.
- H8: Encouragement has a positive significant effect on the adoption of OSH practices in universities.
- H9: Regulatory pressure has a positive significant effect on the adoption of OSH practices in universities.
- H10: Mimetic pressure has a positive significant effect on the adoption of OSH practices in universities.
- H11: Social factors have a significant positive effect on the adoption of OSH practices in universities.
- H12: Competition has a positive significant effect on the adoption of OSH practices in universities.

Figure 1

Conceptual framework of the study
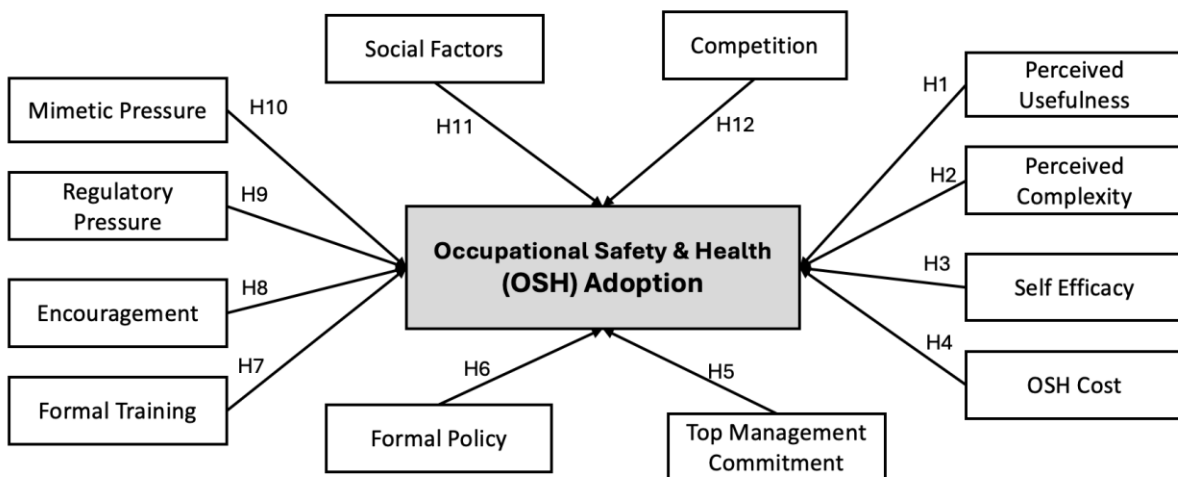
Research Methodology

As the study focuses on assessing the factors affecting OSH practices in universities in Saudi Arabia, a quantitative design has been implemented to gather the relevant information and analyse it. The desired respondents of this study included students and staff (faculty and administrative staff), of public and private universities across Saudi Arabia. The respondents were contacted through a snowball sampling technique of non-probability sampling due to a lack of a sampling frame. The respondents (students and staff) were contacted through personal contacts at various universities and requested to send the link to the online questionnaire to their contacts. Through the consistent follow-up and networking abilities of snowball sampling, researchers succeeded in approaching many respondents across the country to collect their opinions.

The questionnaire was developed with all due care by following the guidelines by Saunders et al. (2016). The respondents were ensured confidentiality of their anonymous responses. To operationalize the study's constructs, pre-validated and reliable measurement scales have been adopted from previous similar studies

such as Hussain and Shah (2015), Lingard et al. (2011), Ahmad and Iqbal (2022) and Lee and Ha-Brookshire (2017). The respondent's response was measured through a five-point Likert scale where 1 represented strongly agree and 5 represented strongly agree.

Over four months, with strict follow-up, a total of 953 responses were received. Of these, 465 incomplete and unengaged responses were dropped, yielding a response rate of around 51%. The remaining 488 complete responses were considered for inclusion in the data analysis. The demographic statistics of the respondents presented in Table 1 show that 56% of the total 488 respondents were female. This is consistent with the proportion of male and female students and staff in Saudi universities, where the female student population is higher than the male. In terms of qualification, around 35% of the respondents were below a bachelor's degree, which represents the students currently pursuing a bachelor's degree.

Table 1

Demographic profile of the respondents

Variables	Values	Frequency	Percentage
Gender	Female	273	56.0
	Male	215	44.0
Respondent Type	Staff	201	41.2
	Student	287	58.8
Age	18 – 25 Years	194	39.8
	26 – 35 Years	138	28.3
	36 – 45 Years	106	21.8
	46 – 55 Years	35	7.2
	Above 55 Years	14	2.9
Education Level	Below Bachelor	169	34.6
	Bachelor's Degree	118	24.2
	Master's Degree	116	23.7
	PhD	85	17.5
Work Experience	No Experience	145	29.7
	Less than 5 Years	165	33.9
	6 – 10 Years	132	27.0
	11 – 20 Years	26	5.2
	21 – 30 Years	11	2.3
	More than 30 years	10	2.0

The final data was analysed in SmartPLS software using the partial least squares (PLS) approach of structural equation modelling (SEM). Following the guidelines of Hair et al. (2021), the data was assessed for reliability and validity of the measurement scales before testing the research hypotheses.

Results and Data Analysis

This study followed a structural equation modelling (SEM) approach since the purpose was theory confirmation to test whether the factors identified in the global literature as the antecedents of OSH adoption predicted it in the context of Saudi universities. In SEM, it is mandatory to establish the reliability and validity of the measurement scales of the latent variables before testing the research hypotheses. Following Hair et

al. (2021) guidelines measurement and path model analysis is provided below.

Reliability

The reliability of the construct was assessed through three main criteria including factor loadings, Cronbach alpha, and composite reliability. The results provided in Table 2 demonstrate that all the scales are reliable, since for all the scores, the factor loadings are above 0.50, Cronbach Alpha is above 0.60 and composite reliability (CR) is above 0.70.

Convergent Validity

Convergent validity represents the ability of the scale to measure the same variable that it is supposed to measure. To establish convergent validity, each measurement scale must meet three criteria. Along with composite reliability values (CR > 0.70), the average variance extracted (AVE) score should exceed 0.50. In addition, CR scores should be greater than the corresponding AVE scores. As Table 2 shows, the convergent validity of all the measurement scales was established well since each scale met all three criteria.

