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# *ČLANCI / ARTICLES*

## SMART TOURISM: SHAPING THE FUTURE OF THE TOURIST DESTINATION THROUGH SUSTAINABLE INNOVATIONS

Drago Cvijanović<sup>1</sup>, Aleksandra Vujko<sup>2</sup>, Goran Maksimović<sup>3</sup>

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### *Abstract*

*Smart destinations are innovative areas, both urban and rural, that harness digital technologies to enhance the tourism experience. These destinations utilize information and communication technologies (ICT) to streamline services, bolster safety, and offer personalized encounters for tourists. Key features of smart destinations include robust connectivity through high-speed internet, the use of mobile applications for providing real-time information, and the implementation of eco-friendly initiatives that support sustainable tourism practices. Cities such as Barcelona, Amsterdam, and Vienna exemplify smart destinations by employing technology to manage tourist flows effectively, reduce congestion, and improve overall visitor engagement. Through these advancements, smart destinations aim to create more efficient, sustainable, and enjoyable experiences for all visitors. The research posits that 'smart tourism' is essential for the future sustainability and competitiveness of destinations. By analyzing the feedback from 389 tourists who visited these cities in April and May 2024, the study highlights the significance of sustainable transformations towards smart tourism. The findings suggest that smart tourism is not just a future concept but is actively being realized in the present. Learning from cities like Barcelona, Amsterdam, and Vienna, Serbia can position itself as a leader in innovation within the region, ultimately enhancing the quality of life for residents and providing a seamless experience for tourists.*

**Keywords:** smart tourism, future, sustainability, Barcelona, Amsterdam, Vienna, Serbia

**JEL:** O32, O33, Q5

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## Introduction

Smart destinations are urban or rural areas that utilize digital technologies to create more efficient, sustainable, and enjoyable experiences for tourists (Ye et al., 2025). At their core, smart destinations integrate information and communication technologies (ICT) to streamline services, enhance safety, and provide personalized experiences (Koo et al., 2025). Characteristics of smart destinations include connectivity through high-speed internet, the use of mobile applications for real-time information, and eco-friendly initiatives that promote sustainable tourism practices (Tena et al., 2024; Cimbaljević et al., 2023). Smart destinations represent a transformative approach to tourism, where digital technologies are leveraged to enhance the overall experience for visitors while simultaneously promoting sustainability and efficiency (Wang, 2024). These areas, whether urban or rural, utilize a range of information and communication technologies (ICT) to provide seamless services, ensure safety, and offer personalized experiences to tourists (Long & Chen, 2024).

One of the key characteristics of smart destinations is connectivity (Qian, 2024). High-speed internet forms the backbone of smart destinations, enabling tourists to access information and services on-the-go (Benaddi et al., 2024a). This connectivity is often supported by the widespread availability of Wi-Fi in public spaces, which allows visitors to stay connected and informed throughout their journey (Benaddi et al., 2024b). In addition to connectivity, smart destinations commonly employ mobile applications to deliver real-time information. These apps can provide tourists with a wealth of knowledge at their fingertips, such as directions, event schedules, and local recommendations (Sustacha et al., 2023).

Moreover, technology plays a crucial role in managing tourist flows and reducing congestion in smart destinations (Tavitiyaman et al., 2021; Nieves-Pavón et al., 2024). Visitor engagement is greatly improved in smart destinations through interactive technologies (Collado-Agudo et al., 2023). Augmented reality (AR) and virtual reality (VR) experiences allow tourists to immerse themselves in the local culture and history in innovative ways (Shin et al., 2023). According to Lee & Jan (2023), museums and historical sites might offer AR tours that bring exhibits to life, providing a richer and more engaging learning experience (Gong & Schroeder, 2022).

In the realm of smart tourism, the integration of big data and AI-driven recommendations collaborates to deliver travel experiences that are highly tailored to individual preferences (Kim & Kim, 2023). Information is gathered from diverse sources, notably social media interactions, where posts, check-ins, hashtags, and reviews disclose prevailing trends and favored destinations (Huda et al., 2023). Within smart cities, sensors monitor real-time data such as foot traffic, air quality, noise levels, and crowd density, offering crucial insights into the movement of tourists within urban environments. According to Ngeoywijit et al., (2022)

transactional data derived from hotel reservations, transportation services, and event ticket purchases aids in forecasting visitor behaviors, while the utilization of mobile applications provides insights into preferences through search history, saved locations, and in-app activities (Gelter et al., 2022; Okonta & Vukovic, 2024).

Upon the collection of this data, artificial intelligence is employed to examine patterns and deliver tailored recommendations (Oliveira et al., 2022; Liu & Wu, 2023). These recommendation engines propose activities, attractions, restaurants, and events that align with individual preferences and past behaviors (Lu et al., 2021). Utilizing historical data, predictive analytics project future trends, including optimal times for visiting popular locations based on crowd densities or weather conditions (Mandić & Kennell, 2021). Additionally, natural language processing facilitates chatbots and virtual assistants, providing real-time multilingual assistance and aiding tourists in navigating unfamiliar environments effortlessly (Kontogianni et al., 2022). In application, this technology revolutionizes the interactions between cities and their visitors (Mantero, 2023).

Cities like Barcelona, Amsterdam and Vienna serve as prime examples of smart destinations, where technology is employed to manage tourist flows, reduce congestion, and improve visitor engagement. According to Grimaldi & Fernandez (2017), in Barcelona, visitors can use apps to navigate through the city's rich cultural heritage sites, find dining options, and even locate the nearest public transportation options. Barcelona's intelligent city infrastructure utilizes real-time data to direct tourists toward areas with lower congestion, employing dynamic digital signage and mobile alerts that adjust according to prevailing circumstances (Shmelev & Shmeleva, 2025). Eco-friendly initiatives are another hallmark of smart destinations. These initiatives are designed to promote sustainable tourism practices that minimize environmental impact. According to Noori et al., (2025), Amsterdam has been at the forefront of sustainable tourism by encouraging the use of bicycles and public transportation, thereby reducing the carbon footprint associated with tourist activities. The city also implements smart waste management systems that enhance recycling efforts and reduce waste production. Amsterdam's city card application not only offers discounts but also suggests lesser-known attractions, promoting a more balanced flow of tourist activity throughout the city (Yigitcanlar et al., 2019; Putra & van der Knaap, 2019). In Vienna, according to Roblek (2019), data analytics and smart signage systems are used to direct tourists away from crowded areas, distributing visitor traffic more evenly across the city. This not only enhances the visitor experience by reducing wait times and overcrowding but also helps preserve the integrity of cultural and historical sites (Fernandez-Anez et al., 2018). The tourism application in Vienna delivers customized walking tours tailored to individual preferences such as history, architecture, or culinary experiences.

These examples illustrate the pivotal role of technology in not only enriching tourist experiences but also in fostering sustainable tourism practices. The research started

from the initial hypothesis that "smart tourism" is the future of tourism towards which destinations must turn if they want to remain sustainable and competitive. These examples of good practice were intended to point out the importance of sustainable transformations in the direction of "smart tourism". The paper used the opinions of 389 tourists who visited Barcelona, Amsterdam and Vienna in April and May 2024 and based on their experience gave their opinion on the development of destination tourism. It was concluded that smart tourism is the future that happens in the present time.

## **Methodology**

Research was conducted among 389 travelers of several travel agencies from Novi Sad that took tourists to Barcelona, Vienna and Amsterdam in April and May 2024. In question are travelers who have traveled to one or even all three cities and thus were adequate to give an assessment of the state of smart tourism in these cities. They were asked a group of questions related to Smart Public Transport in the City, Digital City Services & Smart Tourism and Eco-Friendly & Sustainable Tourism Innovations. Tourists answered the questions on a five-point Likert scale (Strongly Disagree - Disagree - Neutral - Agree - Strongly Agree). The questions were sent via a link, and they answered via their mobile phones or computers.

### **Smart Public Transport in City**

1. The availability of real-time public transport updates (e.g., mobile apps, digital screens) made it easier to navigate city.
2. I found the contactless ticketing system (e.g., mobile tickets, smart cards) convenient and efficient.
3. The public transport system in city was well-integrated and easy to use.
4. I felt safe using smart public transport services (e.g., surveillance, emergency features, well-lit stations).
5. The availability of multilingual digital transport information improved my travel experience in city.
6. The public transport system provided a seamless connection between tourist attractions.

### **Digital City Services & Smart Tourism**

7. The official city tourism app or website provided accurate and useful information.
8. I found the availability of digital guides, interactive maps, and AI chatbots helpful for exploring the city.
9. The city's free Wi-Fi availability helped me access smart tourism services

easily.

10. Digital signage and interactive kiosks provided relevant and up-to-date tourism information.
11. I felt that city's digital services reduced my need for printed travel materials.
12. The ability to book city experiences (e.g., museums, concerts, guided tours) online improved my visit.

### **Eco-Friendly & Sustainable Tourism Innovations**

13. City's smart tourism initiatives promoted environmentally friendly travel options.
14. I noticed and appreciated the city's efforts in reducing carbon emissions through smart transport and green initiatives.
15. The availability of e-scooters, bike-sharing, and pedestrian-friendly streets made it easy to explore city sustainably.
16. Smart waste management and recycling stations in public areas made me more environmentally conscious during my visit.
17. I would recommend Barcelona, Amsterdam and Vienna to others as a model for sustainable and smart tourism.
18. My experience with city's eco-friendly tourism initiatives would influence me to choose similarly sustainable destinations in the future.

To compare the responses provided by the respondents based on gender, a Pearson Chi-Square test was applied. Discrepancies in responses that are of statistical significance are considered at a p-value of less than 0.05. With greater values, it can be stated that there lies no statistical significance.

### **Results and Discussion**

Number of 183 male respondents and 206 female respondents participated in the research. The answers regarding smart public transport are given in table 1. Intelligent public transportation systems serve as essential facilitators of urban mobility and significantly contribute to the advancement of smart tourism through enhanced accessibility, sustainability, and visitor experience. Based on the table 1, it can be concluded the following: **Real-time updates:** (If the average ratings for real-time updates are high, it suggests that passengers frequently receive accurate and timely information about arrivals, departures, delays, and route changes. This improves the overall travel experience by helping users plan their journeys more efficiently.); **Contactless ticketing:** (High ratings in this category indicate that the contactless ticketing system is both convenient and user-friendly. This reduces the need for physical tickets or cash, speeding up boarding times and making the system

more accessible for both locals and tourists.); **Integration and ease of use:** (When scores are high here, it reflects that different transport modes (like buses, trams, metro, and bike-sharing) are seamlessly connected. This makes navigating the city easier for users, especially tourists unfamiliar with the transport network.); **Safety:** (High safety ratings suggest that users feel secure while using the transport services, which is critical for both local commuters and tourists. It can refer to physical safety, cleanliness, and the presence of surveillance or security personnel.); **Multilingual information:** (If this category scores highly, it indicates that information (such as signage, announcements, and digital app interfaces) is available in multiple languages, making it easier for international visitors to use the system without language barriers.); **Connectivity to tourist attractions:** (High scores here imply that the public transport system offers direct or convenient routes to major tourist attractions, enhancing the overall tourism experience by making popular sites more accessible without needing private transport).

**Table 1.** Smart Public Transport in Barcelona, Amsterdam and Vienna

			Gender		Total
			Male	Female	
The availability of real-time public transport updates (e.g., mobile apps, digital screens) made it easier to navigate city.	Agree	84	102	186	
	Strongly agree	99	104	203	
Total		183	206	389	
			Asymptotic Significance (2-sided)		
Pearson Chi-Square	Value	df	.476		
			Gender		Total
			Male	Female	
I found the contactless ticketing system (e.g., mobile tickets, smart cards) convenient and efficient.	Neutral	3	0	3	
	Agree	110	106	216	
	Strongly agree	70	100	170	
Total		183	206	389	
			Asymptotic Significance (2-sided)		
Pearson Chi-Square	Value	df	.030		
			Gender		Total
			Male	Female	
The public transport system in city was well-integrated and easy to use.	Neutral	1	4	5	
	Agree	118	126	244	
	Strongly agree	64	76	140	
Total		183	206	389	
			Asymptotic Significance (2-sided)		
Pearson Chi-Square	Value	df	.420		
			Gender		Total
			Male	Female	
I felt safe using smart public transport services (e.g., surveillance, emergency features, well-lit stations).	Agree	137	159	296	
	Strongly agree	46	47	93	
Total		183	206	389	

		Value	df	Asymptotic Significance (2-sided)	
Pearson Chi-Square		.287	1	.592	
		Gender		Total	
The availability of multilingual digital transport information improved my travel experience in city.	Male		Female		
	Agree	79	95	174	
	Strongly agree	104	111	215	
Total		183	206	389	
		Value	df	Asymptotic Significance (2-sided)	
Pearson Chi-Square		.340	1	.560	
		Gender		Total	
The public transport system provided a seamless connection between tourist attractions.	Male		Female		
	Neutral	3	0	3	
	Agree	92	100	192	
	Strongly agree	88	106	194	
Total		183	206	389	
		Value	df	Asymptotic Significance (2-sided)	
Pearson Chi-Square		3.656	2	.161	

High scores for the items in Table 2 indicate a positive perception of digital city services and smart tourism among respondents. Specifically, it suggests that a significant number of participants "Strongly Agree" or "Agree" with statements regarding the effectiveness and usefulness of digital services provided by cities. The table 2 includes responses to various aspects of digital city services and their impact on tourism. **Official City Tourism App or Website:** (respondents generally found the official city tourism apps or websites to be accurate and useful. These platforms serve as comprehensive guides, offering essential information on attractions, accommodations, dining, and local events. The availability of real-time updates and easy navigation further enhances their utility); **Digital Guides, Interactive Maps, and AI Chatbots:** (The presence of digital guides, interactive maps, and AI chatbots is highly beneficial for tourists. These tools enable visitors to explore the city more efficiently by providing instant information, route suggestions, and personalized recommendations. AI chatbots, in particular, offer 24/7 assistance, making it easier to address queries or resolve issues during travel); **Free Wi-Fi Availability:** (The availability of free Wi-Fi significantly contributes to the accessibility of smart tourism services. It allows tourists to stay connected, access online resources, and utilize various digital tools without incurring additional costs. This connectivity is crucial for seamless navigation and staying informed about local happenings); **Digital Signage and Interactive Kiosks:** (Digital signage and interactive kiosks offer up-to-date tourism information and are strategically placed at key locations throughout the city. These installations provide insights into local attractions, event schedules, and transportation options, enhancing the overall visitor experience); **Reduction in Need for Printed Materials:** (The widespread availability of digital services reduces the need for printed travel materials. Tourists can access all

necessary information digitally, which is not only convenient but also environmentally friendly. This shift towards digital resources aligns with sustainable tourism practices); **Online Booking for City Experiences:** (The ability to book city experiences online, such as museum visits, concerts, and guided tours, significantly enhances the tourism experience. Online booking platforms offer convenience and flexibility, allowing tourists to plan their itineraries in advance and avoid long queues).

**Table 2.** Digital City Services & Smart Tourism in Barcelona, Amsterdam and Vienna

			Gender		Total
			Male	Female	
The official city tourism app or website provided accurate and useful information.	Neutral	1	4	5	
	Agree	113	109	222	
	Strongly agree	69	93	162	
Total		183	206	389	
	Value	df	Asymptotic Significance (2-sided)		
Pearson Chi-Square	4.082	2	.130		
			Gender		Total
			Male	Female	
I found the availability of digital guides, interactive maps, and AI chatbots helpful for exploring the city.	Agree	126	150	276	
	Strongly agree	57	56	113	
Total		183	206	389	
	Value	df	Asymptotic Significance (2-sided)		
Pearson Chi-Square	.738	1	.390		
			Gender		Total
			Male	Female	
The city's free Wi-Fi availability helped me access smart tourism services easily.	Agree	74	93	167	
	Strongly agree	109	113	222	
Total		183	206	389	
	Value	df	Asymptotic Significance (2-sided)		
Pearson Chi-Square	.877	1	.349		
			Gender		Total
			Male	Female	
Digital signage and interactive kiosks provided relevant and up-to-date tourism information.	Neutral	3	0	3	
	Agree	102	89	191	
	Strongly agree	78	117	195	
Total		183	206	389	
	Value	df	Asymptotic Significance (2-sided)		
Pearson Chi-Square	10.361	2	.006		
			Gender		Total
			Male	Female	
I felt that city's digital services reduced my need for printed travel materials.	Neutral	1	4	5	
	Agree	112	118	230	
	Strongly agree	70	84	154	
Total		183	206	389	
	Value	df	Asymptotic Significance (2-sided)		
Pearson Chi-Square	1.876	2	.391		
			Gender	Total	

		Male	Female	
The ability to book city experiences (e.g., museums, concerts, guided tours) online improved my visit.	Agree	121	151	272
	Strongly agree	62	55	117
Total		183	206	389
		Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square		2.376	1	.123

High scores in the context of the items in the table 3 indicate a strong level of agreement or satisfaction among respondents regarding Eco-Friendly & Sustainable Tourism Innovations. Here's a breakdown of what high scores mean for each item.

**Environmentally Friendly Travel Options:** (Cities like Barcelona, Amsterdam, and Vienna have made significant strides in promoting smart tourism initiatives that encourage environmentally friendly travel. These initiatives include the development of efficient public transportation networks and incentives for using low-emission vehicles); **Reduction of Carbon Emissions:** (Efforts to reduce carbon emissions are evident through smart transport solutions and green initiatives. For instance, the integration of electric buses and the promotion of renewable energy sources for public transport systems contribute to a decrease in the overall carbon footprint); **E-Scooters, Bike-Sharing, and Pedestrian-Friendly Streets:** (The availability of e-scooters, bike-sharing programs, and pedestrian-friendly streets facilitates sustainable exploration of the city. These options not only reduce reliance on cars but also promote healthier lifestyles and reduce traffic congestion); **Smart Waste Management and Recycling Stations:** (Public areas in these cities are equipped with smart waste management systems and recycling stations. These installations encourage tourists to dispose of waste responsibly and increase awareness about environmental conservation); **Recommendation as Models for Sustainable Tourism:** (Due to these successful initiatives, Barcelona, Amsterdam, and Vienna serve as exemplary models for sustainable and smart tourism. Their commitment to green practices and technological integration sets a benchmark for other cities); **Influence on Future Travel Choices:** (The positive experiences with eco-friendly tourism initiatives in these cities are likely to influence travelers to choose similarly sustainable destinations in the future. The emphasis on sustainability enhances the overall travel experience, making it more fulfilling and responsible). These cities' dedication to eco-friendly innovations not only improves the quality of life for residents but also enriches the experience for visitors, creating a win-win scenario for sustainability and tourism.