Table 2

Reliability and Convergent Validity of Measurement Scales

Code	Latent Variables and Indicators	Loadings	Alpha	CR	AVE
	Perceived Usefulness		0.772	0.856	0.612
Use1	OSH practices make my stay here safe	0.712			
Use2	OSH practices would increase the university's market reach	0.832			
Use3	OSH practices would improve the quality of life on campus	0.799			
	Perceived Complexity		0.854	0.912	0.734
Com1	OSH practices difficult-to-learn	0.692			
Com2	OSH practices are difficult to practice	0.745			
Com3	OSH tasks are easy to remember	0.778			
	Self-efficacy		0.783	0.876	0.834
Slf1	I can perform OSH tasks without anyone's help	0.876			
Slf2	I can perform OSH tasks if I have adequate time to complete	0.612			
Slf3	I can perform OSH tasks using the safety manual only	0.842			
Slf4	I can practice OSH tasks only if someone shows me how to do	0.897			
	OSH Cost		0.697	0.701	0.582
Cst1	OSH implementation is costly	0.604			
Cst2	OSH costs are greater than its benefits	0.761			
Cst3	OSH maintenance is costly	0.739			
	Top Management Commitment		0.689	0.914	0.692
TPC1	Our top management has clear goals and a vision for OSH	0.704			
TPC2	The vision is widely communicated throughout the university	0.886			
TPC3	Our OSH program is based on organizational strategies	0.879			
TPC4	Following OSH practices are very important to our top management	0.782			
TPC5	Our top management forces us to follow OSH practices	0.629			

	Formal Policy		0.801	0.832	0.574
FP1	My university has a formal OSH policy	0.873			
FP2	My university uses safety and health posters for awareness	0.863			
FP3	My university employs professional safety and health consultants	0.847			
FP4	My university provides first-aid boxes	0.753			
FP5	I know whom to call if there is a sudden fire break-out	0.619			
	Formal Training		0.906	0.918	0.734
FT1	My university provides opportunities to receive formal OSH training	0.765			
FT2	My university arranges workshops on OSH issues	0.935			
FT3	My university provides classroom-based lessons on OSH issues	0.992			
FT4	My university arranges site tours during the orientation program	0.845			
	Encouragement		0.895	0.872	0.645
Enc1	Our management encourages us to learn OSH practices	0.843			
Enc2	Our management rewards us for practicing OSH	0.811			
Enc3	Our management encourages us to participate in hazard identification on sites	0.709			
Enc4	Our management rewards us for demonstrating exemplary safe behaviour on-site	0.697			
	Regulatory Pressure		0.864	0.723	0.823
Reg1	Government laws force universities to adopt OSH practices	0.906			
Reg2	Ministry of Education regulations force universities to adopt OSH practices	0.889			
Reg3	Ministry of Education is committed to promoting OSH practices in universities	0.863			
Reg4	OSH is required for accreditation	0.848			
	Mimetic Pressure		0.832	0.873	0.591
Mim1	Universities following OSH practices create a good health & safety culture	0.816			
Mim2	Other universities following OSH practices are favourably considered by students and employees	0.797			
Mim3	Other universities that have adopted OSH are doing better	0.823			
	Social Factors	0.861	0.703	0.822	0.672
Soc1	If we practice OSH, it will give us a higher status in the industry	0.845			
Soc2	If we practice OSH, we will have more prestige than other universities	0.837			
Soc3	OSH practice is a status symbol in this industry	0.829			
Soc4	If we practice OSH, we will be seen as competent	0.813			
	Competition		0.814	0.799	0.712
Cmp1	It is easy for students & employees to switch to another university due to the lack of OSH practices	0.702			

Cmp2	OSH services offered by other universities are similar to this university	0.818			
Cmp3	This university will lose its students & employees if it does not adopt OSH practices	0.859			
Cmp4	I feel that OSH is a strategic necessity to compete in the marketplace	0.633			
	OSH Adoption		0.623	0.709	0.592
Adp1	Our top management has already developed OSH plans	0.779			
Adp2	Our top management has approved a financial budget schedule	0.678			
Adp3	Our top management has enforced OSH plans	0.791			
* Loading > 0.60, Alpha>0.60, CR>0.60, AVE>0.50					

Discriminant Validity

The discriminant validity of the measurement scales represents the degree to which study variables are different from each other in terms of measuring the underlying concept. In SEM, traditionally, cross-loadings and Fornell and Larcker (1981) were used to assess the discriminant validity. However, currently, the Heterotrait-Monotrait (HTMT) ratio of correlation criteria is preferred because it is more stringent and reliable than the traditional criteria. The HTMT scores show correlations between the constructs. A threshold value above 0.85 indicates multicollinearity, or, in other words, potential issues with discriminant validity.

Table 3
HTMT Ratio Scores

Latent Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
Perceived Usefulness													
Perceived Complexity	0.584												
Self-efficacy	0.673	0.642											
OSH Cost	0.349	0.663	0.410										
Top Management Commitment	0.782	0.458	0.289	0.567									
Formal Policy	0.467	0.562	0.233	0.739	0.723								
Formal Training	0.823	0.567	0.629	458	0.629	0.253							
Encouragement	0.389	0.637	0.778	349	0.688	0.356	0.492						
Regulatory Pressure	0.467	0.39	0.666	0.592	0.523	0.318	0.237	0.345					
Mimetic Pressure	0.186	0.491	0.248	0.436	0.519	0.439	0.158	0.723	0.534				
Social Factors	0.582	0.732	0.572	0.628	0.422	0.543	0.384	0.512	0.628	0.759			
Competition	0.491	0.639	0.529	0.348	0.539	0.405	0.571	0.384	0.381	o.634	0.812		
OSH Adoption	0.682	0.239	0.711	0.801	0.628	0.489	0.365	0.612	0.549	0.694	0.539	0.438	
Criteria: HTMT<0.85													

This study opts for the HTMT ratio criteria due to its novelty, relevance, and stringency. As shown in Table 3, all the values fall below the threshold for all the latent variables, establishing the discriminant validity

of the scales. However, some values are very close to threshold; see, for instance, the correlation between perceived usefulness and formal training as well as between perceived usefulness and top management commitment, which raises some concerns and might create issues in structural model assessment.

Path Coefficient Analysis

To achieve the research objectives, hypotheses were tested once it was ensured that the measurement scales for all the latent variables were reliable and valid. SEM, or path coefficient analysis, is used to examine the strength and direction of the hypothesized paths. Through t-statistics, the magnitude of the direct effect is quantified to decide whether to accept or reject a research hypothesis.

Table 4 provides path coefficient (β) values along with associated t and p values. At a 95% confidence interval, a path or hypothesis is supported if the corresponding t-value is greater than ± 1.96 and the p-value is less than 0.05. As shown in Table 4, except for perceived usefulness, cost, and top management commitment, the significance value of all other variables (factors) is below 0.05 and for most it is 0.000, indicating a strong positive or negative influence on OHS adoption in Saudi universities.

Overall, the outcomes of regression analysis demonstrated that there is a strong impact of factors such as perceived complexity, self-efficacy, formal policy, formal training, encouragement, regulatory pressure, mimetic pressure, social factors, and competition on OSH adoption (a dependent variable) in the universities of Saudi Arabia. Among all perceived complexity, OSH cost was hypothesized to have a negative influence on the adoption of OSH practices. While perceived complexity was confirmed to have a negative influence, OHS cost appeared to have a statistically insignificant impact on the adoption of OHS practices. Surprisingly, management commitment and perceived influence have also shown insignificant impacts in the context of Saudi universities, which is in contrast with existing empirical studies from other countries.

Table 4

Hypotheses Testing

Hypothesis		Path Coefficient	T-value	P-value	Decision
H1	Perceived usefulness -> OSH adoption	0.047	0.213	0.342	Rejected
H2	Perceived complexity -> OSH adoption	-0.318	4.386	0.000	Supported
H3	Self-efficacy -> OSH adoption	0.197	3.789	0.000	Supported
H4	OSH Cost -> OSH adoption	0.132	0.527	0.634	Rejected
H5	Top management commitment -> OSH adoption	0.184	0.302	0.983	Rejected
H6	Formal policy -> OSH adoption	0.529	10.068	0.000	Supported
H7	Formal training -> OSH adoption	0.392	6.002	0.000	Supported
H8	Encouragement -> OSH adoption	0.389	5.992	0.000	Supported
H9	Regulatory pressure -> OSH adoption	0.202	3.772	0.001	Supported
H10	Mimetic pressure -> OSH adoption	0.323	4.387	0.000	Supported
H11	Social factors -> OSH adoption	0.195	3.017	0.003	Supported
H12	Competition -> OSH adoption	0.631	12.087	0.000	Supported
* Critical t-value 1.96 (P<0.05)					

Coefficient of Determination Analysis

The coefficient of determination ($R2$), or regression analysis, measures the proportion of the variance caused by independent variables in the dependent variable. The results show that around 62% ($R2 = 0.618$) of the variance in adoption of OSH practices can be explained by the 12 independent variables included in the model, as shown in Table 5. Though individualized variance may vary from one factor to another based on their impact in terms of path coefficient, overall variance suggests that these are the core antecedents of the adoption of OSH practices in Saudi universities. A detailed discussion of the results and their implications is provided in the forthcoming sections. A detailed discussion of the results and their implications is provided in the forthcoming sections.

Table 4

Coefficient of Determination

Dependent Variable	R Square	Adjusted R Square	Predictors
OSH Adoption	0.618	0.603	Perceived usefulness, perceived complexity, self-efficacy, cost, top management commitment, formal policy, formal training, encouragement, regulatory pressure, mimetic pressure, social factors, and competitive pressure

Discussion and Implications

The findings of this study show that the adoption of OSH practices in universities is mainly influenced by self-efficacy, perceived complexity, formal policy, formal training, encouragement, regulatory pressure, mimetic pressure, social factors, and competitive pressure. While all these factors have shown a significant positive impact, perceived complexity has a negative impact on the adoption of OSH practices. These findings are consistent with the existing scholarly empirical evidence. However, three factors, including perceived usefulness, OSH cost, and top management commitment, were found to have no significant impact on OSH adoption in the context of Saudi universities. This contrasts with previous similar studies conducted in different geographical contexts. See, for instance, a study by Ahmad and Iqbal (2022) on Pakistani higher education institutions where management commitment was not only found to have a strong positive impact on OSH adoption but was also confirmed as an intervening variable. Likewise, Hossain et al. (2015) also found it as a strong predictor of OSH adoption in Bangladeshi universities. Why these factors have shown statistical insignificance is an interesting subject to be explored in future research investigations.

On the other hand, the findings supported the hypothesis that regulatory pressure has a significant positive impact on the adoption of OSH practices in universities. This notion is also supported in the study conducted by Gunningham (2011) that regulatory pressure forces people to adopt OSH practices within the organizational environment. In this regard, Mansour et al. (2019) argued that most developing countries lag in following the regulatory principles related to OSH practices, leading to an increase in the magnitude of accidents in the higher educational environment. Likewise, the findings revealed that competitive pressure also influences universities to adopt OSH practices. Similarly, mimetic pressure has a significant impact on OSH adoption, and stakeholders in universities are likely to mimic other organizations. In addition, social factors also play a highly significant role in OSH adoption. The participants of the survey believed that the top management of universities either lacks commitment to the adoption of OSH practices or that the

commitment level is significantly low. In this regard, Ahmad and Iqbal (2022) and Hart (2010) (2010) stated that universities in developing countries are usually relatively less motivated towards the maintenance of a safe working environment. It has also been identified from the findings of the study that cost has no significant impact on the adoption of OSH practices, as the high implementation cost of adopting OSH does not influence them to adopt OSH practices in the universities.

These findings have practical implications for various stakeholders, such as accreditation bodies, government agencies, civil society, and university management, as highlighted below.

Firstly, the universities need to recognize the importance of OSH adoption at the workplace for the safety and health of all employees, students, and visitors. To achieve this, universities need to develop formal policies, provide training programs, and develop a system that encourages OSH safety.

Secondly, the perceived complexity of OSH regulations and policies negatively influences their adoption. The regulatory bodies should simplify OSH procedures and processes to alleviate perceived complexity and encourage greater adoption among universities.

Thirdly, though perceived usefulness, OSH cost, and top management commitment were found to be statistically insignificant in Saudi universities, it's important to recognize that their significance may vary across different geographical contexts. Addressing the perceived lack of top-management commitment is crucial. Leaders within universities should demonstrate a strong commitment to OSH practices, recognizing their importance in safeguarding the well-being of staff and students. Similarly, while upfront implementation costs may appear high, the long-term benefits of a safer working environment could outweigh these initial expenses.

Fourthly, various types of pressures, such as regulatory, mimetic, and competitive pressures, appeared to be strong influences on OSH adoption in universities. The regulatory bodies should enhance regulatory pressure for the implementation of OSH policies across all universities. This will create an environment that may enhance competitive and mimetic pressures.

Lastly, society can play a crucial role in enforcing and enhancing OSH practices at universities by exerting social pressure to emphasize a safe working environment.

Limitations and Future Direction of Research

The scope of this study is limited to a specific context in a developing country like Saudi Arabia. The findings of the study may not be generalized to all countries, especially the developed countries and the Western world, due to significant differences in cultures and economic situations. Thus, future research is recommended to focus on different locations for analysing the factors affecting the adoption of OSH practices in the higher education system.

On the other hand, the study used a quantitative method to examine the factors affecting the adoption of OSH practices, which limited the findings of the study. For this purpose, it is recommended that future research use both quantitative and qualitative analysis to acquire more in-depth and generalized results.

This study found that top management commitment does not impact OSH adoption in the context of Saudi Arabia. These findings are contrary to global empirical research. Future research should explore the reasons behind these differences by using qualitative methods such as in-depth interviews to identify the reasons behind them.

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PRIMERJAVA KAKOVOSTI ŠTUDIJA NA UNIVERZI V LJUBLJANI IN UNIVERZI V MARIBORU | COMPARISON OF THE QUALITY OF STUDIES AT THE UNIVERSITY OF LJUBLJANA AND THE UNIVERSITY OF MARIBOR

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Povzetek. Slovenija se sooča z naraščajočim problemom pomanjkanja kvalificirane delovne sile v nekaterih segmentih trga dela in potrebnega znanja, spretnosti ter kompetenc, kar postaja ena glavnih ovir za izboljšanje produktivnosti in gospodarskega napredka. Po drugi strani, po raziskavah OECD, 44,9% populacije v starostni skupini od 30 do 34 let ima doseženo terciarno izobrazbo, medtem ko vpis v visokošolsko izobraževanje v zadnjih letih pada. V prispevku analiziramo kazalnike kakovosti dveh največjih univerz v Sloveniji z metodo meta-analize Samoevalvacijskih poročil 44 visokošolskih zavodov. Osredotočili smo se na raziskovalno vprašanje »Kako Univerza v Ljubljani in Univerza v Mariboru zagotavljata kakovost študija?«. Rezultati kažejo primerljive podatke o kakovosti študija na Univerzi v Ljubljani in Univerzi v Mariboru za študijsko leto 2021/2022. Ugotavljamo nizko prehodnost študentov iz prvega v drugi letnik dodiplomskega študija in višjo prehodnost na podiplomski stopnji. Rezultati tudi nakazujejo na povprečno visoko stopnjo zadovoljstva študentov s študijem. Razlika se kaže v stopnji diplomiranja, ki je na Univerzi v Mariboru razmeroma visoka v primerjavi z Univerzo v Ljubljani. Pri analizi smo ugotovili, da Samoevalvacijska poročila pri nekaterih kazalnikih niso primerljiva, zaradi različnih metod samoevalvacij, ovira pa so tudi manjkajoči podatki.