**Table 3.** Eco-Friendly & Sustainable Tourism Innovations in Barcelona, Amsterdam and Vienna

		Gender		Total
		Male	Female	
City's smart tourism initiatives promoted	Neutral	2	0	2
	Agree	77	95	172
	Strongly agree	104	111	215

environmentally friendly travel options.				
Total	183	206	389	
	Value	df	Asymptotic Significance (2-sided)	
Pearson Chi-Square	2.761	2	.251	
I noticed and appreciated the city's efforts in reducing carbon emissions through smart transport and green initiatives.	Gender		Total	
	Male	Female		
I noticed and appreciated the city's efforts in reducing carbon emissions through smart transport and green initiatives.	Neutral	3	0	3
	Agree	105	102	207
	Strongly agree	75	104	179
Total	183	206	389	
	Value	df	Asymptotic Significance (2-sided)	
Pearson Chi-Square	6.404	2	.041	
The availability of e-scooters, bike-sharing, and pedestrian-friendly streets made it easy to explore city sustainably.	Gender		Total	
	Male	Female		
The availability of e-scooters, bike-sharing, and pedestrian-friendly streets made it easy to explore city sustainably.	Neutral	1	4	5
	Agree	103	118	221
	Strongly agree	79	84	163
Total	183	206	389	
	Value	df	Asymptotic Significance (2-sided)	
Pearson Chi-Square	1.617	2	.445	
Smart waste management and recycling stations in public areas made me more environmentally conscious during my visit.	Gender		Total	
	Male	Female		
Smart waste management and recycling stations in public areas made me more environmentally conscious during my visit.	Agree	121	149	270
	Strongly agree	62	57	119
Total	183	206	389	
	Value	df	Asymptotic Significance (2-sided)	
Pearson Chi-Square	1.760	1	.185	
I would recommend Barcelona, Amsterdam and Vienna to others as a model for sustainable and smart tourism.	Gender		Total	
	Male	Female		
I would recommend Barcelona, Amsterdam and Vienna to others as a model for sustainable and smart tourism.	Neutral	1	4	5
	Agree	118	102	220
	Strongly agree	64	100	164
Total	183	206	389	
	Value	df	Asymptotic Significance (2-sided)	
Pearson Chi-Square	9.540	2	.008	
My experience with city's eco-friendly tourism initiatives would influence me to choose similarly sustainable destinations in the future.	Gender		Total	
	Male	Female		
My experience with city's eco-friendly tourism initiatives would influence me to choose similarly sustainable destinations in the future.	Agree	132	149	281
	Strongly agree	51	57	108
Total	183	206	389	
	Value	df	Asymptotic Significance (2-sided)	
Pearson Chi-Square	.002	1	.965	

## Conclusion

Smart destinations leverage digital technologies to enhance the tourism experience while promoting sustainability and efficiency. These areas, whether urban or rural, utilize information and communication technologies (ICT) to provide seamless services, improve safety, and offer personalized experiences for tourists. Key characteristics of smart destinations include high-speed internet connectivity, mobile applications for real-time information, and eco-friendly initiatives, as exemplified by cities like Barcelona, Amsterdam, and Vienna, which implement smart public transport systems, digital city services, and sustainable tourism practices to create a more enjoyable and responsible travel experience. Each city demonstrates how leveraging Information and Communication Technologies (ICT) can create a seamless, efficient, and sustainable travel experience for both residents and visitors. The integration of real-time updates, contactless ticketing, and multilingual information services enhances the convenience and accessibility of public transportation, directly improving user satisfaction and making these cities more attractive to international tourists. Additionally, these systems reduce tourists' reliance on traditional printed materials, promote eco-friendly travel behaviors, and contribute to overall sustainability goals. Barcelona's focus **on** IoT-based mobility solutions, Amsterdam's pioneering efforts in Mobility-as-a-Service (MaaS), and Vienna's commitment to real-time data integration each offer unique examples of how cities can innovate to meet the evolving needs of modern travelers. These advancements not only improve transportation efficiency but also foster a safer, more inclusive, and personalized tourism experience.

Smart destinations represent a forward-thinking approach to tourism, where technology is harnessed to create more efficient, sustainable, and enjoyable experiences for visitors. By integrating high-speed internet, mobile applications, eco-friendly initiatives, and interactive technologies, these areas are setting new standards for how cities and rural areas can cater to the needs of modern tourists while also safeguarding their natural and cultural resources for future generations.

For Serbia, implementing analogous strategies may yield substantial advantages, particularly as the nation seeks to enhance its status as a compelling and competitive tourist destination within the Balkans. By adhering to these best practices, urban mobility and the overall experience for visitors in cities such as Belgrade, Novi Sad, and Niš can be significantly improved. The incorporation of real-time information systems, contactless ticketing, and multilingual digital services would enhance the accessibility and convenience of Serbian cities for international visitors. Such advancements could enable Serbia to draw a wider array of tourists, particularly from the EU and other regions. Moreover, the introduction of sustainable transportation options, including electric buses, bike-sharing initiatives, and pedestrian-friendly

areas, would position Serbia in accordance with global sustainability movements. This alignment is especially crucial as environmentally conscious tourism increasingly becomes a priority for travelers around the globe. Investing in high-speed internet access within public areas, as well as implementing digital ticketing and mobile applications for real-time navigation, has the potential to improve tourist satisfaction and elevate the quality of life for local residents. The burgeoning technology sector in Serbia offers a robust basis for the incorporation of these digital advancements into urban infrastructure. By embracing smart city initiatives, Serbia can establish itself as a frontrunner in the Western Balkans in terms of innovation related to urban mobility and tourism development. Such an approach would not only distinguish Serbia in a competitive regional tourism landscape but also facilitate collaborations with prominent cities across Europe.

Serbia can draw valuable lessons from the experiences of Barcelona, Amsterdam, and Vienna. By embracing smart public transport systems and integrating sustainable, digital solutions, Serbian cities can enhance their global competitiveness, improve the quality of urban life, and ensure a more seamless, eco-friendly experience for future generations of tourists.

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# **PAMETNI TURIZAM: OBLIKOVANJE BUDUĆNOSTI TURISTIČKE DESTINACIJE KROZ ODRŽIVE INOVACIJE**

Drago Cvijanović, Aleksandra Vukko, Goran Maksimović

## ***Apstrakt***

*Pametne destinacije su inovativna područja, urbana i ruralna, koja koriste digitalne tehnologije za poboljšanje turističkog iskustva. Ove destinacije koriste informacione i komunikacione tehnologije (IKT) kako bi pojednostavile usluge, poboljšale bezbednost i ponudile personalizovane susrete za turiste. Ključne karakteristike pametnih destinacija uključuju snažnu povezanost putem interneta velike brzine, upotrebu mobilnih aplikacija za pružanje informacija u realnom vremenu i implementaciju ekoloških inicijativa koje podržavaju prakse održivog turizma. Gradovi kao što su Barselona, Amsterdam i Beč predstavljaju primer pametnih destinacija koristeći tehnologiju za efikasno upravljanje turističkim tokovima, smanjenje zagađenja i poboljšanje ukupnog angažovanja posetilaca. Kroz ove napretke, pametne destinacije imaju za cilj da stvore efikasnija, održiva i prijatnija iskustva za sve posetioce. Istraživanje je pokazalo da je „pametni turizam“ od suštinskog značaja za buduću održivost i konkurentnost destinacija. Analizom povratnih informacija od 389 turista koji su posetili ove gradove u aprilu i maju 2024. godine, studija ističe značaj održivih transformacija ka pametnom turizmu. Rezultati sugerisu da pametni turizam nije samo koncept budućnosti već se aktivno realizuje i u sadašnjosti. Učeći od gradova poput Barselone, Amsterdama i Beča, Srbija može da se pozicionira kao lider u inovacijama u regionu, što na kraju poboljšava kvalitet života stanovnika i pruža besprekorno iskustvo za turiste.*

**Ključne reči:** pametni turizam, budućnost, održivost, Barselona, Amsterdam, Beč, Srbija

**JEL:** O32, O33, Q55

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## THE INFLUENCE OF SOCIAL NETWORKS ON THE TEACHING PROCESS OF LANGUAGE LEARNING

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### ***Abstract***

*Owing to technological advancements, social networks have become an indispensable part of everyday life. Accordingly, their application has also become present in educational settings. This paper examines the use of social networks in language teaching. The first part of the paper presents a theoretical framework that analyzes the didactic application of social networks in foreign language teaching. The second part of the paper encompasses an empirical study whose subject is the examination of the attitudes of Spanish language teachers in Serbia toward this topic, as well as the extent to which social networks are represented in teaching practice. The aim of the research is to provide an overview of the current state of social network use in language teaching, as well as teachers' attitudes toward this topic. The results indicate numerous advantages and highlight the need for further research and professional training in this field.*

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**Keywords:** *social networks, communication, foreign language learning, teaching process.*

**JEL:** *D85, I23.*

## **Introduction**

In recent years, we have witnessed rapid development and numerous achievements in the field of modern technologies that shape our everyday lives. One of the phenomena with which we have become fully integrated is social networks, without which it would be difficult to imagine daily life (Trifunović et al., 2023; Hernandez, Pereira, 2024; Mihajilović et al., 2024). Their widespread presence and frequent use in everyday life have contributed to their integration into foreign language teaching. The new digital era introduces the use of social networks such as Facebook and Twitter not only for communication purposes but also for the exchange of multimedia resources (Smith, Duggan, 2023; Liu, Zhang, 2024; Miller, Saunders, 2024; Prdić, & Kostić, 2024; Stanković, et al., 2023).

The main advantages offered by social networks in foreign language teaching include the fact that they represent highly useful free platforms for interactive learning, enable conversation in a direct manner, and allow quick access without time constraints. Social networks can be accessed via various devices, provide practical and enjoyable learning experiences, and support interculturality and social connectivity (Gutjeres, 2021; Kemp, Williams, 2023; Ercegovac & Ercegovac, 2023).

The subject of this research is the presentation and analysis of the application of social networks in language teaching. The aim of the research is to examine the current situation in the teaching of Spanish as a foreign language in Serbia, as well as Spanish teachers' attitudes toward this topic. The hypothesis is that Spanish language teachers use social networks in teaching and that students are interested in this approach. It is also assumed that professional training in this area would be beneficial, given that this topic has been insufficiently researched in Serbia.

## **Literature Review**

Social networks as a service enable individuals to create a public or semi-public profile within a bounded system, generate a list of other users with whom they share content, and view content created by other users within the system (Boyd & Ellison, 2007; Gutjeres, 2021; Shepherd, 2024; Dašić et al, 2024).

According to another definition (Bartlett, 2006; Vázquez & Cabero, 2015 In García, 2016: 41), social networks are “a group of applications and collaborative spaces in which social connections and information exchange exist within an online environment.”

Websites such as Facebook and Twitter represent a group of applications and collaborative spaces where social connections and information exchange occur

online (Ellison & Boyd, 2023). They host content created by social network users themselves, enabling interaction across great distances. As a result, foreign language learners are provided with opportunities to practice the language on a regular basis (Mana, 2023).

Social networks enable connections based on friendship (Facebook), professional activity (LinkedIn), the use of a specific format (YouTube, Vimeo), presentations (SlideShare), photography (Flickr), or text (Google Docs). Certain social networks have become widespread among users of a specific age group (Tuenti), while others are more open and allow unrestricted presentation of content to the entire internet (Facebook or Twitter) (Moja, 2011; Hanna et al., 2004; Kaplan & Haenlein, 2023).

Given that they are free of charge and provide easy access without time limitations, social networks represent an attractive tool for language learning, particularly for individuals with limited time or those who work extensively online (Gutjeres, 2021).

### **Advantages of Using Social Networks in Foreign Language Teaching**

Social networks have attracted the attention of foreign language teaching methodologists due to the various advantages they can offer in the dynamics of teaching and second language learning (Sera, 2019; Olsen & Thompson, 2023).

They possess characteristics that make them appealing to learners, such as the ability to view videos or photographs. They also allow users to express their opinions and perspectives on posts with a high degree of freedom of expression, which represents a significant advantage for foreign language teaching (Ruiperes & García, 2012; Stojanović et al., 2021).

Social networks strengthen interconnections among learners from different countries in real time, enabling the use of language in practice in a natural and spontaneous manner and in contact with other cultures (Gutjeres, 2021; Golonka et al., 2024).

They provide a space for the development of linguistic skills, such as written production and listening comprehension, and also encourage active participation and autonomous learning (Gutjeres, 2021).

Furthermore, social networks offer learners opportunities for immersion in real communicative situations (Gutjeres, 2021; Thorne & Black, 2023). Since the essence of foreign language learning lies in the ability to participate in real communicative situations, the application of social networks provides learners with opportunities to improve language competence precisely in this way.

Twitter allows users to follow news from native speakers on topics such as politics, economics, travel, new technologies, or even weather forecasts. Given that tweets are limited to 140 characters, sentences are easier to memorize. This facilitates vocabulary acquisition and the learning of commonly used expressions specific to everyday life, as well as sentence structures. Twitter users can practice writing

concise sentences in a foreign language. Changing the interface language on Facebook is also an effective way to expose learners to foreign language input (Mana, 2023; Levy, 2024).

Interactions that take place within social network communities make them particularly suitable as supplementary learning tools. Since language on social networks is used for information exchange or social interaction, it constitutes meaning-focused language use. Additionally, situations involving clarification, correction, requests for assistance, or confirmation are frequent, thus enabling cooperative meaning construction, which should also occur in foreign language classrooms. Social networks often involve discussions on topics such as literature or gastronomy, making language use similar to that in content-based instruction (Moja, 2011).

In other words, social networks can be extremely versatile in terms of the content they allow users to share, but their true potential lies in their ability to facilitate real-time communicative situations that enable not only vocabulary acquisition and improvement but also the practice of speaking and listening comprehension (Sera, 2019; Thorne & Black, 2023). It is indisputable that social networks foster the development of communicative skills and competencies in foreign language learners, as they enable the creation of numerous real-time communicative situations from any geographical location (Sera, 2019; Mikroyannidis & Iordanou, 2023).

With regard to task-based approaches, the variety of information types and audiovisual resources that can be used on social networks is virtually unlimited. Posts on Facebook, Twitter, Instagram, or other networks may include links to documents such as books, articles, videos, and other materials (Murray, 2024; Chik & Lee, 2023). In this way, learners gain access to numerous activities through which they can practice writing, reading, speaking, and text comprehension. This range of options undoubtedly influences learners' motivation and interest in their own learning process (Tovar & Tapia, 2019; Sera, 2019).

There is also a wide variety of social networks specialized in language learning, including Twiducate, LiveMocha, Conversation Exchange/Language Exchange, Talk, Palabea, Polyglot Club, My Happy Planet, Shared Talk, English Baby, Wordsurfing, Babble.com, and Duolingo. Despite the existence of many specialized platforms, Facebook remains one of the most widely used for this purpose. This is due to the fact that most students and young people already have access to it and use it daily, and its configuration is not overly complex (Araujo Portugal, 2014; Cabero & Marín, 2014). Consequently, the simplicity of general-purpose social networks (Facebook and Twitter) remains relevant and even essential, as does the demand from certain teachers who use them for information distribution and communication (Borromeo García, 2016; Godwin-Jones, 2023).

Social networks introduce fun, dynamism, and oral interaction into foreign language learning. However, for comprehensive learning that would enable learners to internalize syntactic, grammatical, and lexical structures, social networks do not replace traditional methods such as the learning of grammatical rules (Gutjeres, 2021). Therefore, it is essential to clearly define didactic objectives and structure the information intended to be presented through social networks.

Moreover, these platforms must be used appropriately, with due consideration for privacy, digital security, and content quality, in order to maximize pedagogical benefits and minimize potential distractions or risks (Gutjeres, 2021; García & Méndez, 2023).

### **Disadvantages of Using Social Networks in Language Teaching**

The use of social networks for educational purposes requires a high level of caution and self-regulation if their benefits for language learning are to be fully exploited (Johnson et al., 2020). Additionally, the volume of information that students receive through social networks is immense and varies in quality; therefore, learners must be able to identify, filter, and process information in order to access appropriate resources for their learning needs (Vu & Kang, 2023; Thompson, 2022).

However, there are obstacles to their use, including the knowledge and skills required for information technology use, institutional policies, implementation planning, and social differences between teachers and learners (Borromeo García, 2016). One of the greatest barriers is the lack of training or competence among some teachers in using new technological advancements.

### **Research Method and Results**

In order to examine the current status of social network use in Spanish language teaching in Serbia, a study was conducted among Spanish language teachers. The research method employed was a survey. The research instrument was an anonymous questionnaire created using Google Docs and administered to respondents via email. The questionnaire consisted of ten open-ended and closed-ended questions. The sample comprised 19 respondents ( $n = 19$ ).

The study provides indicative information regarding teachers' attitudes toward the use of social networks in language teaching and is intended to encourage educators to apply this innovative tool, as well as to stimulate further research on the topic. The hypothesis was that Spanish language teachers use this tool and that both teachers and students are interested in it.

Statistical data processing and analysis were conducted using IBM SPSS (Statistical Package for the Social Sciences), version 25. Descriptive statistics were applied to describe the sample, and the chi-square test was used to examine differences. The significance threshold was set at 0.05.

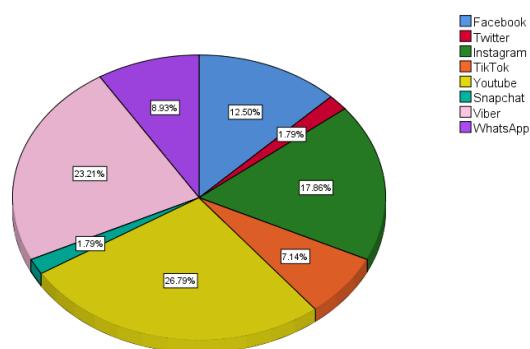
The study included 19 Spanish language teachers, predominantly working in primary schools (63.2%), with teaching experience ranging from 16 to 25 years (68.4%) (Table 1). The majority of teachers (68.4%) reported using social networks in foreign language teaching, most often several times per month (46.2%) (Table 1). Based on the results presented in Figure 1, it can be concluded that teachers most frequently use YouTube (26.79%), Viber (23.21%), and Instagram (17.86%).

Table 1. General characteristics of Spanish language teachers

		f	%
<b>Where do you teach Spanish?</b>	Primary school	12	63.2
	Secondary school	3	15.8
	University	2	10.5
	Language school	1	5.3
	Private lessons	1	5.3
	5 years or less	1	5.3
<b>Years of teaching experience</b>	Between 6 and 15 years	5	26.3
	Between 16 and 25 years	13	68.4
	More than 25 years	0	0
<b>Do you use social networks in foreign language teaching?</b>	Yes	13	68.4
	No	6	31.6
<b>How often do you use social networks in teaching?</b>	Daily	2	15.4
	Several times a week	4	30.8
	Several times a month	6	46.2
	Rarely	1	7.7

**Source:** Author's illustration based on the research

Figure 1. Which social networks do you use?



**Source:** Author's illustration based on the research

The majority of respondents (79%) believe that students are interested in this type of instruction. Likewise, most respondents (79%) believe that the use of social networks enhances the process of acquiring Spanish. As many as 63.2% of respondents believe that the use of social networks in teaching fosters learner autonomy. Overall, 68.4% of respondents stated that a seminar or training on the use of social networks would be beneficial (Table 2). The main advantage of using social networks in Spanish language teaching is student motivation and the encouragement of autonomy (38.9%), while the main disadvantages are distraction of students' attention (38.9%) and content monitoring (22.2%) (Table 3).

Table 2. Usefulness of social networks in Spanish language classes

		f	%
<b>Where do you teach Spanish?</b>	Primary school	12	63.2
	Secondary school	3	15.8
	University	2	10.5
	Language school	1	5.3
	Private lessons	1	5.3
	5 years or less	1	5.3
<b>Years of teaching experience</b>	Between 6 and 15 years	5	26.3
	Between 16 and 25 years	13	68.4
	More than 25 years	0	0
<b>Do you use social networks in foreign language teaching?</b>	Yes	13	68.4
	No	6	31.6
	Daily	2	15.4
<b>How often do you use social networks in teaching?</b>	Several times a week	4	30.8
	Several times a month	6	46.2
	Rarely	1	7.7

Source: Author's illustration based on the research

Table 3. Advantages and disadvantages of using social networks in Spanish language classes

	f	
<b>Advantages of using social networks in Spanish language classes</b>	Motivates students and encourages autonomy	7
	More efficient acquisition of course content	3
	Better listening comprehension	4
	Better accessibility of teaching materials	2
	Other	2
	Internet safety	1
<b>Potential disadvantages of using social networks in Spanish language classes</b>	Content monitoring	4
	Students' loss of focus	7
	Excessive screen time	2
	Other	4

Source: Author's illustration based on the research

The study examined whether there were statistically significant differences in the use of social networks in Spanish language teaching, students' interest in this type of instruction, the improvement of Spanish language acquisition through this approach, the promotion of learner autonomy, and the usefulness of seminars and training for this type of instruction in relation to the type of Spanish language teaching. The chi-square test was applied to examine the stated differences.