Ključne besede: visoko šolstvo, prehodnost študija, vpis, stopnja diplomiranja, samoevalvacijska poročila, kakovost študija, zadovoljstvo, obremenitev s študijem.

Abstract. One of the key challenges to increasing productivity and advancing the economy in Slovenia is the rising shortage of skilled labour in particular sectors of the labour market as well as the requisite knowledge, skills, and competences. However, OECD data indicates that 44.9% of people in the 30- to 34-year-old age range have completed postsecondary education, despite a decline in enrolment in higher education in recent years. In this work, we employ the meta-analysis of 44 self-evaluation reports higher education institutions to examine the quality indicators of Slovenia's two biggest universities. We focused on the research question "How do the University of Ljubljana and the University of Maribor ensure the quality of education?". The results show comparable data on the quality of studies at the University of Ljubljana and the University of Maribor for the academic year 2021/2022. We note a low progression rate of students from the first to the second year of undergraduate studies and a higher progression rate at the postgraduate levels. The results also indicate an average high level of student satisfaction with their studies both universities. The difference is reflected in the graduation rate, which is relatively high at the University of Maribor compared

to the University of Ljubljana. During the analysis, we found that the Self-evaluation reports are not comparable for some indicators, due to different self-evaluation methods, and missing data is also an obstacle.

Keywords: higher education, progression of studies, enrolment, graduation rate, self-evaluation reports, quality of studies, student satisfaction, student workload.

Uvod[1]

Slovenija se spopada z eno največjih vrzeli v razpoložljivosti delovne sile, s čimer se veča zaostanek za državami, ki so vodilne pri produktivnosti in inovacijah. Pomanjkanje kvalificirane delovne sile v nekaterih segmentih trga dela (gradbeništvo, zdravstvo, šolstvo, IT sektor, elektrotehnika itd.) ter potrebnih znanj, veščin, spretnosti in kompetenc, postaja ena izmed glavnih ovir za izboljšanje produktivnosti in gospodarski napredek, kljub temu, da imamo po OECD raziskavi 44,9 % delež prebivalstva s terciarno izobrazbo (v starostni skupini od 30 do 34 let) (Eurostat, 2020). Izobraženost odraslih in delovno aktivnih se v Sloveniji že leta izboljšuje, vendar se hkrati pojavljajo neskladja na trgu dela. Kakovost študija bo eden izmed ključnih dejavnikov, ki lahko zmanjša vrzel med potrebnimi znanji in veščinami za prehod v Družbo 5.0.

Opazimo lahko porast deleža oseb s terciarno izobrazbo, ki opravljajo delo, za katero je potrebna največ srednješolska izobrazba. Ta težava je nastala zaradi počasnega preoblikovanja podjetniškega sektorja, specifičnih potrebah po delovni sili in neskladjih pri vpisu v srednje in terciarno izobraževanje. Prilagajanje in izboljšanje (kakovosti) znanj, veščin in sposobnosti mladih, skupaj z intenzivnim prekvalificiranjem zaposlenih vseh starosti, sta ključna za zeleni in digitalni prehod (to so prednostne naloge na ravni EU). Potrebne pa bodo tudi druge spremembe (vlaganje v raziskave in razvoj, izboljšanje učinkovitosti, prenove poslovnih procesov, prestrukturiranje gospodarstva itd.), ki so bistvene za povečanje produktivnosti (EURES, 2022; Eurostat, 2020; Ferk in Wostner, 2021; UMAR, 2019).

V prispevku se osredotočamo na raziskovalno vprašanje: »*Kako Univerza v Ljubljani in Univerza v Mariboru zagotavljata kakovost študija?*«. Pri tem smo s pomočjo metaanalize sekundarnih podatkov Samoevalvacijskih poročil 44 visokošolskih zavodov primerjali kazalnike kakovosti (prehodnost študija, stopnja dokončanja, obremenitev študentov in zadovoljstvo študentov). V našem prispevku smo sicer želeli podati vodstvu dveh največjih univerz pregled kazalnikov kakovosti izobraževalne dejavnosti in s pomočjo primerjave omogočiti podlago za boljše odločitve o nadaljnjih strategijah in načrtovanje ukrepov na podlagi dejstev, s tem pa tudi stalno izboljševanje storitve študijske dejavnosti.

Predpostavljali smo, da so Samoevalvacijska poročila visokošolskih zavodov transparenten in kakovosten vir podatkov, ki predstavljajo realno stanje na visokošolskih zavodih in omogočajo pregled kakovosti študija. Kljub temu so se pojavile določene omejitve pri analizi podatkov iz Samoevalvacijskih poročil, saj le-ta ne poročajo med seboj primerljivih podatkov, zaradi različnih metodologij samoevalvacije ali pa smo naleteli na manjkajoče podatke. Pri analizi smo se zato omejili na pregled kazalnikov kakovosti največjih dveh univerz v Sloveniji: Univerze v Ljubljani in Univerze v Mariboru.

[1]*Prispevek je nastal na podlagi magistrske naloge z naslovom Kakovost študija na visokošolskih zavodih in povezava s trgom dela (Bogataj, 2024) in je ustrezno dopolnjen in razširjen za konferenčni prispevek.*

Visokošolski trg dela

Podjetja, ki zaposlujejo več terciarno izobraženega kadra, običajno dosegajo višjo produktivnost, saj ti zaposleni uspešno združujejo svoje veščine in znanje. Izobrazba in veščine so ključnega pomena za rast produktivnosti pri uporabi novih tehnologij in prilagajanju na nove zahteve trga dela. Študija OECD je potrdila, da najbolj produktivna podjetja zaposlujejo zaposlene z raznolikim naborom znanj in veščin. Empirična analiza za Slovenijo izpostavlja ključno vlogo izobrazbe in znanja pri doseganju višje produktivnosti, še posebej v podjetjih, ki delujejo v dejavnostih, povezanih z znanjem, kot so IT, znanstveni, tehnični in finančno-zavarovalniški sektorji. Podjetja, ki se uvrščajo med desetino najboljših po produktivnosti, imajo skoraj polovico zaposlenih s terciarno stopnjo izobrazbe (Eurostat, 2020).