Based on the results of the chi-square test presented in Table 4, it can be concluded that a statistically significant difference exists with regard to the usefulness of seminars and training for this type of instruction in relation to the type of Spanish language teaching. On the basis of the numerical and percentage distribution shown in Table 5, it can be concluded that primary school and university teachers predominantly believe that training is necessary, whereas teachers who provide private lessons consider such training unnecessary.

Table 4. Differences with respect to the type of Spanish language instruction

		f	%
<b>Advantages of using social networks in Spanish language classes</b>	Motivates students and encourages autonomy	7	38.9
	More efficient acquisition of course content	3	16.7
	Better listening comprehension	4	22.2
	Better accessibility of teaching materials	2	11.1
	Other	2	11.1
<b>Potential disadvantages of using social networks in Spanish language classes</b>	Internet safety	1	5.6
	Content monitoring	4	22.2
	Students' loss of focus	7	38.9
	Excessive screen time	2	11.1
	Other	4	22.2

\*Statistical significance at the 0.05 level

Source: Author's illustration based on the research

Table 5. Do you believe that training or a seminar would be beneficial for improving the use of social networks in Spanish language teaching?

Where do you teach Spanish?		Yes	No	Other	Total
	f				
Primary school	f	10	1	1	12
	%	83.3	8.3	8.3	100
Secondary school	f	1	0	2	3
	%	33.3	0	66.7	100
University	f	2	0	0	2
	%	100	0	0	100
Language academy	f	0	0	1	1
	%	0	0	100	100
Private lessons	f	0	1	0	1
	%	0	100	0	100

	Total	<i>f</i>	13	2	4	19
		%	68.4	10.5	21.1	100

Source: Author's illustration based on the research

The study also investigated whether there were statistically significant differences in the use of social networks in Spanish language teaching, students' interest in this type of instruction, the improvement of Spanish language acquisition through this approach, the promotion of learner autonomy, and the usefulness of seminars and training for this type of instruction in relation to teachers' years of experience. The chi-square test was used to examine these differences.

An examination of the chi-square test results presented in Table 6 indicates that a statistically significant difference exists with regard to the improvement of Spanish language acquisition through the use of social networks in teaching. Based on the numerical and percentage distribution shown in Table 7, it can be concluded that teachers with less than five years of experience believe that social networks do not enhance Spanish language acquisition, whereas teachers with more than five years of experience believe that social networks contribute to improving Spanish language acquisition.

Table 6. Differences with respect to the length of teachers' experience

	$\chi^2$	p
Do you use social networks in foreign language teaching?	4.759	0.093
Do you think that pupils/students are interested in this type of teaching?	2.338	0.674
Do you think that the use of social networks in Spanish language classes can improve the acquisition of Spanish?	20.462	<0.0005*
Do you think that the use of social networks encourages learner autonomy?	3.021	0.554
Do you think that a seminar or training related to this topic would be useful to you?	1.068	0.899

Source: Author's illustration based on the research

\*Statistical significance at the 0.05 level

Table 7. The use of social networks improves the acquisition of Spanish

Gde predajete španški			Yes	No	I don't know	Total
		<i>f</i>	0	1	0	1
		%	0	100	0	100
	Up to 5 years	<i>f</i>	5	0	0	5
		%	100	0	0	100
		<i>f</i>	10	0	3	13
	Between 6 and 15 years	<i>f</i>	76.9	0	23.1	100
		%	78.9	5.3	15.8	100
		<i>f</i>	15	1	3	19
	Total	<i>f</i>	78.9	5.3	15.8	100
		%	78.9	5.3	15.8	100

Source: Author's illustration based on the research

Finally, the study examined whether there were statistically significant differences in students' interest in this type of instruction, the improvement of Spanish language

acquisition through this approach, the promotion of learner autonomy, and the usefulness of seminars and training for this type of instruction in relation to the use of social networks in Spanish language teaching. The chi-square test was applied to examine these differences.

Based on the results of the chi-square test presented in Table 8, it can be concluded that no statistically significant differences exist in teachers' responses with regard to the use of social networks in Spanish language teaching.

Table 8. Differences with respect to the use of social networks for teaching Spanish

	$\chi^2$	p
Do you think that pupils/students are interested in this type of teaching?	0.796	0.672
Do you think that the use of social networks in Spanish language classes can improve the acquisition of Spanish?	4.807	0.090
Do you think that the use of social networks encourages learner autonomy?	1.644	0.440
Do you think that a seminar or training related to this topic would be useful to you?	0.398	0.819

Source: Author's illustration based on the research

\*Statistical significance at the 0.05 level

## Conclusion

Social networks have also found their place in foreign language teaching. Due to their characteristics, they represent a practical and effective tool for information exchange, thereby enhancing productive and receptive language skills. Through appropriate implementation of social networks in teaching, learners' linguistic, sociocultural, and pragmatic competences can be improved (Godwin-Jones, 2023; Murray, 2024; Kostić, 2023).

Didactic preparation is essential when working with social networks. While social networks constitute valuable support for foreign language learning, they cannot replace formal language courses (Mana, 2023).

Based on the conducted research, it can be concluded that the majority of respondents use social networks several times per month. The most commonly used platforms are YouTube, Viber, and Instagram. Most respondents express a positive attitude toward the use of social networks in language teaching and believe that students are motivated. Distraction of students' attention is identified as a potential drawback. Furthermore, the research results indicate a need for professional training in this area, which could contribute to increased use of social networks in teaching and enhance the effectiveness of the learning process.

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# UTICAJ DRUŠTVENIH MREŽA NA NASTAVNI PROCES UČENJA JEZIKA

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## *Apstrakt*

*Zahvaljujući napretku tehnologija, društvene mreže su postale nezaobilazni deo naše svakodnevnice. Shodno tome, njihova primena je prisutna i u nastavi. U radu se razmatra upotreba društvenih mreža u nastavi jezika. Prvi deo rada podrazumeva teorijski okvir koji se bavi analizom didaktičke primene društvenih mreža u nastavi stranih jezika. Drugi deo rada obuhvata spovedeno istraživanje čiji je predmet ispitivanje stava predavača španskog jezika u Srbiji prema ovoj temi i zastupljenost društvenih mreža u nastavi. Cilj istraživanja se sastoji u sagledavanju trenutne situacije primene društvenih mreža u nastavi jezika, kao i stava profesora prema ovoj temi. Rezultati ukazuju na brojne prednosti i potrebu za daljim istraživanjem i obukama u ovoj oblasti.*

***Ključne reči:*** društvene mreže, komunikacija, učenje stranih jezika, nastavni proces.

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## EMPLOYEES' PERCEPTIONS IN TRANSPORT COMPANIES REGARDING COST MANAGEMENT

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### *Abstract*

*In contemporary business conditions characterized by national and international contractual integration and acquisitions, globalization of supply and demand for transport services, the exceptionally rapid development of competition due to the emergence of new companies from countries not traditionally oriented toward international transport, and the rise of powerful software tools, cost management has been gaining increasing importance. The management structures of transport companies recognize that the key mechanism for maintaining competitive positions lies precisely in effective cost management. This paper aims to examine the perceptions of employees in transport companies in Serbia regarding cost management. The research results showed that employees recognize the importance of cost control, but a lack of transparency, training and communication between departments limits their effective implementation. Clear differences were observed between managerial and non-managerial staff, with managers consistently scoring higher, suggesting that workplace and proximity to decision-making significantly shape perceptions of cost management.*

**Keywords:** management, costs, transport companies, employees' perceptions

**JEL:** *M21, M41, R49*

### **Introduction**

In a world of open borders, with predominantly globalized economies and reduced political and economic barriers to entering new foreign markets, companies have gained the opportunity to operate more successfully and achieve higher profit margins. An International Monetary Fund study (IMF, 2016) points out that this

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reflects the decline in effectively applied tariffs and non-tariff barriers burdening trade costs. Anderson and Wincoop (2004) note that transportation costs in global trade, representing the largest component of non-tariff costs, have been significantly reduced. Theorists (Davis & Drumm, 2002) who investigated transport costs as a share of total logistics costs observed that they had risen to as much as 44% in 2002. Thus, although transport costs in absolute terms have decreased, their share in logistics costs has increased. This is a growing number of scholars who are devoting attention to research in this area. Such a trend can be considered expected, given the structure of transport costs, their individual dependence on the movement of other input prices, and the fact that they are not set by political decision, but rather by economic principles. In interpreting this, it becomes clear why transport costs have not fallen as much or as rapidly as artificial barriers have been removed by political decision. This was noted by Amjadi and Yeats (1995), as well as other researchers (Radelet & Sachs, 1998), who observed that transport costs appear to be more persistent than non-tariff barriers eliminated by political decisions in the pursuit of trade liberalization.

“The transport sector plays a significant role in the functioning of the overall economy” (Miljković & Nikolić, 2024, p. 7). The same authors emphasize its importance from the supply perspective, noting that it primarily contributes by enabling market expansion, increasing production, and generating multiplier effects, while also influencing production and employment during the phases of infrastructure construction and operation. The World Trade Organization published a report highlighting that transport costs constitute the main non-tariff barrier, often proving to be a more effective form of protection than politically designed tariffs and non-tariff barriers (WTO, 2013). This has been empirically confirmed by various researchers studying countries in South America (Micco & Perez, 2002) and Asia (De, 2006). Theorists (Camison-Haba & Clemente-Almendros, 2020), analyzing the UN Conference on Trade and Development report (UNCTAD, 2015), emphasized their estimate that international transport costs accounted for 9% of a country’s import value, ranging from 6.8% in developed countries to 11.4% in developing countries during the 2005–2014 period.

Based on the objective of the research of this study, three research questions have been carefully formulated to provide a structured framework for investigating employees’ perceptions of cost management in transport companies:

- RQ1 - How does the level of employees' awareness of cost management affect their perception of the importance of cost control?
- RQ 2 - Is there a difference in attitudes towards cost management depending on the employees' job position?

- RQ3 - How do different aspects of organizational support (strategy, modern methods, motivation, rapid response and communication) affect the perception of cost management effectiveness in transport companies?

The efficiency of transport organizations is ensured by maximizing operational outcomes while simultaneously minimizing associated costs. Conceptually, the economic effect of transport can be defined as the net difference between the results of an organisation's economic activities and the expenditure required to achieve them.

### **Specific features of costs in transport companies**

Financial sustainability in businesses is shaped by a range of complex internal and external factors, among which the efficiency of cost management plays a critical role (Srebro et al., 2021; Milojević et al., 2024). Transport costs account for a significant share of companies' total expenses, as an increasing quantity of goods, whether fast- or slow-moving consumer goods, are not produced in geographical proximity to the customer and actual consumption. Consequently, companies' interest in examining these costs has grown over time. In the context of globalization of the world market, with the extension and increasing complexity of supply chains, transport costs have been recognized as a primary indicator of supply chain efficiency (Zeng & Rossetti, 2003). The expected reduction of transport costs in the global economy, resulting from the application of new engineering solutions both in transport vehicles and in improvements to transport infrastructure (Glaser & Kohlhase, 2004), has led to greater efficiency in goods distribution. This, in turn, enables better financial performance for companies—not only manufacturers, but also transport and trading firms—since all entities within this chain benefit from such technological progress. Manufacturers can increase production due to theoretically higher demand driven by lower prices; trading companies can increase profit margins by capturing part of the difference between old and new transport costs, while transport companies can also achieve higher profit margins by retaining part of the difference between previously higher and subsequently lower operating costs. Djankov, Freund, and Pham (2010), as well as Hummels (2007), note that in global trade, transport costs represent the most significant factor guiding foreign investment and entry into foreign markets.

Researchers (Kufel, 1990; Nowakowska-Grunt, 2013) emphasize that logistics costs constitute a specific category of costs, referring to the monetary value spent by a company in planning, implementing, and controlling non-technical processes of moving all forms of materials and goods through time and space. Other theorists (Stępień, Legowik-Świącik, Skibińska, & Turek, 2016) argue that logistics costs are a critical element of companies' financial positions and cost structures. In this sense, they are recognized as a decisive factor for maintaining and strengthening a company's competitive position in the market (Chow & Gill, 2011; Zamora & Pedraza, 2013), a view confirmed by Pešut (2009) in analyzing the report *Global*

*Supply Chains, Transport and Competitiveness* by the United Nations Economic Commission for Europe.

The classification and structuring of logistics costs were addressed by Szałek (1994), while Pfohl (2022) focused on the complexity of costs associated with warehousing operations. Kwejt (1982), in his research, examined the structuring of logistics costs, paying particular attention to both strict transport costs and various costs of inventory management. He also considered shortages and penalties arising from supplier errors, a topic later presented at a textbook level by Skowron-Grabowska (2014).

The development of the concept of “smart logistics,” which incorporates highly promising principles such as Mobile Robotic Systems, Mobile Automated Platforms, and Multi-Agent Cloud, has been studied by researchers (Gregor, Krajčovič, & Wiecek, 2017). They elaborate on the notion of a “smart connected product” and present it within the context of smart logistics. These researchers identify current logistics solutions as environmentally risky, overly demanding for the workforce, and costly, estimating that by 2030, half of European factories will employ their own logistics solutions supported by autonomous mobile robotic systems. The digitization of transport and its impact on transport company costs has also been examined by Stalmašeková, Genzorová, Čorejová, and Gašperová (2017), who highlight the significance of information and communication technologies for the transport industry.

Dan (2022) investigates problems in logistics and develops countermeasures for challenges encountered by companies in managing transport costs. He underscores the role of transport costs within logistics and dissects their composition. In interpreting the current state of the industry, he observes a serious brain drain, inadequate management of transport costs, and a clear need for improving the quality of transport. As a goal for researchers, he proposes the development of a market-oriented transport system that will be more cost-efficient and more competitive in the market.

### **Challenges in managing transport costs in a dynamic environment**

The limitation of resources imposes upon companies the requirement of adequate cost management to increase business efficiency. In the decision-making process, company management requires relevant information about the essential components of business and technological processes, namely, every individual element within these processes that entails a financial outflow. The internal information system stores historical cost data, which forms part of a larger database established based on prior business experience. This database contains monetary amounts of costs paired with the corresponding expected performance or technological effect.

Cost management is an important element of ensuring economic security as it helps organizations control costs and optimize resource allocation. This is essential for

maintaining financial stability in a competitive environment (Azimov, Hamidov, 2025). In recent times, cost accounting has been tasked with satisfying the diverse information needs of management (Vladislavljević, Vukosavljević, 2017). Practically, the use of management accounting information systems is limited to cost management, developing different types of budgets, and monitoring performance (Knežević et al., 2024). By applying new digital information technology tools, management accounting can provide quality information for strategic and operational decision-making (Spasić et al., 2024).

In economic theory, the importance of examining the interdependence between investments and the consumption of materials and energy is often emphasized as one of the key determinants in the creation of newly generated value (Beke Trivunac, Peković, 2025). Economic models are applied as instruments of analysis precisely because they enable solving a large number of economic problems arising from the effects of multiple variables (Pantić, et al., 2021). Achieving efficient cost management requires emphasizing agility. It is the ability to detect shifts in the environment and respond to them effectively (Lekić et al., 2023).

Predictive analytics has emerged as an essential instrument in strategic cost management, enabling companies to optimize pricing strategies and improve operational efficiency (Celestin, 2018). Cost accounting and budget preparation serve as foundational pillars of financial management, enabling organizations to allocate resources efficiently, control expenditures, and support strategic planning (Majumder, 2025). The application of business analytics can greatly improve the efficiency and impact of management accounting (Uyar, 2021). The different cost management and management control implications of service businesses deserve attention, as this area remains largely underexplored in the management accounting and control literature (Tkaczyk et al., 2025).

In addition to the identified demands for higher quality of transport services provided by transport companies, there is a persistent lack of financial resources. This most sought-after scarce resource today forces transport companies to optimize processes and associated resources while considering sometimes conflicting factors such as accessibility or availability, favorable pricing, and requirements for savings. Generating an adequate service offering is a demanding task for transport company management, which must always be carefully market-adjusted, with costs of each process structured within the product, i.e., the transport service, in focus.

At the micro level, when analyzing costs in transport companies, theorists observe that cost optimisation is crucial for efficiently managing overall company expenditures and represents the most important factor in achieving the desired financial results and further business development (Gerasimova, 2018). In assessing the market positions of transport companies, Gerasimova (2018) emphasizes that a company's competitiveness primarily depends on the speed of adoption and application of various new concepts and technologies, resulting in higher-quality

services at more affordable prices. With the development and strengthening of competition, companies' profit margins decline, leaving proper cost management as the key measure. In this process, companies must strengthen their own capabilities and potential to retain or improve their market position. Cost rationalization requires the prevention of unnecessary, idle, or sunk costs, that is, those costs which, in essence, do not generate corresponding revenues.

Bokor (2009) notes shortcomings in calculating transport service prices, since business practice often relies excessively on arbitrary cost allocation keys. The most common pattern he identifies is the use of a universal average cost value such as "€/vehicle-km," obtained by simply dividing the total incurred costs by work output. This approach does not account for cost differentiation factors, such as vehicle or service characteristics, which lead to inaccurate assessments of cost efficiency and business performance and ultimately result in inadequate resource allocation (Bokor, 2009).

As a significant driver of total operating costs, transportation costs directly affect pricing decisions, product competitiveness, and the overall business performance (Savić et al., 2020). In his study, Bokor (2009), analyzing transport costs at the micro level, examines the structure of operating costs, cost drivers, and the relationship between costs and performance, seeking solutions to the challenges of managing costs and performance. He highlights the benefits of improved cost and performance management for companies that are horizontally or vertically integrated, due to high ratios of indirect costs. Namely, when a certain resource is allocated and used for several distinct transport services, such costs cannot be easily attributed to a single service. For example, the main competitive advantages of road freight transport compared to other modes are its flexibility, reliability and fast delivery (Peštović et al., 2025).

Improving cost calculation in transport implies incorporating additional technologically oriented information, with the idea of allocating indirect costs to products based on the flows of technological processes rather than using ad hoc patterns. Bokor (2009) observes that a combination of technological and accounting data at least mitigates managerial ignorance resulting from the averaging of cost amounts in calculations. He proposes a general approach to transport cost calculation methodology that leverages technological performance indicators, which in turn enables the development of cost estimates for each service. By comparing the revenue from a service with its corresponding direct costs, the unit contribution margin is obtained. Companies can use this information for managerial decision-making and for accepting or rejecting certain market opportunities, relying on experiential methods and historical costs.

In contemporary business conditions, with a large number of competitors, companies must adapt to current market trends and offer new and unique services (products), while managing costs rationally, which increases the chances of business growth.

Effective cost management is a prerequisite for generating profit and expanding business operations through increased sales, growth in customer base, expansion into other markets, and domestic and foreign acquisitions. Bokor (2009) also points out that stronger competition fosters corporate integrations, i.e., mergers and acquisitions, and that such trends have been observed across all forms of transport (road, rail, and air).