Na podlagi omenjenih dejstev smo sklepali, da kljub visoki stopnji terciarne izobrazbe, ki jo ima delovna sila v Sloveniji, obstaja pomanjkanje ustreznega znanja za opravljanje specifičnih nalog. To pomanjkanje se lahko kaže v obliki nezadostnih tehničnih spretnosti, pomanjkanja praktičnih izkušenj ali pomanjkanja specifičnih veščin, ki so potrebne v današnjem hitro spreminjajočem se delovnem okolju. Poleg tega obstaja možnost, da delovna sila poseduje znanje in spretnosti, ki so bile v preteklosti morda bistvene, vendar so v sodobnem kontekstu postale manj pomembne. Zato je ključnega pomena, da se delovna sila stalno izobražuje in usposablja ter ostane na tekočem z najnovejšimi trendi in zahtevami na trgu dela. Za pridobitev teh znanj in veščin ključno vlogo nosijo vsi visokošolski zavodi v Sloveniji, kakovosten študij pa je pri tem eden izmed pogojev za uspešnejši prehod na trg dela.

V današnjem času smo priča zanimivemu pojavu na terciarnem trgu dela. Po eni strani je določenih vrst izobraženih kadrov v presežku (družboslovne vede), po drugi strani pa vpis novih študentov na visokošolske zavode pada (zahtevnejše naravoslovne in tehniške smeri). Slika 1 prikazuje vpis študentov v zadnjem desetletju, kjer je opaziti trend padanja (16.471 manj vpisanih študentov v letu 2022/2023 v primerjavi z letom 2012/2013).

Slika 7

Vpis po študijskih letih 2012/13-2022/23
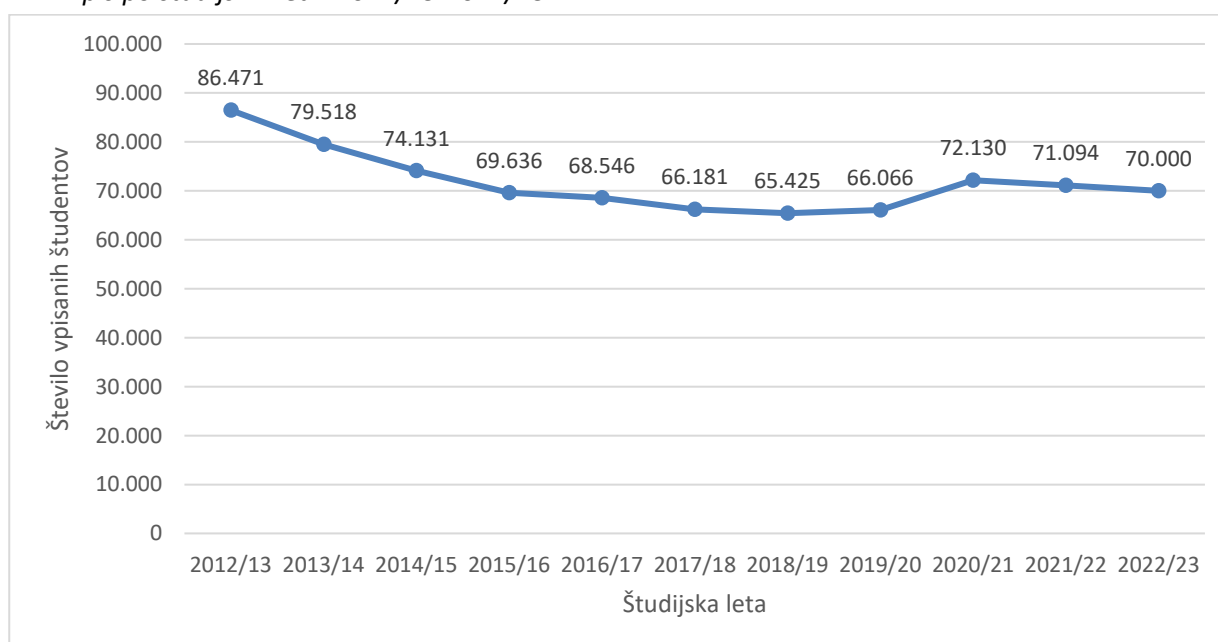
Vir: SURS, 2023.

Leta 2023 je v raziskavi Evro-barometra sodelovalo 12.909 malih in srednje velikih podjetij iz evropske

unije. Na vprašanje »kako pomembno je imeti usposobljene delavce s pravimi veščinami?« so slovenska podjetja 76 % pritrdilno odgovorila za »zelo pomembno« (Eurobarometer, 2023a). V Sloveniji je bila v letu 2023 opravljena terenska razkisava med malimi in srednje velikimi podjetji, kjer je sodelovalo 481 podjetij. 43 % delodajalcev se je izreklo, da je iskanje zaposlenih z ustreznimi znanji in spretnostmi trenutno najbolj pereča težava. Evropsko povprečje na to vprašanje je 54 %. Skoraj polovica delodajalcev se je opredelila, da je bilo v zadnjih 24 mesecih zelo težko oz. nekoliko težko najti in zaposliti osebe z ustreznimi znanji in spretnostmi. Delodajalci so se v samo 3 % opredelili, da imajo na področju delovnih mest raziskav in razvoja pomanjkanje znanj in spretnosti. Pri delovnih mestih IT področja je bil ta odstotek 19 % (Eurobarometer, 2023b).

Kakovost študija

Kakovost v visokem šolstvu je večplasten koncept in ga težko opišemo z eno definicijo. Vključuje tako izjemnost in preseganje standardov kot tudi funkcijo razvoja in transformacije, pri čemer akademske vrednote pogosto tekmujejo z organizacijskimi in ekonomskimi interesi. V Sloveniji še ni enotne definicije kakovosti, kar odraža širok spekter mnenj od akademskih do gospodarskih (Širok, 2019).

Preden se visokošolski zavod lahko uradno ustanovi, mora pridobiti odločbo o akreditaciji pri Nacionalni agenciji Republike Slovenije za kakovost v visokem šolstvu (v nadaljevanju: NAKVIS). Glede na vrsto zavoda so dodatno zahtevani pogoji izvajanja študijskih programov (na koliko stopnjah) in pokrivanje področij in disciplin (število znanstvenoraziskovalnih disciplin in izobraževalnih področij). Poleg tega mora vsak visokošolski zavod izpolnjevati tudi druge zahteve, ki jih določa ZViS, vključno z zahtevami glede kakovosti izobraževanja, raziskovalne dejavnosti, upravljanja in financiranja. Ta postopek zagotavlja, da so programi, ki jih ponujajo ustrezni in kakovostni (Debevec in Širok, 2022; Zakon o visokem šolstvu (ZViS), 2023; Zakon o vrednotenju in priznavanju izobraževanja (ZVPI), 2012).