## **Materials and methods**

All statistical analyses were performed using IBM SPSS Statistics, version 22.0. Frequencies and percentages were used to describe the demographic and professional characteristics of respondents. For the questionnaire items measured on a five-point Likert scale, both frequency distributions (N and %) and measures of central tendency and variability were calculated. The reliability of the questionnaire and its subscales was assessed using Cronbach's alpha coefficients. Group differences in total and subscale scores according to demographic and professional characteristics were examined using the Mann-Whitney U test and the Kruskal-Wallis test, with Bonferroni correction applied for multiple comparisons. Correlations between subscales and the overall score were analyzed using Spearman's rho. Finally, multiple linear regression analysis was performed to examine predictors of the overall cost management score, with categorical variables entered into the model as dummy variables. Statistical significance was set at  $p < 0.05$ .

## **Research results and discussion**

The research was conducted in the first half of 2025. A total of 120 respondents participated in this study, of whom 89 (74.2%) were male and 31 (25.8%) were female. The largest proportion of respondents was aged 41-50 years (42; 35.0%) and over 51 years (37; 30.8%). There were 22 respondents (18.3%) younger than 30 years, while 19 respondents (15.8%) were aged 31-40 years. Regarding education, most respondents had completed secondary school (44; 36.7%), followed by a bachelor's degree (34; 28.3%) and a master's degree (32; 26.7%), whereas 10 respondents (8.3%) held a doctorate (PhD). In terms of work experience in the transport sector, the majority had worked for 16 years or more (61; 50.8%), followed by 6-10 years (26; 21.7%) and 11-15 years (24; 20.0%), while the smallest group consisted of respondents with less than one year of experience (9; 7.5%). With respect to the field of transport, most respondents were employed in railway transport (44; 36.7%) and in road and pipeline transport (36; 30.0%), followed by air transport (30; 25.0%). Water transport accounted for 8 respondents (6.7%), while 2 respondents (1.7%) worked in other sectors. As for job positions, the majority of respondents were employed in non-managerial positions (77; 64.2%), while 43 respondents (35.8%) held managerial positions. Socio-demographic and professional characteristics of respondents are presented in Table 1.

Table 1. Socio-demographic and professional characteristics of respondents (N = 120)

Characteristic	Category	N (%)
Gender	Male	89(74.2)
	Female	31(25.8)
Age (years)	≤ 30 years	22(18.3)
	31–40 years	19(15.8)
	41–50 years	42(35.0)
	≥ 51 years	37(30.8)
Level of education	Secondary school	44(36.7)
	Bachelor's degree	34(28.3)
	Master's degree	32(26.7)
	Doctorate (PhD)	10(8.3)
Work experience in the transport sector	<1 year	9(7.5)
	6–10 years	26(21.7)
	11–15 years	24(20.0)
	≥16 years	61(50.8)
Field of transport sector	Road and pipeline transport	36(30.0)
	Water transport	8(6.7)
	Air transport	30(25.0)
	Railway transport	44(36.7)
	Other	2(1.7)
Job position	Managerial position	43(35.8)
	Non-managerial position	77(64.2)
N - number of respondents; percentage		

Source: Authors

A questionnaire on cost management in transport companies, consisting of 13 items grouped into three subscales, was administered. The subscale Employees' perception of the importance of cost control included four items, showing a mean total score of  $13.79 \pm 4.36$  (maximum 20), indicating a moderate level of agreement. The highest-rated statement was "I am well acquainted with the basic principles of cost management" ( $4.17 \pm 1.12$ ), suggesting that employees possess solid knowledge of the fundamental principles of cost management. This was followed by "I have sufficient information to monitor costs in my work" ( $3.76 \pm 1.26$ ), pointing to a generally positive perception of the availability of relevant information for cost monitoring. In contrast, the lowest-rated statements were "Cost information is made

available to employees in a transparent manner" ( $2.93\pm1.37$ ) and "In my company, training sessions on cost control and management are regularly organized" ( $2.92\pm1.55$ ). These findings highlight organizational weaknesses in ensuring transparency of cost-related information and in implementing regular training programs on cost management. Overall, the results show that employees recognize the importance of cost control and see themselves as informed, while organizational support through transparent communication and regular training is still lacking.

Within the subscale Employees' attitudes towards cost management, the mean total score was  $16.98\pm2.39$  (maximum 20), indicating a high level of agreement among respondents. The two highest-rated statements were "Effective cost management is of crucial importance for the survival of our company in the market" ( $4.79\pm0.63$ ) and "Cost control contributes to increasing the competitiveness of our company" ( $4.79\pm0.53$ ), both of which reflect employees' strong recognition of cost management as a key factor for business survival and competitiveness. Lower scores were observed for the statements "The management of my company pays sufficient attention to cost management" ( $3.78\pm1.20$ ) and "Investments in software solutions for cost control are necessary in my company" ( $3.62\pm1.09$ ). These results show that employees recognize the strategic role of cost management but are less convinced that management gives it enough priority or invests in tools such as software solutions.

Analysis of the subscale *Employees' perception of organizational support in cost management*, the mean total score was  $18.32\pm4.01$  (maximum 25), which points to a moderate to high level of agreement. The highest-rated statement was "*The greatest challenge in cost management is the rising prices of fuel and electricity*" ( $4.18\pm0.86$ ), followed by "*Inefficient internal control is a limiting factor for successful cost management*" ( $3.97\pm0.92$ ), which suggests that employees see external market conditions and weaknesses in internal control as the main obstacles to efficient cost management. Slightly lower scores were recorded for "*In my company, there is a clear cost management strategy*" ( $3.77\pm1.06$ ), suggesting that while many employees recognize the existence of a strategy, not all are equally confident in its clarity. The lowest-rated statements were "*Employees are motivated to manage resources rationally*" ( $3.32\pm1.32$ ) and "*There is effective interdepartmental communication regarding costs*" ( $3.08\pm1.43$ ), which indicate that motivation and communication are perceived as weaker elements of organizational support. Overall, the findings suggest that employees identify external cost pressures and internal control as key factors, while aspects such as motivation and communication require further improvement.

Distribution of responses and mean scores for subscales of cost management in transport companies are presented in Table 2.

**Table 2.** Distribution of responses and mean scores for subscales of cost management in transport companies

SURVEY ITEMS	1 N (%)	2 N (%)	3 N (%)	4 N (%)	5 N (%)	Mean±SD
<b>EMPLOYEES' PERCEPTION OF THE IMPORTANCE OF COST CONTROL</b>						13.79±4.36
I am well acquainted with the basic principles of cost management	5(4.2)	9(7.5)	9(7.5)	34(28.3)	63(52.5)	4.17±1.12
In my company, training sessions on cost control and management are regularly organized	36(30.0)	15(12.5)	17(14.2)	26(21.7)	26(21.7)	2.92±1.55
I have sufficient information to monitor costs in my work	9(7.5)	14(11.7)	16(13.3)	39(32.5)	42(35.0)	3.76±1.26
Cost information is made available to employees in a transparent manner	24(20.0)	26(21.7)	22(18.3)	30(25.0)	18(15.0)	2.93±1.37
<b>EMPLOYEES' ATTITUDES TOWARDS COST MANAGEMENT</b>						16.98±2.39
Effective cost management is of crucial importance for the survival of our company in the market	1(0.8)	2(1.7)	2(1.7)	11(9.2)	104(86.7)	4.79±0.63
Cost control contributes to increasing the competitiveness of our company	0(0.0)	2(1.7)	1(0.8)	17(14.2)	100(83.3)	4.79±0.53
The management of my company pays sufficient attention to cost management	8(6.7)	9(7.5)	26(21.7)	35(29.2)	42(35.0)	3.78±1.20
Investments in software solutions for cost control are necessary in my company	4(3.3)	12(10.0)	42(35.0)	30(25.0)	32(26.7)	3.62±1.09
<b>EMPLOYEES' PERCEPTION OF ORGANIZATIONAL SUPPORT IN COST MANAGEMENT</b>						18.32±4.01
Employees are motivated to manage resources rationally	16(13.3)	17(14.2)	26(21.7)	35(29.2)	26(21.7)	3.32±1.32
In my company, there is a clear cost management strategy	2(1.7)	14(11.7)	30(25.0)	37(30.8)	37(30.8)	3.77±1.06
There is effective interdepartmental communication regarding costs	23(19.2)	23(19.2)	20(16.7)	29(24.2)	25(20.8)	3.08±1.43
The greatest challenge in cost management is the rising prices of fuel and electricity	1(0.8)	6(5.0)	11(9.2)	54(45.0)	48(40.0)	4.18±0.86
Inefficient internal control is a limiting factor for successful cost management	0(0.0)	5(4.2)	37(30.8)	35(29.2)	43(35.8)	3.97±0.92

N - number of respondents; % - percentage; SD - Standard deviation; 1 - Strongly disagree; 2 - Disagree; 3 - Neutral; 4 - Agree; 5 - Strongly agree

Source: Authors

By summing all items, a total score was obtained with a mean value of  $49.10 \pm 9.21$ , ranging from 29 to 65 points (out of a maximum possible 65). The results show that all subscales significantly and positively correlate with each other, as well as with the total score ( $p < 0.01$ ). The strongest correlation was observed between the subscale *Employees' perception of organizational support in cost management* and the total score ( $\rho = 0.872$ ). This suggests that employees who report higher levels of organizational support, such as clear strategies, effective communication, and efficient internal control, also tend to achieve higher overall scores in cost management. Similarly, a very strong correlation was noted between *Employees' attitudes towards cost management* and the total score ( $\rho = 0.861$ ), confirming that employees' recognition of the strategic importance of cost management is in line with their overall responses. The lowest, but still strong, correlation was between *Employees' perception of the importance of cost control* and *Employees' perception of organizational support in cost management* ( $\rho = 0.567$ ). These results show clear connection between the three dimensions, indicating that employees' knowledge, attitudes, and perceptions together shape the overall view of cost management in transport companies (Table 3, Figure 1). Since the total score was calculated as the sum of all subscales, the correlations between individual subscales and the total score should be interpreted with caution, as they are not fully independent. Nevertheless, these results provide useful insight into which dimensions contributed most strongly to the overall evaluation of cost management.

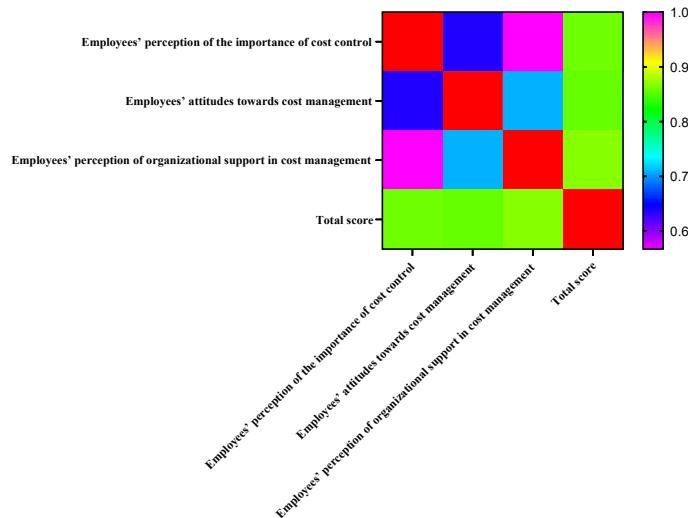
Table 3. Correlations between subscales and the overall score of employees' statements and perceptions on cost management in transport companies

Subscale	Employees' perception of the importance of cost control	Employees' attitudes towards cost management	Employees' perception of organizational support in cost management	Total score
Employees' perception of the importance of cost control	1	0.643**	0.567**	0.864**
Employees' attitudes towards cost management		1	0.714**	0.861**
Employees' perception of organizational support in cost management			1	0.872**

Total score				1
**p<0.001 (2-tailed).				

Source: Authors

Figure 1. Heatmap of correlations between subscales and the overall score on cost management in transport companies



Cronbach's alpha values indicated satisfactory internal consistency across all subscales: *Employees' perception of the importance of cost control* ( $\alpha=0.832$ ; good reliability), *Employees' attitudes towards cost management* ( $\alpha=0.762$ ; acceptable reliability), and *Employees' perception of organizational support in cost management* ( $\alpha=0.744$ ; acceptable reliability). The overall score demonstrated good reliability ( $\alpha=0.867$ ). These results confirm that the subscales exhibit adequate internal consistency, indicating that the items within each subscale consistently measure the same dimension of cost management in transport companies.

Differences in the overall cost management score and the subscale *Employees' attitudes towards cost management* were analyzed across demographic and professional characteristics. No significant gender differences were observed. Significant differences were found by age, showing the highest values among respondents aged 41-50 years and the lowest among those aged  $\leq 30$  years. Education level showed a clear upward trend, with significantly higher scores among respondents with bachelor's or master's degrees compared to those with secondary education. Work experience tended to be associated with higher scores in those with  $\geq 16$  years, but the differences were not significant. No significant differences were observed between transport sectors. In contrast, job position was significantly associated with both outcomes, with managerial staff reporting higher values compared to non-managerial employees. Results are presented in Table 4.

Table 4. Differences in the overall cost management score and the subscale *Employees' attitudes towards cost management* across demographic and professional characteristics

Characteristic	Category	Employees' attitudes towards cost management Median (IQR)	Test statistics/p	Total score Median (IQR)	Test statistics/p
Gender	Male	17.0(4.00)	1252.0/0,440 <sup>a</sup>	49.0(16.00)	1323,5/0,737 <sup>a</sup>
	Female	17.0(3.00)		49.0(15.00)	
Age (years)	≤ 30 years	16.0(3.00)	8.36/0.039 <sup>b</sup>	43.0(12.25)	10.63/0.014 <sup>b</sup>
	31–40 years	16.0(3.00)		52.0(15.00)	
	41–50 years	18.0(4.00)*		53.0(16.50)*	
	≥ 51 years	18.0(4.00)		50.0(16.50)	
Level of education	Secondary school	16.0(3.00)	32.17/0.000 <sup>b</sup>	42.0(8.00)	43.92/0.000 <sup>b</sup>
	Bachelor's degree	18.0(3.25) *		55.0(12.00) *	
	Master's degree	19.0(2.75) *		56.5(11.00) *	
	Doctorate (PhD)	18.0(3.00)		47.5(10.50)	
Work experience in the transport sector	<1 year	16.0(5.00)	6.04/0.110 <sup>b</sup>	48.0(18.50)	7.94/0.057 <sup>b</sup>
	6-10 years	16.5(3.00)		44.0(16.25)	
	11-15 years	17.0(3.00)		46.0(12.50)	
	≥16 years	18.0(3.00)		53.0(15.50)	
Field of the transport sector	Road and pipeline transport	17.0(2.00)	5.38/0.250 <sup>b</sup>	48.0(15.00)	6.18/0.186 <sup>b</sup>
	Water transport	17.0(5.25)		43.0(11.75)	
	Air transport	18.5(4.00)		55.5(23.00)	
	Railway transport	17.0(4.00)		48.5(12.75)	
	Other	18.0(/)		51.0(/)	
Job position	Managerial position	19.0(2.00)	728.0/0.000 <sup>a</sup>	58.0(12.00)	551.5/0.000 <sup>a</sup>
	Non-managerial position	16.0(3.00)		44.0(12.00)	

Values are presented as median (IQR - interquartile range); a - Mann-Whitney U test; b - Kruskal-Wallis test; \*  $p<0.0083$  compared with the first category (Bonferroni correction)

Source: Authors

**Multiple linear regression was conducted to examine the influence of demographic and professional characteristics on the overall cost management score.** The overall model was statistically significant ( $F(15,104) = 7.094, p < 0.001$ ), explaining 50.6% of the variance in the total score ( $R^2 = 0.506$ , Adjusted  $R^2 = 0.434$ ). Respondents with a bachelor's degree scored on average 8.83 points higher compared to those with secondary education ( $B = 8.83, p < 0.001$ ). In comparison, those with a master's degree scored 8.18 points higher ( $B = 8.18, p < 0.001$ ), which indicates a clear positive effect of higher education on employees' perceptions of cost management. Regarding work experience in the transport sector, respondents with less than one year of experience had significantly lower scores of 8.47 points compared to those with  $\geq 16$  years ( $B = -8.47, p < 0.05$ ). Similarly, those with 11-15 years of experience scored 5.12 points lower than the reference group ( $B = -5.12, p < 0.05$ ). This suggests that the longest-tenured employees reported more positive perceptions of cost management compared to those with shorter experience. The job position also showed a significant effect. Non-managerial employees scored on average 6.02 points lower than managerial employees ( $B = -6.02, p < 0.05$ ), highlighting the importance of hierarchical position within organizations for shaping attitudes towards cost management. Other predictors, including gender, age, and field of transport sector, were not statistically significant (Table 5).

**Table 5.** Results of linear regression analysis with the overall cost management score as the dependent variable (N = 120)

Predictor	B	SE B	Beta	t	p	95% CI for B	
						Lower	Upper
Age: 31-40 years	1.428	2.493	0.057	0.573	0.568	-3.514	6.371
Age: 41-50 years	- 1.728	2.572	- 0.090	- 0.672	0.503	-6.828	3.372
Age: $\geq 51$ years	- 1.674	2.591	- 0.084	- 0.646	0.520	-6.813	3.464
Education: Bachelor's degree	8.833	1.992	0.434	4.434	0.000	4.882	12.784
Education: Master's degree	8.183	2.152	0.394	3.802	0.000	3.915	12.452
Education: Doctorate	3.803	2.801	0.115	1.358	0.178	-1.752	9.358
Work exp.: <1 year	- 8.473	3.344	- 0.243	- 2.534	0.013	- 15.105	-1.841
Work exp.: 6-10 years	- 3.568	2.257	- 0.160	- 1.581	0.117	-8.043	0.908
Work exp.: 11-15 years	- 5.121	1.910	- 0.223	- 2.682	0.009	-8.908	-1.334

Sector: Air transport	1.771	1.915	0.084	0.925	0.357	-2.026	5.568
Sector: Water transport	- 0.474	2.833	- 0.013	- 0.167	0.867	-6.091	5.143
Sector: Road and pipeline transport	0.995	1.645	0.050	0.605	0.546	-2.266	4.256
Sector: Other	2.194	6.482	0.031	0.339	0.736	- 10.660	15.048
Job position	- 6.016	1.846	- 0.314	- 3.258	0.002	-9.677	-2.354
Gender	- 0.493	1.689	- 0.024	- 0.292	0.771	-3.843	2.856

Dependent variable: overall cost management score; CI - confidence interval; SE B - standard error of B; Reference categories: Age  $\leq$ 30 years, Secondary school,  $\geq$ 16 years of work experience, Railway transport, Managerial position, Male gender.

Source: Authors

In accordance with the formulated research questions, the following findings have been identified and are presented below.

The findings of this research indicate that employees largely recognize the relevance of cost control and believe they are familiar with its fundamental principles. Nevertheless, shortcomings in organizational transparency and the lack of regular training programs weaken the overall support provided to employees. Greater awareness and access to information were associated with stronger acknowledgement of the role of cost control. Clear differences were observed between managerial and non-managerial staff, with managers consistently achieving higher scores, which suggests that job position and proximity to decision-making significantly shape perceptions of cost management. Non-managerial employees showed lower values, pointing to the need for broader engagement across all organizational levels. Furthermore, employees identified rising energy costs and weaknesses in internal control as key barriers to effective cost management, while motivation and interdepartmental communication were recognized as weaker aspects of organizational support. The strong association between this subscale and the overall score confirms that clear strategies, modern tools, and effective communication channels play an essential role in shaping employees' views on efficiency. Taking together, the results demonstrate that cost management in transport companies depends on the interplay of employees' knowledge, attitudes, and the level of organizational support. Higher education, longer work experience, and managerial roles emerged as significant predictors of higher scores, emphasizing the importance of continuous professional development, transparent communication, and active participation of staff at all levels as a basis for strengthening cost management practices and maintaining competitiveness.