Po 80. členu ZViS-a se »Kakovost visokošolskih zavodov, študijskih programov ter znanstvenoraziskovalnega in umetniškega ter strokovnega dela ocenjujejo visokošolski zavodi (samoevalvacija) in agencija (zunanja evalvacija). Ugotovitve iz samoevalvacijskih poročil in poročil o zunanjih evalvacijah se upoštevajo ob podaljšanju akreditacije visokošolskih zavodov.« Samoevalvacija je tako prepuščena visokošolskim zavodom samim, ki na podlagi izbrane metodologije preverja kakovost študija na letni ravni. Zunanja evalvacija (ob podaljšanju akreditacije) pa presoja samoevalvacijo zavoda, spreminjanje, posodabljanje in izvajanje dejavnosti zavoda.

Merila za akreditacijo in zunanjo evalvacijo visokošolskih zavodov in študijskih programov (Uradni list RS, št. 42/17, 14/19, 3/20, 78/20, 82/20 – popr., 44/21 in 23/23; v nadaljevanju: Merila) v 21, členu določajo (notranje zagotavljanje in izboljševanje kakovosti študijskega programa) dva standarda (NAKVIS, 2017):

- Prvi standard določa, da mora visokošolski zavod evalvirati in posodabljati vsebino, sestavo in izvajanje študijskega programa. Nato NAKVIS presoja, ali samoevalvacija omogoča razvoj in posodobitev programa, kako se zbirajo in analizirajo informacije za spremembe programa ter kako se deležniki obveščajo o napredku in ugotovitvah samoevalvacije.

- Drugi standard zahteva, da so naloge, načrtovane na podlagi samoevalvacije študijskega programa, razvidne iz samoevalvacijskih poročil. NAKVIS presoja uresničevanje teh nalog v obdobju zadnjih treh let. Prav tako presoja sodelovanje deležnikov pri izboljšavah, njihovo uresničevanje in nastajanje samoevalvacijskega poročila ter sklenjenost kroga kakovosti (PDCA).

Področje presoje C.1. v Merilih se nanaša na notranje zagotavljanje in izboljševanje kakovosti študijskega programa. Prvi standard tega področja določa, da mora visokošolski zavod evalvirati in posodabljati vsebino, sestavo in izvajanje študijskega programa. Presoja se, ali samoevalvacija študijskega programa omogoča njegovo razvijanje in posodabljanje, tako da se ohranja njegova aktualnost ter ustvarja kakovostno izobraževalno okolje. Visokošolski zavod mora priložiti samoevalvacijska poročila za zadnja tri leta in dokumente, iz katerih je razvidno uresničevanje nalog na podlagi izsledkov samoevalvacijskega poročila za zadnje zaključeno samoevalvacijsko obdobje. Priložiti je potrebno tudi načrt ukrepov za prihodnje samoevalvacijsko obdobje. Iz tega razberemo področja vsebine samoevalvacijskega poročila, ta področja so (NAKVIS, 2017):

- posodabljanje vsebine študijskega programa,
- presojanje ustreznosti izvajanja študijskega programa,
- obremenitev študentov,
- primerjanje doseženih kompetenc z načrtovanimi,
- presojanje ustreznosti preverjanja in ocenjevanja znanja,
- presojanje razmer za študij,
- presojanje pričakovanj, potreb in zadovoljstva študentov,
- ugotavljanje potreb po znanju in zaposlitvenih potreb v okolju,
- analiziranje vpisa,
- prehodnosti,
- dokončanja študija in
- presojanje znanstvenega, strokovnega, raziskovalnega oziroma umetniškega dela.

Visokošolski zavodi kakovost na področju samoevalvacije praviloma urejajo s pravilnikom o kakovosti, ki je v skladu s politiko kakovosti in merilih NAKVIS-a.

Kazalniki kakovosti

Kakovost lahko merimo na različne načine, pri tem nam lahko pomaga nabor kazalnikov kakovosti. V visokem šolstvu imamo naslednje kazalnike kakovosti:

- *Število vpisanih:* Število vpisanih se nanaša na število študentov, ki so se vpisali v določen študijski program na visokošolskem zavodu (Uradni list, 2011).
- *Prehodnost:* Prehodnost meri, kako uspešno študenti prehajajo iz ene stopnje (letnika) študija na naslednjo ali kako uspešno napredujejo skozi svoj študijski program. Na primer koliko študentov uspešno izdela prvi letnik in se vpiše v drugi letnik študija. V prvi letnik vpisanih 100 študentov in nato v drugi letnik naslednje leto vpisanih 50 študentov iste generacije, pomeni prehodnost 50 % čiste generacije. (Uradni list, 2011).
- *Stopnja dokončanja:* Stopnja dokončanja (število diplomantov) predstavlja število študentov, ki so uspešno zaključili svoj študijski program na določenem visokošolskem zavodu (Uradni list, 2011).
- *Obremenitev študentov:* Obremenitev študentov v visokošolskem izobraževanju se nanaša na količino dela, ki ga študenti opravijo v okviru študijskega programa. To vključuje obisk predavanj, seminarjev, laboratorijskih vaj, študij, pripravo na izpite in izdelavo projektnih in seminarskih nalog. Obremenitev študentov se običajno izraža v kreditnih točkah ECTS (ang. European Credit Transfer and Accumulation System), kjer ena kreditna točka predstavlja približno 25 do 30 ur dela. Samoevalvacijska poročila običajno vključujejo analizo obremenitve študentov, ki se nanaša na njihovo delovno obremenitev v okviru študijskega programa. Obremenitev je praviloma ločena po predmetih programa. Povratne

informacije študentov o njihovi obremenitvi, zavodi praviloma pridobijo preko anket ali drugih metod zbiranja podatkov (Darmody idr., 2008; Smith, 2019; Souto-Iglesias in Baeza_Romero, 2018).

- *Zadovoljstvo študentov s študijem:* Zadovoljstvo študentov s študijem je kazalnik, ki odraža mnenje študentov o študijski izkušnji, vključujoč kakovost študijskih virov, pedagoški proces, podporo študentom, infrastrukturo in odnose s profesorji. Vključuje tudi oceno študijskega okolja, vključenost v dejavnosti in pripravljenost na kariero (UM PF, 2022).

Rezultati

Iz samoevalvacijskih poročil visokošolskih zavodov in uradnih statistik (SURS, UMAR, Eurostat) smo prikazali pregled podatkov glede na izbrane kazalnike kakovosti. Rezultate prikazujemo za študijsko leto 2021/2022 za največji univerzi (Univerza v Mariboru in Univerza v Ljubljani).

Prehodnost študija iz 1. v 2. letnik

V tabeli 1 vidimo, da je prehodnost študija iz 1. v 2. letnik na Univerzi v Ljubljani in na Univerzi v Mariboru v povprečju zelo podobna. Univerza v Mariboru podaja rezultate ločeno glede na redni ali izredni način študija, vendar na nobeni stopnji in načinu v povprečju odstopanje od Univerze v Ljubljani načeloma ni različno za več kot 5 %. Če posplošimo, je prehodnost na obeh univerzah primerljiva.