## Conclusion

The paper studied the issue of employees' perceptions regarding cost management practices in transport companies, with a focus on understanding how organizational communication, transparency, and employee characteristics influence attitudes toward cost control. The paper identifies the key determinants that can guide managers in making more informed business and financial decisions to achieve efficient cost management, while also providing valuable insights for policymakers in the transport economy sector.

In the globalization of the economy that has gained momentum, due to the relocation of world production to geographically distant locations, transport costs are increasingly recognized as a significant factor of competitiveness. They are the subject of study by theorists of trade economics, but also by researchers of global supply chains, where the consolidation of business and the struggle for a monopoly in the transport of goods market are observed. This is precisely where lies the key that can accelerate the advancement of the global production force from the East, towards the leader position of the world economy.

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# PERCEPCIJE ZAPOSLENIH U TRANSPORTNIM PREDUZEĆIMA O UPRAVLJANJU TROŠKOVIMA

Stefan Milojević, Miloš Milošević, Milica Simić

## *Apstrakt*

*U savremenim poslovnim uslovima koje obeležavaju nacionalne i međunarodne ugovorne integracije i akvizicije, globalizacija ponude i potražnje za transportnim uslugama, izuzetno brz razvoj konkurenциje usled pojave novih preduzeća iz zemalja koje tradicionalno nisu bile orijentisane ka međunarodnom transportu, kao i rast značaja naprednih softverskih alata, upravljanje troškovima dobija sve veću važnost. Menadžment transportnih preduzeća prepoznaće da se ključni mehanizam očuvanja konkurenčke pozicije zasniva upravo na efikasnom upravljanju troškovima. Cilj ovog rada je da ispita percepcije zaposlenih u transportnim preduzećima u Srbiji i vezi sa upravljanjem troškovima. Rezultati istraživanja pokazuju da zaposleni prepoznaju značaj kontrole troškova, ali da nedostatak transparentnosti, obuke i međusektorske komunikacije ograničava njenu efikasnu primenu. Uočene su jasne razlike između menadžerskog i nemenadžerskog kadra, pri čemu menadžeri dosledno ostvaruju više skorove, što ukazuje da radna pozicija i blizina procesu odlučivanja značajno oblikuju percepcije o upravljanju troškovima.*

**Ključne reči:** upravljanje; troškovi; transportna preduzeća; percepcije zaposlenih.

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## THE IMPACT OF CORPORATE GOVERNANCE ON ECONOMIC SECURITY

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### *Abstract*

*Corporate governance is a set of mechanisms, rules and processes through which a company's operations are directed and controlled, with the aim of ensuring efficiency, accountability and transparency. At the same time, the economic security of a company implies the stability, resilience and ability of an organization to protect its resources and business interests from internal and external risks. The paper explores the connection between corporate governance and economic security, pointing out that well-implemented management principles contribute to risk reduction, strengthening investor confidence, more efficient use of resources and long-term sustainability of business. Special attention is paid to transparency, management accountability and the role of internal controls and corporate security systems in preserving the economic stability of a company. By analyzing relevant literature and practice, the paper points to the importance of an integrated approach to corporate governance and security management as key factors of competitiveness and survival of a company in modern business conditions.*

**Keywords:** corporate governance, economic security, transparency, responsibility, risk, internal controls.

**JEL:** G34, G32

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## Introduction

The modern business environment is characterized by continuous and dynamic changes, high competition and increasingly complex forms of risks to which companies are exposed. In such a complex context, the issue of preserving the sustainability of business and the economic security of the company becomes one of the key issues facing management and the corporate governance system(Trifunović et al., 2023). Corporate governance is defined as a set of structures, processes and decision-making mechanisms that enable a company to operate efficiently, responsibly and in accordance with laws and ethical standards, with particular importance being the protection of the interests of various stakeholders – owners, employees, investors, as well as the wider social community (Rajnović & Bukvić, 2017). Through adequate corporate governance, a company can develop mechanisms for identifying and managing risks, optimizing business processes and increasing the trust of relevant stakeholders.

Economic security, on the other hand, implies the ability of a company to maintain stability and continuity of business, as well as financial resilience to various internal and external threats that can disrupt business. According to Trivan et al. (2024), economic security includes several key elements: the protection of material and intangible resources, the prevention of financial and operational losses, the preservation of business continuity, and the ability of the organization to respond and adapt to crisis situations. This clearly shows that economic security cannot be viewed in isolation from corporate governance, because the quality and efficiency of management mechanisms directly affect the organization's ability to recognize, mitigate and overcome possible economic and security challenges.

The connection between corporate governance and economic security is particularly important in the modern conditions of globalization, digitalization and increasingly frequent economic and security crises(Ristanović et al., 2024). Business transparency, management accountability, effective internal controls, as well as a clearly defined security strategy, represent the fundamental pillars of maintaining competitiveness and long-term sustainability of the company(Trifunović et al., 2024). In this way, the company not only protects its resources and financial stability, but also strengthens the trust of investors and other key participants in the business ecosystem.

The aim of this paper is to thoroughly investigate and analyze the impact of corporate governance on the economic security of the company(Škrbić et al., 2023), with special attention to the theoretical foundations, as well as the practical implications of the application of modern management models and security management. The analysis aims to highlight the importance of an integrated approach, in which effective corporate governance becomes a key factor in preserving the stability, resilience and long-term sustainability of a company's business.

## Corporate governance – theoretical framework

Corporate governance is one of the key and central concepts of modern economics and management, as it directly deals with the way in which the mutual relations between capital owners, management and other stakeholders within a company are organized and regulated. According to the OECD definition, corporate governance means a set of structures, procedures and processes that direct and supervise the operations of a company, with the ultimate goal of ensuring long-term sustainability, accountability and transparent functioning (Zattoni & Pugliese, 2021). In other words, it is not just a formal framework or administrative procedure, but a system of values and rules that define how decisions are made, how their implementation is monitored and how the interests of all stakeholders involved in the company's operations are protected.

The professional literature particularly emphasizes that the development of the concept of corporate governance was conditioned by multiple socio-economic and market processes. Among the most important are the processes of privatization, globalization, and increasing integration of capital markets, as well as the emergence of numerous corporate scandals in the late 20th and early 21st centuries, which clearly indicated the necessity of strengthening the regulatory framework, internal controls, and oversight mechanisms in companies (Jin et al., 2021; Majstorović & Obrić, 2023). These scandals have shown that without adequate governance and ethical oversight, companies can find themselves in situations that threaten not only the interests of investors, but also broader economic stability.

Authors who deal with this topic emphasize that the basic principles of corporate governance are as follows (Khanh et al., 2020):

- Shareholder rights and equal treatment – protecting the interests of all shareholders, both majority and minority, by ensuring that company decisions are made transparently and in accordance with the law;
- The role of stakeholders – recognizing and taking into account the interests of employees, consumers, suppliers, local communities and other stakeholders who are directly or indirectly related to the company's operations;
- Transparency and disclosure of information – the obligation to timely, accurately and completely inform investors, regulatory bodies and the general public about the financial and business condition of the company;
- Responsibility of management and supervisory bodies – clearly defining the responsibilities of management and supervisory bodies, as well as establishing effective mechanisms for controlling and evaluating decisions.

These principles form the basis for ethical, transparent and sustainable business, because through them companies can build trust with investors, improve their

reputation and create solid assumptions for stable economic development. Rajnović and Bukvić (2017) particularly emphasize that quality corporate governance contributes to reducing the so-called agency problem, i.e. the separation of ownership and management. This is achieved through the establishment of a control system, management reward mechanisms and protection of shareholder interests, which in the long term increases the efficiency and resilience of companies to market risks.

In addition to the theoretical foundations, there are different models and approaches to corporate governance. The most famous among them are:

- The Anglo-Saxon model, which puts shareholders and the capital market in the foreground and is characterized by high flexibility in making business decisions;
- The German model, based on a dual system of management and supervision, where there is a clear division between the executive and supervisory functions;
- The Japanese model, which includes interest groups (stakeholders) to a greater extent and emphasizes the interdependence of companies through keiretsu structures and long-term partnerships.

The choice and application of a specific model depend on the institutional and legal framework of each country, but also on the specifics of the market, business culture and the level of development of corporate institutions.

In the Republic of Serbia, the development of corporate governance has become particularly important after the privatization and restructuring of enterprises. The country has made intensive efforts to improve the regulatory framework and practice, although practice shows that many enterprises still do not fully recognize the importance and complexity of this area. This indicates a continuous need for further harmonization with international standards and strengthening the capacities of management and supervisory bodies (Triapathi, 2019).

In this context, corporate governance cannot be viewed solely as a formal framework or legal requirement, but as a strategic instrument that enables long-term sustainability, stability and security of business. Its implementation affects not only the financial performance of the enterprise, but also the ability of the enterprise to respond to market challenges, global economic changes and crisis situations. In the next chapter of the paper, attention is paid to the concept and importance of the economic security of the enterprise, because it is in this framework that corporate governance shows its real impact and functional importance.

## **Economic security of a company – definition**

Economic security of a company represents the ability of an organization to protect its key resources, maintain business stability and ensure long-term sustainability even in the presence of various internal and external risks. In the broadest sense, this concept includes the protection of financial assets, material goods, human resources and information, but also the ability of a company to respond effectively to changes and challenges brought about by market fluctuations, economic crises, unfair competition or criminal activities (Aguilera & Jackson, 2003). Therefore, economic security can be seen as an integral concept that connects different aspects of business and ensures the resilience and long-term sustainability of the organization.

The concept of economic security can be broken down into several interrelated dimensions that together form a comprehensive system of protection and risk management in a company (Enache & Hussainey, 2019):

- Financial security – includes balance sheet stability, preservation of liquidity and the ability of a company to service all its obligations on time, thereby reducing the risk of insolvency;
- Operational security – refers to business continuity, resilience to supply chain disruptions, technical and technological accidents and unplanned interruptions in production or service provision;
- Information and cyber security – focuses on protecting confidential and business data from misuse, unauthorized access and cyber threats, which can seriously jeopardize a company's business and reputation;
- Legal and regulatory security – involves compliance with laws, regulations and regulatory standards, thereby minimizing the risk of legal sanctions, fines or loss of a license to operate;
- Reputational security – refers to preserving a company's reputation and the trust of key stakeholders, including shareholders, employees, customers and the general public, as reputation directly affects business sustainability and competitive advantage.

Corporate security, as an integrated function that combines all these dimensions, plays a key role in harmonizing security and business processes, thereby achieving greater resilience and efficiency in business. According to the Handbook for Corporate Security Managers, economic security is considered an integral part of the company's strategy, as it enables stable development, prevention of potential losses and protection of the interests of all relevant stakeholders inside and outside the organization (Clarke, 2020; Milenković, 2023).

It is important to emphasize that economic security is not a static or one-time category, but rather a continuous process that requires constant monitoring, periodic

assessment and prompt adjustment of strategies and operational procedures (Ou-Yang, 2008). The modern business environment is characterized by numerous and increasingly complex challenges - from global economic and financial crises, political instability and changes in international markets, to high-tech crime, cyber threats, climate change and natural disasters. In this context, economic security becomes a strategic priority for management, as it enables the long-term preservation of competitive advantage, protection of business resources and stable survival of the company in the market.

Starting from this comprehensive definition of economic security, the next chapter analyzes in more detail the impact of corporate governance on the economic security of enterprises. Special focus will be placed on governance mechanisms, their importance in reducing risk, and the role they play in strengthening the resilience and stability of business processes.

### **The impact of corporate governance on the economic security of a company**

Corporate governance has a direct and significant impact on the economic security of enterprises, which is achieved through improving financial stability, increasing the level of transparency in business operations and building trust among various stakeholders, including shareholders, investors, employees and the wider community. Establishing an effective governance system allows enterprises to reduce the risk of corruption, misuse of resources and managerial errors, while at the same time increasing their resilience to various crises and unforeseen situations (Solomon, 2021). In other words, corporate governance is not just a formal decision-making structure, but a key mechanism for preserving and strengthening the economic security of enterprises in a dynamic business environment.

According to Trivan et al. (2024), the key mechanisms through which corporate governance contributes to economic security are:

- Transparency and Disclosure – One of the fundamental principles of corporate governance is timely, accurate and comprehensive information to shareholders, investors and other stakeholders. Transparency in business reduces the risk of manipulation, hidden business arrangements and potential conflicts of interest, which directly increases market confidence and contributes to a more stable business environment. The OECD principles emphasize that the publication of financial statements, key business decisions and risk assessments creates a safer investment environment, as it allows investors and other participants to make informed decisions.
- Management accountability – Effective corporate governance includes clearly defined management obligations and responsibilities, where managers are expected to make decisions in the best interests of the company, and not for personal gain. This principle reduces the agency problem that arises from the

separation of ownership and management, which is often a source of abuse and corporate scandals (Mallin, 2019). Responsible management contributes to the economic health of a company by strengthening its resilience to business challenges and risks, including financial, operational and reputational aspects.

- Effective internal controls and audits – Internal controls and audit systems are a key element in protecting a company and its resources. They enable timely detection of irregularities, prevention of losses and reduction of opportunities for corrupt practices. According to the Handbook for Corporate Security Managers (Tricker, 2019), internal controls and investigations are an integral part of a company's protection system, as they ensure compliance with legal and ethical norms. The implementation of a key performance indicator (KPI) system additionally enables management to respond in a timely manner to deviations from planned goals (Janković & Golubović, 2025), which contributes to stability and long-term preservation of economic security.

Table 1. The impact of corporate governance mechanisms on economic security

Governance Mechanism	Effect on economic security	Case study
Board of Directors	Reduction of strategic risks	Regular meetings and plan reviews
Audit Committee	Prevention of financial losses	Internal and external audits
Transparent Reporting	Increasing investor confidence	Publishing quarterly reports
Risk Management Policies	Identification and control of risks	Assessing credit risk and market changes

Source: Trivan et al. (2024)

- Risk management and business continuity - Effective corporate governance also includes the introduction of a risk management system that enables the identification, assessment and minimization of threats to the financial and operational stability of the company (Syamsudin et al., 2020). This approach enables business continuity and resilience to crisis situations, which can be caused by market fluctuations, cyber threats, natural disasters or regulatory changes. Companies that integrate risk management into their corporate structure achieve a higher level of economic security and preparedness for unforeseen events.
- Reputational security and market trust - A company's reputation has a direct impact on its economic security. Companies that implement developed corporate governance mechanisms enjoy a higher degree of trust from investors, partners and consumers, which makes them more attractive for obtaining capital and expanding their business. Conversely, poor governance can lead to scandals, a decline in market value and a decrease in competitiveness.

- Empirical indicators of the relationship between governance and security - Research shows that companies with a high level of corporate governance development record significantly better financial results, greater reputation in the market and greater resilience to crisis situations (Savić et al., 2024; Paspalj et al., 2024). These empirical data confirm theoretical assumptions about the key role of corporate governance in preserving economic security.
- Corporate social responsibility (CSR) and economic security - CSR is an important aspect of modern corporate governance and has a significant impact on the economic security of companies. Companies that operate in accordance with the principles of social responsibility invest in environmental protection, ethical treatment of employees, transparent relations with consumers and active contribution to local communities. Rajnović and Bukvić (2017) point out that CSR becomes a strategic instrument for preserving reputation and strengthening trust in the market, which directly contributes to the economic health of the company. Responsible company behavior reduces the risks of regulatory sanctions, negative publicity or consumer boycotts, while at the same time increasing attractiveness for investors and business partners. Trivan et al. (2024) further emphasize that CSR also has a security dimension – companies that invest in the well-being of their employees, local communities and environmental sustainability develop a higher level of resilience to crisis situations. For example, a company that implements developed environmental protection policies or social care for employees shows a greater ability to quickly recover and continue operating in crisis circumstances. For this reason, CSR can also be seen as a preventive mechanism within corporate governance, which reduces business risks and strengthens long-term resilience. Integrating social responsibility into business strategies does not represent an additional cost, but rather an investment in the long-term survival and economic security of the company.

The table below shows an example of the relationship between the level of development of corporate governance and indicators of economic security:

Table 2: Relationship between the level of development of corporate governance and indicators of economic security

Corporate Governance Level	Financial stability	Reputational security	Crisis resilience
Low	40	45	50
Medium	70	75	72
High	90	95	92

Source: Rajnović & Bukvić (2017)

The analysis of the relationship between the level of development of corporate governance and the level of economic security of the enterprise shows a clear and direct correlation – the higher and better implemented the standards of governance

in the enterprise, the higher the level of stability, security and resilience to crisis situations. For this purpose, the table presents three different models of corporate governance: low, medium and high level (Oliver, 2005).

Enterprises with a low level of governance are characterized by numerous shortcomings: a low level of transparency in business operations, insufficient responsibility of management for making strategic and operational decisions, as well as a complete lack of adequate internal controls. As a result of this approach, the financial stability of these enterprises is relatively low and amounts to 40 out of a possible 100 points, while reputational security is threatened and rated at 45/100, and resilience to crisis situations is limited to 50/100. In practice, such companies often face problems of losing investor confidence, difficult access to capital, as well as the risk of scandals and business failures that can threaten the very survival of the company.

In companies that apply a medium level of corporate governance, where basic mechanisms of transparency, accountability and control are implemented, significant progress is observed in all key aspects of economic security. The financial stability of these companies increases to 70/100, reputational security to 75/100, and resilience to crisis situations to 72/100. Such companies function relatively stably in standard market conditions, but still remain subject to risks in the event of global economic disruptions, sudden corporate scandals or cyber incidents, which can seriously threaten their business continuity.

The highest level of corporate governance directly contributes to the highest level of economic security. Companies with a developed and well-structured management system, in which the principles of accountability, transparency and effective internal control are consistently applied, achieve significantly better results: financial stability is at a high level of 90/100, reputational security is 95/100, and resilience to crisis situations reaches 92/100. In addition, such companies not only attract investors and strategic partners, but also strengthen their long-term competitiveness thanks to a high level of trust, data confidentiality and well-developed business continuity plans.

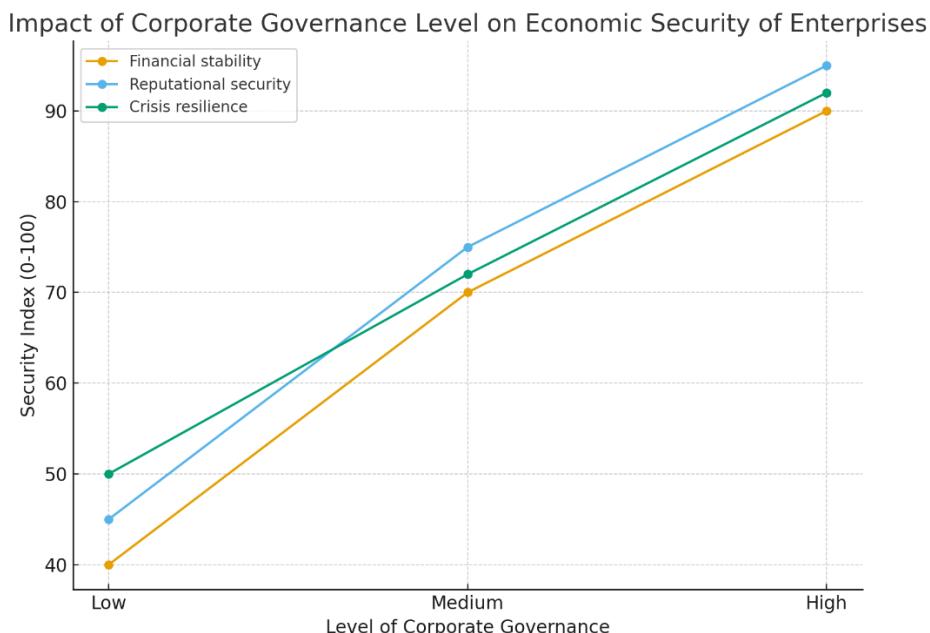
The attached graph clearly shows a positive trend - the higher the level of corporate governance, the higher the degree of economic security in all dimensions: financial stability, reputation and resilience to crisis situations. The graph illustrates a linear relationship between the level of governance and all indicators of economic security, which confirms that investing in management mechanisms directly contributes to the protection and improvement of business performance.

It is important to note that in modern business conditions, all three dimensions - financial stability, reputational security and resilience to crisis situations - are interconnected and act synergistically. Financial stability allows a company to make investments in security and development capacities, while reputational security

strengthens relationships with the market, partners and the wider social environment. At the same time, resilience to crisis situations ensures business continuity and survival in unforeseen and turbulent circumstances.

Such an analysis fully confirms the conclusions of numerous researchers (Popović et al., 2016), according to which economic security cannot be viewed separately from the quality of management processes. In other words, corporate governance and economic security constitute two inextricably linked components of the same system – effective management creates a stable basis for the protection of resources, while high economic security enables the long-term implementation of strategic business goals and the development of the organization.

Chart 1: Relationship between the level of development of corporate governance and indicators of economic security



Source: prepared by the author based on Rajnović & Bukvić (2017)

These results clearly indicate that the implementation of modern corporate governance principles not only leads to improved competitiveness of the company, but also ensures its long-term sustainability and business stability. Therefore, the implementation of an integrated approach that connects corporate governance with security management becomes a key prerequisite for adequate protection of the interests of all relevant stakeholders – from owners and employees to the wider social community. This approach allows strategic decisions to be made in accordance with the principles of transparency, accountability and sustainability, which further contributes to the creation of a stable and safe business environment.

## Practical examples

The practical application of corporate governance principles plays an extremely important role in preserving the economic security of enterprises. Although theoretical frameworks and models emphasize key principles such as accountability, transparency and effective control, the real effects of the application of these mechanisms can best be seen through concrete examples from practice, both international and domestic (Vladisavljević et al., 2023). In this chapter, attention is focused on a detailed analysis of successful and unsuccessful cases, with special attention paid to the correlation between the quality of corporate governance and business stability, indicating how consistent application of the principles can contribute to preserving the financial and operational security of enterprises.

### International examples

#### a) Enron – a study of failure

The Enron scandal is a classic and illustrative example of how the absence of effective corporate governance can be disastrous for the survival and stability of a company. In this case, the company's board of directors failed to establish adequate mechanisms for supervising the work of management, which resulted in serious control failures. In addition, the company's financial statements were non-transparent and susceptible to manipulation, primarily through the use of off-balance sheet structures that concealed the true state of liabilities and risks. As a direct consequence of such practices, investors suffered huge financial losses, and the general public and the capital market experienced a serious blow to their confidence in the integrity and reliability of financial statements (Dogandžić, P. & Dogandžić, A., 2003; Gojkov, 2024). This case clearly indicates the key role of corporate governance in preserving financial stability and protecting the interests of all stakeholders.

#### b) Toyota – maintaining stability in crises

Toyota Motor Corporation is an example of a company that managed to mitigate risks during the global financial crisis of 2008–2009 through the implementation of a high level of corporate governance. In order to maintain business stability, Toyota implemented a comprehensive internal control system that enabled the monitoring and management of key business processes. In addition, the company established a clear hierarchy of responsibilities, which defined responsibility at all levels of management, while at the same time facilitating quick and efficient decisions in crisis situations. A proactive approach to crisis management allowed the company to anticipate potential problems and take preventive measures, which resulted in preserving liquidity and business stability, even during a period of global sales decline (Wang et al., 2021). This practice shows that effective corporate governance can significantly contribute to a company's resilience to external shocks and financial instability.

c) Siemens – integrating ethics and corporate responsibility

After Siemens AG was involved in a corruption scandal in the early 2000s, the company implemented a comprehensive corporate governance program. This program included the introduction of a code of ethics, mandatory training for all employees, and increased oversight by the board of directors. As a result of these measures, Siemens was able to improve its reputation, reduce legal risks, and improve the company's economic performance (Miao et al., 2020).

### **Domestic examples**

a) NIS a.d. Novi Sad

The Oil Industry of Serbia (NIS), as part of the privatization and comprehensive restructuring process, adopted modern corporate governance standards that significantly improved the way the company operates. The Board of Directors, composed not only of internal members but also of independent experts, combined with an efficiently implemented internal control system, played a key role in achieving more stable and predictable financial operations. In addition, the company introduced the practice of transparent publication of quarterly reports, thus providing investors with timely and accurate insight into business results. This approach directly contributed to reducing the risk of unexpected financial losses, strengthening market and investor confidence in NIS (Savić, 2024).

b) Komercijalna banka a.d. Beograd

In the financial sector, Komercijalna banka is a clear example of how good corporate governance can directly contribute to strengthening the economic security of a company. The implementation of a comprehensive risk management system, together with regular and detailed reviews of the credit portfolio, as well as constant supervision of the bank's liquidity, has enabled a significant reduction in potential credit and market risks. This approach demonstrates how effective and responsible governance is crucial for maintaining stability, especially in the banking sector, where the economic security and resilience of an institution depend directly on the ability of management to recognize early signs of risk and take appropriate measures to mitigate them (De Villiers & Dimes, 2020; Dašić et al., 2023).

c) Telekom Srbija

Telekom Srbija has implemented corporate standards that are fully aligned with international guidelines, with particular emphasis on reporting in accordance with International Financial Reporting Standards (IFRS) and the engagement of an independent auditor. This alignment with international norms has enabled the company to improve the level of transparency in its operations, while the introduction and implementation of an employee code of ethics has further contributed to strengthening the company's reputation. As a result of these measures,

the risk of possible financial and operational losses has been significantly reduced, ensuring more stable and reliable operations for the company (Trivan et al., 2024).

Table 3: Comparative overview of domestic and international examples

Company	Corporate Governance Implementation	Impact on economic security	Lesson
Enron (SAD)	Lack of Control, Non-Transparent Reporting	Bankruptcy, investor losses	The need for independent oversight and transparency
Toyota (Japan)	Internal Control, Crisis Preparedness	Maintained liquidity, stability	Proactive risk management strengthens resilience
Siemens (Nemačka)	Ethics, Training, Board Control	Reduced legal risks, strengthened reputation	Integrating ethics and corporate responsibility
NIS (Srbija)	Independent Board, Transparent Reporting	Stable operations, reduced financial risks	Transparency and control facilitate stability
Komercijalna banka (Srbija)	Credit Risk Management, Internal Audits	Reduced risk of losses, stable liquidity	Risk management system essential in banking
Telekom Srbija	IFRS, Independent Auditor, Code of Ethics	Increased reputation, reduced operational risk	Compliance with standards strengthens economic security

Source: Prepared by the author based on Dogandžić, P. & Dogandžić, A. (2003), Wang et al. (2021), Miao et al. (2020), Savić (2024), De Villiers & Dimes (2020) i Trivan et al. (2024)

Practical examples from real business environments clearly illustrate the strong connection between the quality of corporate governance and the level of economic security of a company. When a company does not have adequate and effective supervision, as well as a high degree of transparency in its business processes, it becomes exposed to significant financial losses and potential damage to its reputation, which can seriously threaten its long-term stability and sustainability (Milanović, 2023). On the other hand, the implementation of modern corporate governance standards, including well-defined internal procedures and control mechanisms, significantly reduces operational and strategic risks, strengthens the organization's resilience to crisis situations and increases the trust of both investors and the general public.

Among the key factors contributing to this positive connection are (Bučalina Matić et al., 2024):

- Transparent and accurate financial reporting.
- Active and independent role of boards of directors.
- Effective risk management and crisis preparedness.
- Integration of ethics and social responsibility into business.

These practical examples strongly confirm that corporate governance is not just a regulatory obligation or formality, but functions as a strategic instrument for

preserving the economic security and stability of a company, enabling it to maintain competitiveness and long-term development.

## Conclusion

The analysis of the impact of corporate governance on the economic security of enterprises clearly shows that high-quality, professional and efficient management is one of the key factors that directly contribute to preserving the stability of business operations and long-term sustainability of enterprises. The application of corporate governance principles – including transparency in business operations, a high degree of management responsibility, professionalism in making strategic decisions, as well as active and continuous monitoring and management of risks – allows enterprises to significantly reduce potential financial losses, operational disruptions and risks that can damage the company's reputation in the market.

Various corporate governance mechanisms, which are applied in practice, include the establishment of clearly defined control procedures, detailed strategic planning, an integrated system of internal and external audits, as well as the implementation of policies related to corporate social responsibility. These mechanisms jointly contribute to creating trust among key business stakeholders – including investors, employees, customers, suppliers and the general public interested in the business results of the enterprise. In this sense, transparency and accountability should not be viewed only as regulatory obligations that a company must fulfill, but also as fundamental factors that ensure the stability and resilience of a company to economic fluctuations, market turbulence and unforeseen business shocks.

Practical examples from existing literature and relevant documents indicate that companies that consistently and systematically apply the principles of corporate governance achieve a higher level of economic security. Such companies manage to reduce the risk of sudden financial losses, crisis situations and potential reputational damage, which directly increases their ability for sustainable growth and competitiveness in the market. At the same time, investing in corporate social responsibility initiatives further strengthens the company's image, increases the trust of the public and business partners, and creates a long-term sustainable advantage over competitors.

In conclusion, it can be clearly stated that corporate governance is an indispensable element of modern business strategies. Its consistent application has a direct and measured impact on the economic security of a company, reducing business risks and contributing to stable and sustainable development. Future research in this area should be focused on quantitatively measuring the effects of corporate governance on corporate resilience, as well as evaluating new approaches and methods in risk prevention and management, with the aim of further improving strategies that enable long-term stability and sustainability of business.

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# UTICAJ KORPORATIVNOG UPRAVLJANJA NA EKONOMSKU BEZBEDNOST

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## *Apstrakt*

*Korporativno upravljanje predstavlja skup mehanizama, pravila i procesa putem kojih se usmerava i kontroliše poslovanje preduzeća, sa ciljem obezbeđivanja efikasnosti, odgovornosti i transparentnosti. Istovremeno, ekonomski bezbednost preduzeća podrazumeva stabilnost, otpornost i sposobnost organizacije da zaštitи svoje resurse i poslovne interese od unutrašnjih i spoljašnjih rizika. Rad ispituje povezanost između korporativnog upravljanja i ekonomskih bezbednosti, ukazujući na to da dosledna primena principa upravljanja doprinosi smanjenju rizika, jačanju poverenja investitora, efikasnjem korišćenju resursa i dugoročnoj održivosti poslovanja. Posebna pažnja posvećena je transparentnosti, odgovornosti menadžmenta, kao i ulozi internih kontrola i sistema korporativne bezbednosti u očuvanju ekonomski stabilnosti preduzeća. Analizom relevantne literature i prakse, rad ukazuje na značaj integrisanog pristupa korporativnom upravljanju i upravljanju bezbednošću kao ključnih faktora konkurentnosti i opstanka preduzeća u savremenim poslovnim uslovima.*

**Ključne reči:** korporativno upravljanje, ekonomski bezbednost, transparentnost, odgovornost, rizik, interne kontrole.

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## UTICAJ HRM PRAKSE NA ZADOVOLJSTVO ZAPOSLENIH I LOJALNOST GOSTIJU U SRPSKOM HOTELIJERSTVU

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### *Apstrakt*

*Zadovoljni i motivisani zaposleni stvaraju prijatno okruženje koje podstiče lojalnost gostiju i povećava konkurenčku prednost hotelijerstva. U radu je ispitana veza između prakse upravljanja ljudskim resursima, sa fokusom na razvoj motivacije zaposlenih, i unapređenja ponude i povećanja nivoa zadovoljstva gostiju. Prikupljanje podataka za analizu vršeno je metodom anketiranja, a finalni uzorak je uključivao 146 upitnika, u periodu prikupljanja podataka od januara do novembra 2024. godine. Analizirani modeli pokazuju da je neophodno testirati razlike u više aspekata zadovoljstva istovremeno (kao što su: kvalitet usluge, usklađenost sa očekivanjima, ljubaznost osoblja, itd.) kod zaposlenih i gostiju, tako da je u istraživanju primenjena analiza (MANOVA) i T-test za nezavisne uzorke i Mann-Whitney U test, kao i Post-hoc analiza radi utvrđivanja statističke razlike između grupa. Rezultati istraživanja identikuju područja za koja postoji visok nivo saglasnosti između zaposlenih i gostiju, što znači da su percepcije gostiju i zaposlenih u hotelu prilično usklađene kada se radi o kvalitetu pružanja usluge, profesionalnošću osoblja i prilagođavanju preferencijama gostiju hotela. U dinamičnom hotelijerskom okruženju neprestana je borba za lojalnost gostiju, stoga je potrebno istražiti i specifične ciljeve kroz identifikaciju faktora koji najviše*

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*doprinose zadovoljstvu gostiju, predložiti mere za poboljšanje motivacije zaposlenih i povećanje zadovoljstva gostiju.*

**Ključne reči:** *Upravljanje ljudskim resursima (HRM), motivacija zaposlenih, lojalnost, hotelijerska delatnost, konkurentska prednost.*

**JEL:** *M12, L83, D22.*

## **Uvod**

Motivacija i zadovoljstvo poslom nisu sinonimi, jer ne garantuju isti uticaj na organizaciono ponašanje. Zadovoljstvo poslom je emocionalni odgovor koji ima za rezultat određeno ponašanje u radnom okruženju, dok je motivacija akcija ponašanja koja se može vratiti sa određenim emocionalnim odgovorima (Stepanov, et al., 2016; Hajali et al., 2022). U ovom radu, naglašeno je rekomponovanje na način koji prepoznaje razliku između motivacije i zadovoljstva zaposlenih od zadovoljstva gostiju u hotelijerstvu u Republici Srbiji. U opštem smislu, hotelijerstvo je privredna delatnost koja gostima pruža smeštaj, ishranu i dodatne usluge poput wellness-a, organizacije događaja i rekreativnih sadržaja. Kao osnovni deo turizma, omogućava putnicima da uživaju u destinacijama uz odgovarajući komfor. Ključni cilj je ostvariti zadovoljstvo gostiju kroz kvalitetnu uslugu i gostoprимstvo. U savremenim, konkurentnim, uslovima, dolazi do velikih promena u hotelijerstvu. Gosti imaju sve složenije zahteve, postaju probirljivi i koriste različite informacione kanale za svoje gostovanje, s jedne strane, dok hotelijerstvo nastoji da odgovori adekvatnom ponudom svog uslužnog miksa, radi ostvarivanja komparativne prednosti i dugoročnog uspeha na uslužnom tržištu. Hotelijerstvo Srbije pretrpelo je štetne ekonomiske posledice usled pandemije korona virusa u 2019. godini (Živković et al. 2021) i mera izolacije stanovništva. Obrasci prema kojima je hotelijerski sektor poslovaо menjali su se, tako da transformacija hotelijerstva postaje neophodnost. Funtcionisanje hotelijerstva podrazumeva postojanje objekata, hotela, pansiona i drugih smeštajnih objekata, sa naglaskom na menadžment i efikasnu organizaciju. Kao što je hotelijerstvo reprezentativna delatnost ugostiteljstva, tako i hotel predstavlja njegov najvažniji objekat, jer svojim funkcionisanjem podržava glavne osobine ugostiteljskog procesa koje su prisutne i u ostalim ugostiteljskim objektima, pa shodno tome, on reprezentuje i proizvode ostalih ugostiteljskih objekata. Radi se o sui generis strukturi proizvoda sa materijalnim (prostorne, tehničko tehnološke) i nematerijalnim komponentama (organizacione, kadrovske).

## **Ciljevi studije**

Istraživanje hotelijerstva je aktuelno i značajno sa više aspekata. Sa makroekonomskog aspekta, bitno je za podsticaj razvoja turizma, veću zaposlenost, proširenje uslužnih kapaciteta i doprinos bruto domaćem proizvodu. Sa mikroekonomskog aspekta, ističu se istraživanja u cilju povećanja profitabilnosti hotela, smanjenja fluktuacija radne snage i smanjenja ukupnih troškova. Potom, sa

psihološkog aspekta, važno je zadovoljstvo gostiju uslugom, zadovoljstvo zaposlenih poslom, stvaranje lojalnosti gostiju, kroz dobre preporuke i ponovljene hotelijerske usluge. Ima dosta faktora koji utiču na zadovoljstvo gostiju, a neki od njih su: cena usluge, pouzdanost, dostupnost, ljubaznost zaposlenih prilikom pružanja usluge, ažurnost i obezbeđenje materijalnih i tehničkih preduslova, ali i mnogi drugi. Zaposleni u hotelijerstvu utiču na zadovoljstvo gostiju. Njihov doprinos pružanju kvalitetne usluge zavisi od interne komunikacije od strane menadžmenta. Osnovni cilj ovog rada je da identifikuje aspekte na koji zaposleni u hotelijerstvu treba da obrate posebnu pažnju kako bi se povećao nivo zadovoljstva gostiju. U daljem radu, biće istraženi i specifični ciljevi kroz identifikaciju faktora koji najviše doprinose zadovoljstvu gostiju. Analiza specifičnih ciljeva treba da pruži uvid u upravljanje ljudskim resursima u praksi (engl. Human Resources Management - HRM), i da predloži izvesna poboljšanja u hotelijerskoj industriji.

Glavno istraživačko pitanje u radu treba da pruži odgovor na to, da li postoje značajne razlike između srednjih vrednosti aspekata zadovoljstva kod gostiju i zaposlenih u hotelijerstvu. Nulta hipoteza neće govoriti o statistički značajnoj razlici, dok će alternativna hipoteza potvrđivati datu razliku. Prema tome, nultu hipotezu definišemo na sledeći način:

$H_0$ : Ne postoji razlika u stavovima između gostiju i zaposlenih u pogledu različitih aspekata zadovoljstva (kvalitet usluge, usklađenost usluge sa očekivanjima, ljubaznost i profesionalnost, brzine i efikasnosti komunikacije, personalizovani pristup, odnos cena i kvaliteta, generalno zadovoljstvo boravkom u hotelu i povratnim informacijama).

Za potrebe ove studije razvijene su sledeće alternativne hipoteze, a odnose se na:

$H_1$ : Postoji značajna razlika u kvalitetu usluge između gostiju i zaposlenih

$H_2$ : Postoji značajna razlika u oceni usklađenosti usluge sa očekivanjima između gostiju i zaposlenih

$H_3$ : Postoji značajna razlika u oceni ljubaznosti i profesionalnosti između gostiju i zaposlenih.

$H_4$ : Postoji značajna razlika u oceni brzine i efikasnosti komunikacije između gostiju i zaposlenih.

$H_5$ : Postoji značajna razlika u oceni personalizovanog pristupa između gostiju i zaposlenih.

$H_6$ : Postoji značajna razlika u oceni prilagođavanja preferencijama između gostiju i zaposlenih

$H_7$ : Postoji značajna razlika u oceni odnosa cene i kvaliteta između gostiju i zaposlenih.

H<sub>8</sub>: Postoji značajna razlika u generalnom zadovoljstvu boravkom između gostiju i zaposlenih.

H<sub>9</sub>: Postoji značajna razlika u oceni mogućnosti davanja povratnih informacija između gostiju i zaposlenih.