Tabela 1

Univerza v Mariboru in Univerza v Ljubljani, primerjava prehodnosti študija iz 1. v 2. letnik (študijsko leto 2021/2022)

Prehodnost 1 v 2 letnik UM		Prehodnost 1 v 2 letnik UL	
Univerza v Mariboru - 1 bol. Stopnja UNI	60,16 % redni 53,85 % izredni	58,9 %3 letna 66% 4 leta	Univerza v Ljubljani - 1 bol. stopnja UNI
Univerza v Mariboru - 1 bol. Stopnja VS	52,55 % redni 51,8 % izredni	53,90%	Univerza v Ljubljani - 1 bol. stopnja VS
Univerza v Mariboru - 2 bol. stopnja ENOVIT MAG	75,88 %	70,2 % 5 letni 82,9 % 6 letni	Univerza v Ljubljani - 2 bol. stopnja ENOVIT MAG
Univerza v Mariboru - 2 bol. stopnja MAG	77,76 % redni 68,42 % izredni	76,80 %	Univerza v Ljubljani - 2 bol. stopnja MAG
Univerza v Mariboru - 3 bol. stopnja	80,29 %	83,90 %	Univerza v Ljubljani - 3 bol. stopnja

Vir: (UM, 2023-a; UL, 2023)

Opazimo lahko, da je prehodnost iz 1. v 2. letnik na dodiplomskih študijskih programih bistveno nižja, kot na podiplomskem magistrskem in doktorskem študijskem programu. Prehodnost študentov iz 1. v 2. letnik, ki so vpisani na redni način visokošolsko univerzitetnega programa je višja kot prehodnost študentov, ki so vpisani na izredni način univerzitetnih študijskih programov Univerze v Mariboru. Prehodnost iz 1. v 2. letnik enovitih 6 letnih magistrskih programov na Univerzi v Ljubljani je za več kot 10 % višja kot prehodnost enovitih 5 letnih magistrskih programov Univerze v Ljubljani. Neposredna primerjava prehodnosti med univerza žal ni mogoča zaradi drugačnega zajema podatkov.

Razmerje vpis/diplomiranje

Pri kazalniku razmerje vpisa in diplomiranja smo izbrali 5 primerljivih visokošolskih zavodov iz obeh univerz in analizirali ter primerjali dobljen delež med visokošolskimi zavodi.

Na Univerzi v Mariboru in Univerzi v Ljubljani lahko opazimo različne stopnje uspešnosti diplomiranja glede na število vpisanih študentov. Na Univerzi v Mariboru se razmerje vpis/diplomiranje giblje med 18% do 27%, na Univerzi v Ljubljani pa med 16 % in 24 %. Fakulteta za strojništvo na obeh univerzah kaže relativno najvišje razmerje vpisa in diplomiranja (27 % in 24 %), medtem ko Fakulteta za elektrotehniko, računalništvo in informatiko ter Fakulteta za gradbeništvo, prometno inženirstvo najnižje med izpostavljenimi fakultetami (18 % in 16 %).

Tabela 2

Razmerje vpis/diplomiranje (študijsko leto 2021/2022)

Univerza v Mariboru	Vpis	Diplomiranje	Razmerje vpis/diplomiranje
Fakulteta za elektrotehniko, računalništvo in informatiko - skupaj	2251	408	18 %
Fakulteta za gradbeništvo, prometno inženirstvo in arhitekturo -skupaj	646	117	18 %
Fakulteta za strojništvo - skupaj	871	233	27 %
Pravna fakulteta - skupaj	519	135	26 %
Fakulteta za naravoslovje in matematiko - skupaj	406	98	24 %
Univerza v Ljubljani	**Vpis**	**Diplomiranje**	**Razmerje vpis/diplomiranje**
Fakulteta za računalništvo in informatiko - skupaj	1667	274	16 %
Fakulteta za gradbeništvo in geodezijo - skupaj	802	131	16 %
Fakulteta za strojništvo - skupaj	1849	435	24 %
Pravna fakulteta - skupaj	1156	244	21 %
Fakulteta za matematiko in fiziko - skupaj	1043	233	22 %

Vir: Skupni-ul in skupni-um

V splošnem je diplomiranje na Univerzi v Ljubljani nekoliko nižja, a vseeno primerljiva s podatki Univerze v Mariboru. Nekoliko večje odstopanje (za 5 %) zaznamo na Pravi fakulteti, kjer je razmerje med vpisom in diplomiranjem na Univerzi v Mariboru 26 %, na Univerzi v Ljubljani pa 21 %.

Zadovoljstvo s študijem

Obe univerzi preko študijskih anket zbirata stopnjo zadovoljstva s študijem. Omenjeni kazalnik prikazuje splošno zadovoljstvo s študijem kot celoto vsega pri izobraževanju. Študentje kazalnik ocenjujejo na lestvici od 0 do 5. 0 pomeni zelo nezadovoljen in 5 pomeni zelo zadovoljen.

Univerza v Ljubljani dosega povprečni rezultat 4,05. Univerza v Mariboru pa 4,08. Iz omenjenih rezultatov razberemo, da so študentje na obeh univerzah v povprečju enako zadovoljni. Univerza v Mariboru spremlja tudi oceno izvajalcev predmeta. Ocenjevalna lestvica je od -2 do 2. Povprečni rezultat za celotno univerzo je 1,48, kar kaže na visoko pozitivno oceno.

Primerjava kazalnikov zadovoljstva s študijem na Univerzi v Ljubljani in ocena izvajalcev predmeta na Univerzi v Mariboru:

- Zadovoljstvo s študijem Univerza v Ljubljani -> lestvica 0 do 5 -> rezultat 4,05.
- Zadovoljstvo s študijem Univerza v Mariboru -> lestvica 0 do 5 -> rezultat 4,08.
- Ocena izvajalcev predmeta Univerza v Mariboru -> lestvica -2 do 2 -> rezultat 1,48.

Iz omenjenih podatkov razberemo, da kazalniki nakazujejo na visoko stopnjo zadovoljstva študentov na obeh univerzah.

Obremenitev s študijem

Obremenitev študentov se nanaša na količino dela, ki ga študentje opravijo za določen predmet. Običajno se izraža v kreditnih točkah ECTS, kjer je ena kreditna točka od 25 do 30 ur dela.

Študentje kazalnik ocenjujejo na lestvici od 0 do 5. 0 pomeni zelo neprimerna obremenitev in 5 pomeni zelo primerna obremenitev. Univerza v Ljubljani pri obremenitvi dosega povprečni rezultat 3,9, kar predstavlja srednjo stopnjo obremenitve s študijem.

Univerza v Mariboru teh rezultatov kazalnika obremenitve ne prikazuje. Podana sta podatka za samo dve fakulteti in sicer v povprečni obremenitvi ur dela na teden. Tako je primerjava obremenitve s študijem med univerzama nemogoča.

Primerjava kazalnikov kakovosti po stopnjah študija

Analizirali smo tudi kazalnike kakovosti glede na vrsto izobraževanja in stopnjo študija, sumarno za obe univerzi.