### **Pregled literature**

Motivacija zaposlenih u hotelijerstvu označava ključnu odrednicu efektivnosti hotelijerske industrije, jer neposredno utiče na kvalitet pružanja usluge i zadovoljstvo gostiju. Profesionalnost pruženih usluga pozitivno utiče na iskustvo gostiju i održavanje njihovog poverenja kroz ponovljene posete i pozitivne preporuke. Za sticanje komparativne prednosti veoma je važna lojalnost. Postoje različiti faktori koji utiču na sticanje komparativne prednosti u hotelijerskoj industriji, a najčešće spominjani su lokacija, komunikacija, personalizovana ponuda, elitizam pružanja usluga, ekološka briga i drugi. Pritisak konkurenčije ne sme se zanemariti. Veoma je izvesno da svaka neusaglašenost hotelijerske ponude sa hotelijerskom tražnjom, može za posledicu imati neuspeh, kroz gubitak poverenja gostiju. U ovom slučaju lojalnost gostiju i briga oko održavanja poverenja klijenta u hotelijersku uslugu treba da bude prioritet. To je jedino moguće ukoliko postoji zadovoljstvo poslom. Ovu temu je istraživala grupa autora navodeći da zadovoljstvo poslom predstavlja stepen u kojem su pojedinci zadovoljni svojim poslom i vole ga (Božović et al., 2019; Bolatito i Yasin, 2024). U naučnom opusu pojedini autori prepoznaju „elitizam“ u hotelijerstvu. Hoteli se pozicioniraju na vrhu međunarodne hotelske industrije kroz efikasnu primenu dizajna i stila, prestižnim i distinkтивним pozicioniranjem na tržištu, stvaranjem „elitizma“ u hotelu, ali i u okruženju. (Gillespie, i Morrison. 2000; Power et al., 2024) Autori pažnju posvećuju sadržajima za pružanje raznovrsnih wellness i spa tretmana, zdravstvenih, sportsko-rekreativnih i zabavnih sadržaja (Pavlović et al., 2024; Jones, 2024). Mnogi autori, svoja istraživanja usmeravaju na ispitivanje veza između HRM i performansi u hotelskoj industriji. Oni nedvosmisleno ukazuju da je učinak hotela u pozitivnoj korelaciji sa zapošljavanjem, selekcijom kadrova, obukom, sistemom plata i nagrađivanja. (Chand i Katou, 2007). Istraživanja pokazuju da povećanje nivoa zadovoljstva gostiju hotela može da se postigne isključivo povećanjem odgovornosti prema njihovim potrebama, što sa druge strane doprinosi poboljšanju performansi hotelske organizacije. Poboljšanja HRM praksi rezultat su, ne samo tehničkih i operativnih mera, nego i menadžerskih i organizacionih sposobnosti (Chand, 2010; Cho i Choi, 2021). Rezultati jedne studije iz Egipta pokazuju da gosti više preferiraju neposredni kontakt sa zaposlenima, nego korišćenje tehnologije zasnovane na samouslužnom procesu, koji se mogu dobiti u nekim hotelima sa pet zvezdica (Kattara i El-Said, 2013). Nasuprot tome, rezultati autora Salem-a potvrđuju značajniju negativnu vezu među zaposlenima u kontaktu sa gostima nego među zaposlenima u odeljenju bez kontakta sa gostima (Salem, 2015). Zato donosioci odluka treba da uzmu u obzir pitanja u vezi sa profesionalizacijom i poboljšanjem kvaliteta usluga, jer su njihove

posledice neposredne i proporcionalne. Donosioci ekonomskih odluka dugo su ignorisali različitost nivoa usluga, naglašavajući potencijal uslužne delatnosti kao izvor novih radnih mesta, dok se odlagao trenutak profesionalizacije i podizanja kvaliteta usluga. Zato je literatura dospila fazu zrelosti tek kada je započeta analiza odluka i njihovih posledica u cilju povećanja performansi. Rezultati jedne studije pokazuju da na konkurenčku prednost najveći uticaj imaju nefinansijske performanse u odnosu na finansijske i da odluke koje se odnose na tehnologiju, objekte i organizaciju, kao i razvoj novih usluga mogu dovesti do boljih performansi (Espino-Rodríguez i Gil-Padilla, 2015). Novija istraživanja proširuju koncept HRM ukazujući na centralnu ulogu koju ima menadžerska filozofija unutar hotelskog sektora i kako HRM praksa utiče na iskustvo zaposlenih u vezi sa radom. (Walker i Nickson, 2024). U jednom istraživanju, subjekti studije bili su klijenti međunarodnih turističkih hotela u oblasti Tajpeja. Podaci prikupljeni za ocenu kvaliteta usluge za međunarodne hotele pokazali su da je među 16 indikatora, prvi pet indeksa rangirano po važnosti: volja za uslugom, stručnost, reaktivnost, pouzdanost i ljubaznost. Istraživački rezultati su pokazali da je "Reaktivnost" bila najvažnija za kvalitet usluge u međunarodnim turističkim hotelima (Chang, 2014). Radi se o ključnom aspektu pružanja usluge koji podrazumeva promptno reagovanje zaposlenih u hotelijerstvu na zahteve gostiju, kako bi se doprinelo zadovoljstvu i lojalnosti gostiju. Treba imati u vidu da top menadžment ima glavnu ulogu u podsticanju motivacije zaposlenih na kvalitet hotelijerske ponude i povećanje zadovoljstva gostiju.

## Metodologija istraživanja

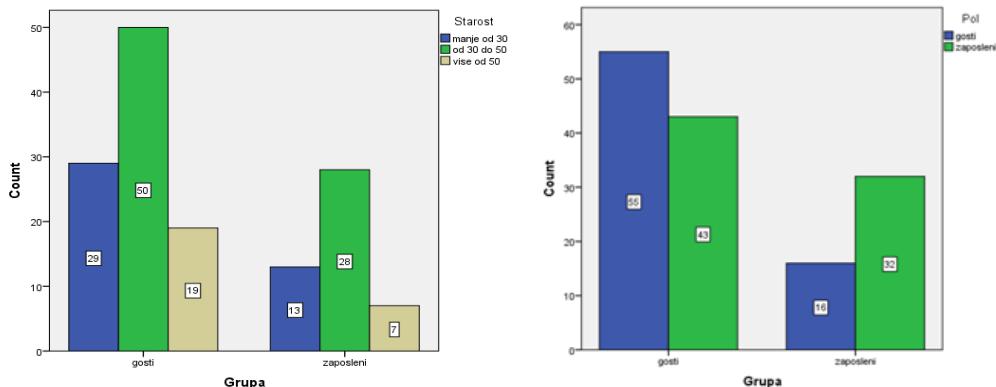
U ovom radu primenjuju se analitičke metode i to: deskriptivna statistika: prikaz prosečnih ocena zadovoljstva za obe grupe, zaposlenih i gostiju, radi lakšeg poređenja; Multivariantna analiza varijanse (MANOVA) i T-test za nezavisne uzorce i Mann-Whitney U test, radi utvrđivanja razlike između grupa sa ciljem utvrđivanja statističke značajnosti razlika u stavovima između grupa, kao i Post-hoc analiza. Za otvorena pitanja, primenjuje se kvalitativna analiza, tj. tematska analiza odgovora. Za empirijsko istraživanje stavova zaposlenih i gostiju u hotelijerstvu Republike Srbije, pitanja u upitniku kategorisana su na sledeći način. Prva grupa sadrži pitanja koja se odnose na demografske i geografske podatke: opšte informacije, (starost, nivo obrazovanja, tip gostiju); pitanja za zaposlene (motivacija, obuka, radni uslovi) i pitanja za goste (zadovoljstvo, očekivanja, lojalnost). Pitanja su formulisana i obrađena u formatu koji omogućava upoređivanje statističkih parametara između gostiju i zaposlenih u hotelu. Na taj način je moguće uporediti njihove odgovore kako bi se identifikovale potencijalne razlike u percepciji zadovoljstva. Molba za učestvovanje u istraživanju, poslata je na 357 adresa hotela, dok je u anketi učestvovalo 213 ispitanika, ali je validno popunjeno 146 upitnika. Numerički je valjan uzorak jer obuhvata oko 40.92% popunjениh upitnika od ukupnog broja poslatih molbi. Anketa je sprovedena potpuno anonimno, a podaci su

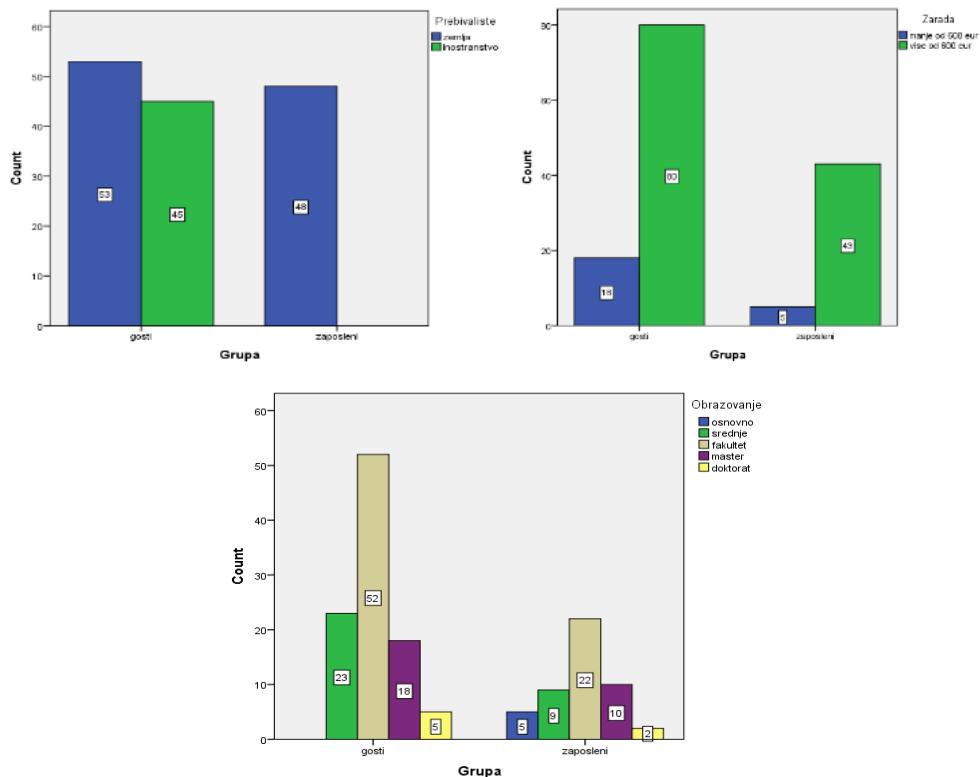
prikupljeni nezavisno za obe grupe. U istraživanju nefinansijskih pokazatelja, težište istraživanja obuhvata: zadovoljstvo kvalitetom usluge, usklađenost usluge sa očekivanjima, ljubaznost i profesionalnost osoblja, brzina i efikasnost komunikacije, personalizovani pristup, prilagođavanje preferencijama, odnos cene i kvaliteta.

## Rezultati istraživanja

Na osnovu distribucije demografskih karakteristika prikazano je učešće ispitanika - gostiju i zaposlenih. Gosti čine 67.1% ukupnog uzorka, dok zaposleni čine 32.9%. Starosnu grupu od 30 do 50 godina, čine 53,4% svih ispitanika. Većina ispitanika (69,2%) dolazi iz zemlje, dok manji ideo (30,8%) dolazi iz inostranstva. Ukupna distribucija pokazuje viši nivo obrazovanja među većinom ispitanika, pri čemu diplomirani studenti čine polovinu uzorka. Ovi podaci pokazuju da najveću grupu čine ispitanici sa fakultetskim obrazovanjem (50.7%), zatim slede oni sa srednjim obrazovanjem (21.9%) i master diplomom (19.2%). Manji ideo ispitanika ima završeno osnovno obrazovanje (3.4%) ili doktorat (4.8%). Ukupna distribucija pokazuje viši nivo obrazovanja među većinom ispitanika, pri čemu diplomirani studenti 74 ispitanika čine polovinu uzorka. Prema podacima o zaradi ispitanika, većina njih (84.2%) zarađuje više od 600 evra mesečno, dok manji ideo ispitanika (15.8%) ima manju mesečnu zaradu, ispod 600 evra. Ovi podaci ukazuju na to da većina ispitanika spada u grupu s višim prihodima, dok samo manji procenat ima nižu zaradu.(Slika 1.)

Slika 1. Distribucija demografskih karakteristika (pol, starost, prebivalište, obrazovanje i zarada) za grupu (gosti i zaposleni u hotelijerstvu)





Izvor: Proračun autora primenom programa IBM SPSS Statistics.

Uvidom u podatke iz tabele (*Tabela 1.*) zapažamo da gosti daju više prosečne ocene za skoro sve aspekte zadovoljstva u poređenju sa zaposlenima. Razlika u standardnoj devijaciji pokazuje veću varijabilnost u ocenama gostiju nego zaposlenih (što je i očekivano jer gosti predstavljaju heterogeniju grupu). Iako su zaposleni za kvalitet usluge dali nešto višu prosečnu ocenu u odnosu na goste razlika možda nije značajna zbog male standardne devijacije zaposlenih (Gosti:  $M=4.35$ ,  $SD=1.49$ ; Zaposleni:  $M=4.65$ ,  $SD=0.48$ ). Kod usklađenosti usluge sa očekivanjima velika je razlika između gostiju i zaposlenih, sa ekstremno malom varijansom kod zaposlenih. (Gosti:  $M=4.35$ ,  $SD=1.49$ ; Zaposleni:  $M=2.00$ ,  $SD=0.00$ ). Ova stavka odražava različite perspektive i može biti ključna za analizu. Za ljubaznost i profesionalnost osoblja, iako su razlike male, treba ih proveriti kroz testove značajnosti (Gosti:  $M=4.69$ ,  $SD=0.83$ ; Zaposleni:  $M=4.58$ ,  $SD=0.50$ ). Značajna je razlika u percepciji personalizacije usluge. Ovo može biti važna stavka za unapređenje (Gosti:  $M=4.73$ ,  $SD=0.74$ ; Zaposleni:  $M=3.69$ ,  $SD=0.66$ ). Kod prilagođavanja preferencijama postoji značajna razlika u percepcijama (Gosti:  $M=4.76$ ,  $SD=0.72$ ; Zaposleni:  $M=4.19$ ,  $SD=0.57$ ). Razlika u percepciji odnosa cene i kvaliteta sugerira potencijalne nesuglasice u standardima ili očekivanjima (Gosti:  $M=4.84$ ,  $SD=0.68$ ; Zaposleni:  $M=4.19$ ,  $SD=0.64$ ).

Tabela 1. Deskriptivna statistika

	Grupa	Mean	Std. Deviation	N
Kvalitet usluge	gosti	4.3469	1.48603	98
	zaposleni	4.6458	.48332	48
	Total	4.4452	1.25413	146
Usklađenost usluge sa očekivanjima	gosti	4.3469	1.48603	98
	zaposleni	2.0000	.00000	48
	Total	3.5753	1.64353	146
Ljubaznost i profesionalnost osoblja	gosti	4.6939	.82996	98
	zaposleni	4.5833	.49822	48
	Total	4.6575	.73755	146
Brzina i efikasnost komunikacije	gosti	4.6939	.87824	98
	zaposleni	4.3542	.69923	48
	Total	4.5822	.83672	146
Personalizovani pristup	gosti	4.7347	.73989	98
	zaposleni	3.6875	.65740	48
	Total	4.3904	.86601	146
Prilagodljivost preferencijama	gosti	4.7551	.71884	98
	zaposleni	4.1875	.57079	48
	Total	4.5685	.72309	146
Odnos cene i kvaliteta usluge u hotelu	gosti	4.837	.6840	98
	zaposleni	4.187	.6410	48
	Total	4.623	.7348	146
Zadovoljstvo boravkom u hotelu	gosti	4.7755	.63458	98
	zaposleni	4.3958	.49420	48
	Total	4.6507	.61692	146
Feedback informacije	gosti	4.6735	.79658	98
	zaposleni	4.3542	.48332	48
	Total	4.5685	.72309	146

Izvor: Proračun autora primenom programa IBM SPSS Statistics.

Ispitivanjem testa normalnosti distribucije, (Tabela 2) utvrđujemo korelaciju između podataka i očekivanih vrednosti normalne distribucije. Većina podataka pokazuje značajno odstupanje od normalne distribucije (Kolmogorov-Smirnov i Shapiro-Wilk), jer su  $p$  vrednosti za sve varijable manje od 0.05, što ukazuje na potrebu za primenom neparametarskih testova.

Tabela 2. Test normalnosti distribucije

Tests of Normality <sup>b</sup>	Grupa	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
Kvalitet usluge	gosti	.507	98	.000	.445	98	.000
	zaposleni	.414	48	.000	.605	48	.000
Usklađenost usluge	gosti	.507	98	.000	.445	98	.000
	zaposleni	.511	98	.000	.410	98	.000
Ljubaznost i profesionalnost	gosti	.382	48	.000	.627	48	.000
	zaposleni	.514	98	.000	.389	98	.000
Komunikacija	gosti	.301	48	.000	.764	48	.000
	zaposleni	.518	98	.000	.393	98	.000
Personalizovani pristup	gosti	.269	48	.000	.772	48	.000
	zaposleni	.521	98	.000	.374	98	.000
Prilagođenost preferencijama	gosti	.358	48	.000	.738	48	.000
	zaposleni						

Odnos cene i kvaliteta	gosti	.533	98	.000	.253	98	.000
	zaposleni	.303	48	.000	.780	48	.000
Zadovoljstvo boravkom u hotelu	gosti	.526	98	.000	.365	98	.000
	zaposleni	.393	48	.000	.621	48	.000
Feedbeck informacije	gosti	.506	98	.000	.444	98	.000
	zaposleni	.414	48	.000	.605	48	.000

a. Lilliefors Significance Correction

b. Uskladjenost usluge is constant when Grupa = zaposleni. It has been omitted.

Izvor: Proračun autora primenom programa IBM SPSS Statistics.

U ovom istraživanju želimo da testiramo razlike između grupa na više zavisnih varijabli istovremeno, tako da primenjujemo Multivarijantnu analizu varijanse (MANOVA).

Tabela 3. Pregled rezultata multivarijantnih testova

Multivariate Tests <sup>a</sup> Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.992	1954.287 <sup>b</sup>	9.000	136.000	.000
	Wilks' Lambda	.008	1954.287 <sup>b</sup>	9.000	136.000	.000
	Hotelling's Trace	129.328	1954.287 <sup>b</sup>	9.000	136.000	.000
Grupa	Roy's Largest Root	129.328	1954.287 <sup>b</sup>	9.000	136.000	.000
	Pillai's Trace	.962	380.655 <sup>b</sup>	9.000	136.000	.000
	Wilks' Lambda	.038	380.655 <sup>b</sup>	9.000	136.000	.000
	Hotelling's Trace	25.190	380.655 <sup>b</sup>	9.000	136.000	.000
	Roy's Largest Root	25.190	380.655 <sup>b</sup>	9.000	136.000	.000

a. Design: Intercept + Grupa

b. Exact statistic

Izvor: Proračun autora primenom programa IBM SPSS Statistics.

Rezultati iz tabele (Tabela 3.) ukazuju na značajne globalne razlike u percepciji aspekata zadovoljstva između gostiju i zaposlenih. Efekat grupe (Grupa) statistički je značajan za sve testove (Pillai's Trace, Wilks' Lambda, Hotelling's Trace, i Roy's Largest Root), jer je p-vrednost (Sig.) manja od 0.05 (p = .000). Partial Eta Squared = .962 za efekat grupe. Grupa objašnjava 96.2% varijanse zadovoljstva, što predstavlja veoma jak efekat. Na osnovu ovih rezultata, možemo potvrditi da postoji značajna razlika u aspektima zadovoljstva između gostiju i zaposlenih, tako da je opravdano sprovođenje daljih testova da bi se identifikovalo koji konkretni aspekti zadovoljstva doprinose ovim razlikama. Uvažavajući činjenicu da zaposleni u hotelu nisu istovremeno i gosti hotela koji su intervjuisani, u analizu uvodimo i Mann-Whitney U test, jer su varijanse među grupama nejednake. U nastavku primenjujemo verziju t testa koja ne prepostavlja jednaku varijansu.