Univerza v Ljubljani ima skupno večje število vpisanih študentov (39,010) v primerjavi z Univerzo v Mariboru, ki je imela 7,232 vpisanih študentov v istem študijskem letu. Na dodiplomskih študijskih programih se prehodnost iz 1. v 2. letnik giba med 51 % in 63 %, višja prehodnost je na rednih študijih kot izrednih. Obe univerzi imata višjo stopnjo prehodnosti na podiplomskih študijskih programih med 70 % in 80 %. V povprečju je stopnja diplomiranja na Univerzi v Mariboru (okoli 30 %) precej višja kot na Univerzi v Ljubljani (okoli 20 %).

Kar zadeva zadovoljstvo s študijem in obremenitev s študijem, Univerza v Ljubljani poroča o visoki stopnji zadovoljstva (4 na lestvici do 5) in primerni obremenitvi (3.9 ali 4 na lestvici do 5), medtem ko Univerza v Mariboru teh podatkov ne objavlja.

Tabela 3

Univerza v Ljubljani, kazalci skupaj za študijsko leto 2021/2022

Univerza v Ljubljani	Vpis število	Prehodnost 1 v 2 letnik	Diplomiranje število	Zadovoljstvo s študijem (0 do 5 ali v %)	Obremenite v (0 do 5)
Univerza v Ljubljani - skupaj	39010		7818 (20 %)		
Univerza v Ljubljani - 1 bol. stopnja UNI	16006	58,9 % 3 letna 66 % 4 leta	3328 (20,8 %)	4	3,9
Univerza v Ljubljani - 1 bol. stopnja VS	6484	53,90 %	1144 (17,6 %)	4	3,9
Univerza v Ljubljani - 2 bol. stopnja ENOVIT MAG	3957	70,2 % 5 letni 82,9 % 6 letni	536 (13,5 %)		
Univerza v Ljubljani - 2 bol. stopnja MAG	10433	76,80 %	2536 (24,3 %)	4	4
Univerza v Ljubljani - 3 bol. stopnja	2130	83,90 %	274 (12,9 %)		

Vir: (Univerza v Ljubljani, 2023)

Tabela 4

Univerza v Mariboru, kazalci skupaj za študijsko leto 2021/2022

Univerza v Mariboru	Vpis 1. letnik	Prehodnost 1 v 2 letnik	Diplomiranje
Univerza v Mariboru - skupaj	7232		2659,5 (36,8 %)
Univerza v Mariboru - 1 bol. Stopnja UNI	4312	60,16 % redni 53,85% izredni	1760 (40,8 %)
Univerza v Mariboru - 1 bol. Stopnja VS		52,55 % redni 51,8 % izredni	
Univerza v Mariboru - 2 bol. stopnja ENOVIT MAG	2612	75,88 %	829,5 (31,8 %)
Univerza v Mariboru - 2 bol. stopnja MAG		77,76 % redni 68,42 % izredni	
Univerza v Mariboru - 3 bol. stopnja	308	80,29 %	70 (22,7 %)

Vir: (UM, 2023-a)

Diskusija in zaključek

Primerjava kazalnikov kakovosti med največjima univerzama v Sloveniji za študijsko leto 2021/2022 je pokazala, da obstajajo manjše razlike med kazalniki kakovosti, kljub temu pa je mogoče trditi, da izvajata primerljivo kakovosten študij.

Univerza v Ljubljani ima občutno večje število vpisanih študentov (39,010) v primerjavi z Univerzo v Mariboru (7,232), kar kaže na večjo institucionalno velikost in širši obseg študijskih programov in visokošolskih zavodov. Stopnja dokončanja je sicer edini kazalnik, kjer se kažejo večje razlike med obema

univerzama, pri čemer ima Univerza v Mariboru relativno višji odstotek dokončanja kot Univerza v Ljubljani.

Glede prehodnosti študija so podatki primerljivi na dodiplomskih in podiplomskih študijskih programih na obeh univerzah. Prehodnost iz 1. v 2. letnik je najnižja na dodiplomskih študijskih programih, kar je povezano tudi z visokim osipom študentov 1. letnikov študijskih programov. Temu lahko pripišemo različne dejavnike, saj na uspešnost študija vpliva več dejavnikov, med drugim predhodno pridobljeno znanje na srednješolskih programih, kognitivne sposobnosti študenta, socialna integracija, socialno-ekonomski status študenta in njegove družine, demografski kazalniki (spol in starost), študentsko delo, finančna podpora in podpora s strani fakultete in drugih ipd. Prehodnost je tudi višja v višjih letnikih in na podiplomski stopnji študija (magistrski in doktorski) (Skrbinjek, Lesjak in Aralica, 2023; Skrbinjek, Lesjak in Dermol, 2024). Vzrok temu lahko pripišemo še višji starosti študentov, ki imajo tudi izkušnje z dodiplomskim študijem in bolj usklajena pričakovanja z zahtevami študija ter tudi jasnejše karierne cilje in motivacijo, da študij pravočasno zaključijo (Skrbinjek, Lesjak in Dermol, 2024).

Pri Univerzi v Ljubljani ugotavljamo visoko zadovoljstvo s študijem (ocena 4 od 5) ter primerno obremenitev (med 3.9 in 4 od 5). Zadovoljstvo študentov z izvajalci je primerljivo visoko tudi na Univerzi v Mariboru (1,45 na lestvici od -2 in 2), medtem ko podatkov o obremenitvi ni bilo na voljo. Razvidno je, da ima Univerza v Ljubljani bolj sistematičen način merjenja zadovoljstva in obremenitve študija.

Neprimerljivost podatkov se je pokazala za veliko slabost Samoevalvacijskih poročil, kar je otežilo našo analizo sekundarnih podatkov, prav tako pa tudi manjkajoči podatki. Za večjo transparentnost priporočamo, da se v samoevalvacijskih poročilih prikazujejo vsaj osnovni kazalniki kakovosti, ki sporočajo kandidatom za študij, kaj lahko tekom študentske izkušnje pričakujejo. Celovite informacije lahko izboljšajo njihovo odločitev za pravo izbiro študijske smeri in posledično uspešnejše dokončanje študija.

V analizi se ne neposredno osredotočamo na prehod študentov na trg dela, bi pa ta vidik bil zanimiv za prihodnje raziskovanje in širšo sliko kakovosti študija. V splošnem razumemo, da bo kakovost visokega šolstva v prihodnosti ključnega pomena. Zagotoviti bo potrebno, da bodo študenti pridobili potrebna znanja in veščine, ki jih trg dela zahteva, in išče. Poleg tega pa tudi omogočiti, da bodo diplomanti konkurenčni ne le na domačem, temveč tudi na mednarodnem trgu dela, kar bo, ob hitrem tehnološkem razvoju in vključevanju umetne inteligence v delovni proces, poseben izziv. Za zmanjšanje razlik med potrebami trga dela in visokošolskim sistemom, bo v prihodnosti ključno okrepiti prilagodljive študijske programe, ki bodo ciljali na pridobivanje specifičnih veščin (digitalna tehnologija in delo z novimi tehnologijami). Pomembno bo tudi spodbujati tesnejše sodelovanje med visokošolskimi zavodi in gospodarstvom, kar bo omogočilo bolj usklajeno pripravo delovne sile na potrebe trga dela.

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