Tabela 4. T - statistika

Test Statistics <sup>a</sup>	Kvalitet usluge	Usklađenost usluge	Ljubaznost i profesionalnost	Komunikacija	Personalizovani pristup	Prilagodenost preferencijama	Odnos cene i kvaliteta	Zadovoljstvo boravkom u hotelu	Feedback informacije
Mann-Whitney U	2039.000	768.000	1814.000	1538.000	681.000	1073.500	966.000	1354.500	1425.500
Wilcoxon W	3215.000	1944.000	2990.000	2714.000	1857.000	2249.500	2142.000	2530.500	2601.500
Z	-1.785	-7.443	-3.069	-4.450	-8.068	-6.515	-7.456	-5.325	-4.721
Asymp. Sig. (2-tailed)	.074	.000	.002	.000	.000	.000	.000	.000	.000

a. Grouping Variable: Grupa

Izvor: Proračun autora primenom programa IBM SPSS Statistics.

U narednom pregledu (Tabela 5.) predstavljeni su rezultati t-testa za nezavisne uzorke kako bi se utvrdila statistička značajnost razlika u stavovima između zaposlenih i gostiju.

Tabela 5. Pregled rezultata t-testa za nezavisne uzorke

Independent Samples Test		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Kvalitet usluge	Equal variances assumed	19.097	.000	-1.357	144	.177	-.29889	.22031	-.73435	.13656
	Equal variances not assumed			-1.806	130.829	.073	-.29889	.16553	-.62636	.02857
Usklađenost usluge	Equal variances assumed	57.037	.000	10.923	144	.000	2.34694	.21487	1.92223	2.77165
	Equal variances not assumed			15.635	97.000	.000	2.34694	.15011	2.04901	2.64487
Ljubaznost profesionalnosti	Equal variances assumed	.237	.627	.850	144	.397	.11054	.13006	-.14653	.36762
	Equal variances not assumed			1.001	138.033	.319	.11054	.11045	-.10786	.32895
Komunikacija	Equal variances assumed	.605	.438	2.340	144	.021	.33971	.14518	.05274	.62668
	Equal variances not assumed			2.528	114.554	.013	.33971	.13437	.07353	.60589

	Equal variances assumed	1.466	.228	8.325	144	.000	1.04719	.12579	.79856	1.29583
Personalizovan i pristup	Equal variances not assumed			8.670	104.012	.000	1.04719	.12079	.80767	1.28672
	Equal variances assumed	.003	.953	4.779	144	.000	.56760	.11876	.33287	.80234
Prilagodjenost preferencijama	Equal variances not assumed			5.169	114.814	.000	.56760	.10982	.35007	.78514
	Equal variances assumed	4.359	.039	5.498	144	.000	.6492	.1181	.4158	.8826
Odnos cene kvaliteta	Equal variances not assumed			5.622	99.111	.000	.6492	.1155	.4201	.8784

Tabela 5. (Nastavak). Pregled rezultata t-testa za nezavisne uzorke

Independent Samples Test	Levene's Test for Equality of Variances		t-test for Equality of Means								
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference			
								Lower	Upper		
Zadovoljstvo boravkom u hotelu	Equal variances assumed	1.229	.269	3.638	144	.000	.37968	.10437	.17338	.58597	
	Equal variances not assumed			3.959	116.689	.000	.37968	.09590	.18974	.56961	
Feedback informacije	Equal variances assumed	1.306	.255	2.554	144	.012	.31930	.12503	.07217	.56644	
	Equal variances not assumed			2.998	137.407	.003	.31930	.10650	.10872	.52989	

Izvor: Proračun autora primenom programa IBM SPSS Statistics.

Rezultati t-testa za nezavisne uzorke, za svaki aspekt zadovoljstva pokazuju sledeće:

$H_1$ : *Kvalitet usluge*. Ne postoji statistički značajna razlika u kvalitetu usluge između gostiju i zaposlenih  $p = 0.177$  ( $p > 0.05$ ). U tom smislu nije moguće odbaciti osnovnu hipotezu ( $H_0$ ) i prihvatiti alternativnu hipotezu ( $H_1$ ).

$H_2$ : *Usklađenost usluge sa očekivanjima*. Postoji statistički značajna razlika između gostiju i zaposlenih u pogledu usklađenosti usluge sa očekivanjima:  $p = 0.000$  ( $p < 0.05$ ). Odbacujemo osnovnu hipotezu ( $H_0$ ) i prihvatomo alternativnu hipotezu ( $H_2$ ).

$H_3$ : *Ljubaznost i profesionalnost*. Ne postoji statistički značajna razlika u oceni ljubaznosti i profesionalnosti između gostiju i zaposlenih  $p = 0.397$  ( $p > 0.05$ ). U tom smislu nije moguće odbaciti osnovnu hipotezu ( $H_0$ ) i prihvati alternativnu hipotezu ( $H_3$ ).

$H_4$ : *Komunikacija*. Postoji statistički značajna razlika u oceni komunikacije između gostiju i zaposlenih:  $p = 0.021$  ( $p < 0.05$ ). Odbacujemo osnovnu hipotezu ( $H_0$ ) i prihvatomo alternativnu hipotezu ( $H_4$ ).

$H_5$ : *Personalizovani pristup*. Postoji statistički značajna razlika u oceni personalizovanog pristupa između gostiju i zaposlenih ( $p = 0.000$  ( $p < 0.05$ )). Odbacujemo osnovnu hipotezu ( $H_0$ ) i prihvatomo alternativnu hipotezu ( $H_5$ ).

$H_6$ : *Prilagođenost preferencijama*. Postoji statistički značajna razlika u oceni prilagođenosti preferencijama između gostiju i zaposlenih,  $p = 0.000$  ( $p < 0.05$ ). Odbacujemo osnovnu hipotezu ( $H_0$ ) i prihvatomo alternativnu hipotezu ( $H_6$ ).

$H_7$ : *Odnos cene i kvaliteta*. Postoji statistički značajna razlika između gostiju i zaposlenih u pogledu odnosa cene i kvaliteta:  $p = 0.000$  ( $p < 0.05$ ). Odbacujemo osnovnu hipotezu ( $H_0$ ) i prihvatomo alternativnu hipotezu ( $H_7$ ). Gosti i zaposleni imaju različite stavove o odnosu cene i kvaliteta.

$H_8$ : Zadovoljstvo boravkom u hotelu. Postoji statistički značajna razlika između gostiju i zaposlenih u pogledu zadovoljstva boravkom u hotelu:  $p = 0.000$  ( $p < 0.05$ ). Odbacujemo osnovnu hipotezu ( $H_0$ ) i prihvatomo alternativnu hipotezu ( $H_8$ ).

$H_9$ : Feedback informacije. Postoji statistički značajna razlika u oceni mogućnosti davanja feedbacka između gostiju i zaposlenih,  $p = 0.012$  ( $p < 0.05$ ). Odbacujemo osnovnu hipotezu ( $H_0$ ) i prihvatomo alternativnu hipotezu ( $H_9$ ).

Statistički značajna razlika uglavnom postoji u posmatranim aspektima za grupu zaposlenih i gostiju, izuzev za kvalitet usluge i ljubaznost i profesionalnost. Za razliku od gostiju koji daju više ocene, kod zaposlenih su evidentne niže ocene, posebno u aspektu prilagodljivosti, što otvara prostor za dalju post hoc analizu za kvalitet usluge (*Tabela 6.*) i ljubaznost i profesionalnost (*Tabela 7.*)

Tabela 6. Pregled rezultata post hoc analize za kvalitet usluge

Tests of Between-Subjects Effects  
Dependent Variable: Kvalitet usluge

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2.878 <sup>a</sup>	1	2.878	1.841	.177
Intercept	2605.563	1	2605.563	1666.204	.000
Grupa	2.878	1	2.878	1.841	.177
Error	225.183	144	1.564		
Total	3113.000	146			
Corrected Total	228.062	145			

a. R Squared = .013 (Adjusted R Squared = .006)

Izvor: Proračun autora primenom programa IBM SPSS Statistics.

Post hoc analiza za kvalitet usluge dokazuje da model objašnjava vrlo malo varijanse (Adjusted R Squared = 0.006), što je pokazatelj da faktor grupa nije važan za objašnjenje razlika u kvalitetu usluge. Takođe, model koji je korišćen za analizu razlika između gostiju i zaposlenih u pogledu ljubaznosti i profesionalnosti, u vrlo maloj meri objašnjava varijacije u podacima (model objašnjava samo 0.5% varijacije u zavisnoj varijabli), što dodatno podržava zaključak da razlika između grupa nije značajna.

Tabela 7. Pregled rezultata post hoc analize za ljubaznost i profesionalnost

Tests of Between-Subjects Effects					
Dependent Variable: Ljubaznost i profesionalnost					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.394 <sup>a</sup>	1	.394	.722	.397
Intercept	2772.996	1	2772.996	5087.873	.000
Grupa	.394	1	.394	.722	.397
Error	78.483	144	.545		
Total	3246.000	146			
Corrected Total	78.877	145			

a. R Squared = .005 (Adjusted R Squared = -.002)

### Zaključak i preporuke

Na osnovu rezultata testiranja hipoteza, identifikovali smo područja za koja postoji visok nivo saglasnosti između zaposlenih i gostiju. U pogledu kvaliteta usluge, nema značajne razlike u percepciji između gostiju i zaposlenih, što sugerije da su gosti generalno zadovoljni kvalitetom usluge, ali da i zaposleni imaju slične percepcije u vezi s tim. Potvrđena je konstatacija da se standardi o kvalitetnom pružanju usluga uniformno primenjuju od strane zaposlenih, a da su gosti zadovoljni pruženim uslugama. Takođe, u percepcijama o ljubaznosti i profesionalnosti osoblja između gostiju i zaposlenih, evidentno je da gosti i zaposleni ocenjuju ljubaznost i profesionalnost osoblja na veoma sličan način. Gosti smatraju da su njihove potrebe zadovoljene na sličan način kako ih zaposleni percipiraju. Generalno, može se izvesti zaključak o usklađenosti percepcija zaposlenih i gostiju, izuzev nekih aspekata koji zahtevaju proširenje istraživanja. Dobijene rezultate istraživanja moguće je uporediti sa dosadašnjim sprovedenim analizama i na taj način uočiti faktore koji mogu uticati na zadovoljstvo.

Za ostale aspekte testiranja hipoteza, identifikovali smo da područja u kojima postoje različite percepcije zaposlenih i gostiju. Na osnovu ovog istraživanja i analize odgovora na otvorena pitanja u upitniku mogu se uputiti konkretnе preporuke menadžmentu kako bi se smanjio jaz između percepcije zaposlenih i gostiju. Za zaposlene treba razmotriti mogućnost uvođenja fleksibilnog radnog vremena prema sopstvenim potrebama, naročito slobodne dane, organizovanje motivacionih programa i dodatnih treninga i obuka u dodatnu personalizaciju, kako bi bolje

razumeli očekivanja gostiju, raznih stimulacija novčanih i nenovčanih, poboljšanje komunikacije i redovno praćenje kako aktivnosti od strane menadžmenta utiču na zaposlene u pružanju usluga. Gosti hotela očekuju visok nivo gostoprимstva, prijatan ambijent, poboljšanje komunikacije i fleksibilnost u zadovoljenju njihovih potreba. Treba analizirati utiske gostiju putem povratnih informacija i sprovoditi akcije kojima će se povećati njihova lojalnost i poboljšati stavovi u vezi njihovih očekivanja. Poboljšanje ovih aspekata i redovno praćenje uvida i unapređivanje komunikacije, može direktno uticati na smanjenje jaza u percepciji između zaposlenih i gostiju, identifikovati prilike za očuvanje i unapređenje konkurentske prednosti.

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# THE IMPACT OF HRM PRACTICES ON EMPLOYEE SATISFACTION AND GUEST LOYALTY IN SERBIAN HOSPITALITY

Stevan Barović, Jelena Božović, Milan Brkljač, Ivana Vučić, Svetlana Marković

## **Summary**

*Satisfied and motivated employees create a pleasant environment that fosters guest loyalty and enhances the competitive advantage of the hospitality industry. This study examined the relationship between human resource management practices, with a focus on employee motivation development, and the improvement of service offerings and guest satisfaction levels. Data collection for the analysis was conducted using a survey method, and the final sample included 146 questionnaires, collected between January and November 2024. The analysed models indicate that it is necessary to test differences in multiple aspects of satisfaction simultaneously (such as service quality, alignment with expectations, staff courtesy, etc.) for both employees and guests. Therefore, the study applied MANOVA, independent samples T-test, Mann-Whitney U test, and Post-hoc analysis to determine statistical differences between groups. The research results identify areas with a high level of agreement between employees and guests, meaning that the perceptions of guests and hotel employees are quite aligned when it comes to service quality, staff professionalism, and adapting to guest preferences. In the dynamic hospitality environment, there is a constant struggle for guest loyalty, so it is necessary to explore specific goals by identifying the factors that contribute most to guest satisfaction, propose measures to improve employee motivation, and increase guest satisfaction.*

**Key words:** Human Resource Management (HRM), Employee Motivation, Loyalty, Hospitality Industry, Competitive Advantage.

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## ELUCIDATING PERCEIVED OVERQUALIFICATION–INTENTION TO LEAVE THE ORGANIZATION NEXUS: THE INTERMEDIARY ROLE OF JOB SATISFACTION

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### ***Abstract***

*In an ever-evolving organizational system, strategic maneuvering of employees is necessary. The wide spectrum of employees' perceptions necessitates managerial finesse to quell often consequential, yet undesirable employees' attitudes and behaviors. The research paper's prime objective was to delve into the complexities of an increasingly common issue of this kind, that is, to investigate the "perceived overqualification–intention to leave the organization" nexus, and furthermore, to scrutinize whether job satisfaction mediates the abovementioned relationship. The research sample comprised 151 individuals, Serbian residents, all of whom were officially in the national workforce at the close of 2022 (time of questionnaire completion). The data gathered via the well-structured Google Forms online questionnaire underwent subsequent analysis through the utilization of statistical tools IBM SPSS Statistics 26 and SmartPLS 4. The conducted research empirically tested and confirmed the premise that an employee's perception of being overqualified (exceeding the requirements of the current job position) serves as a fertile ground for the development of his/her discontentment (low levels of job satisfaction), ultimately culminating in job abandonment intentions. The paper contributes to the ongoing debate on employees' "perceptions–attitudes–behavior" consequentiality, and may serve as a valuable reference point for an organization's long-term plans and strategies.*

**Keywords:** *employee perceptions, overqualification, employee satisfaction, turnover intention, PLS-SEM.*

**JEL:** *D23, J28, J63*

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## Introduction

Human resources are the most prized organizational asset. For that reason, workforce preservation represents every successful organization's top priority. Yet, against the employees' preservation stands their potential withdrawal intention. Employees' intention to leave the organization represents the behavioral manifest which may be caused by a variety of reasons – some internal (which employees may control either totally or partially), and some external (over which employees can have very little or no influence at all). Organizational literature acknowledges perceived overqualification as one of these internal factors, and declares it to be the cause of the aforementioned employees' unwanted behavior in the context of workforce stability.

Given the insufficient empirical evidence and many unanswered questions related to this issue, the research direction and aim of the paper were established. The intent was to investigate the relationship between employees' perceived overqualification and intention to leave the organization, as well as the eventual mediating effect of job satisfaction within it. All this is done through a concrete analysis of the effects of perceived overqualification on the attitude/behavioral intentions of national workers employed in the territory of the Republic of Serbia. The exploratory model depicted perceived overqualification as an independent variable, whilst job satisfaction and intention to leave the organization were framed as dependent variables.

The research is divided into four sections. The first section deals with the theoretical underpinnings of the study, whilst the authors underline the significance of the research variables – perceived overqualification, job satisfaction, and intention to leave the organization – simultaneously describing them. The formulation of hypotheses and a summary of prior research in the field follow. In the second section, the research technique and methodology explanation are provided. The questionnaire employed, the methods used for the data analysis, and the research sample are all presented and described. The third section relates to the empirical portion of the study, in which the authors discuss data previously processed using IBM SPSS Statistics 26 and SmartPLS 4 statistical software packages, as well as employed PLS-SEM analysis, aiming to validate the hypothesized correlations. The entire study ends with conclusions – theoretical and empirical ramifications, research limitations, and suggested directions for future examination.

## Theoretical background

Theoretical approaches to the observed phenomena reveal scholars' unity regarding its defining. Videlicet, numerous authors (Johnson, Johnson, 2000; Biaobin et al., 2021; Chen et al., 2021; Maltarich et al., 2011; Jolović, Bobera, 2019; Maynard, Parfyonova, 2013) are united in the assertion that perceived overqualification represents an individual's belief that the skill set he/she possesses exceeds the requirements of the job he/she performs, i.e., that his/her education, experience, as well as knowledge, skills, and abilities (KSAOs) are more extensive than those needed for his/her current work position. According to Erdogan and Bauer's (2021) terminology, overqualification cultivates a sense of being deprived of the job one deserves, and is subsequently associated with a variety of detrimental effects on both employees and organizations. In other words, overqualification can often be seen as an antecedent of employees' negative job attitudes, as well as a driver of behaviors that are

unfavorable from the organization's point of view (Erdogan, Bauer, 2009; Liu et al., 2015; Zhang et al., 2024).

Work-related attitude relevant for this research – job satisfaction, can be defined as a positive or pleasurable emotional state that arises from the appraisal of one's job (Alfes et al., 2016; Parveen et al., 2017), whilst observed unfavorable employees' behavior – intention to leave the organization, can be conceptualized as the combination of one's desire to leave current and search for alternative employment, along with the aspiration to pursue more favorable career development opportunities and fully actualize personal professional potential (Chen et al., 2021; Jolović, Berber, 2021).

The studies examining the overqualification–turnover nexus (Andrade et al., 2023; Yildiz et al., 2017; Rasheed et al., 2024; Vinayak et al., 2021; Ballesteros-Leiva et al., 2023; Ye et al., 2017; Rasheed et al., 2022; Li et al., 2020; Biaobin et al., 2021; Harari et al., 2017; Chen et al., 2021; Piotrowska, 2022; Liu, Wang, 2012; Mah, Huang, and Yun, 2024; Mah, Shin, and Min, 2024) demonstrate that perceived overqualification is a statistically significant, positive predictor of employees' intention to leave the organization. More specifically, perceived overqualification can produce dissatisfaction, trigger job search, and ultimately result in turnover behavior (Maynard, Parfyonova, 2013). Therefore, perceived overqualification is negatively related to job satisfaction (Alfes et al., 2016; Johnson, Johnson, 2000; García-Mainar, Montuenga-Gómez, 2020; Erdogan, Bauer, 2009; Erdogan et al., 2011; Wassermann et al., 2017; Andrade et al., 2023; Arvan et al., 2019; Harari et al., 2017; Pan, Hou, 2024; Lobene et al., 2014). The scientific literature (Tian-Foreman, 2009; Azeez et al., 2016; Alam, Asim, 2019; Andrade et al., 2023; Scanlan, Still, 2019; Mobley, 1977; Ramalho Luz et al., 2018; George, Sreedharan, 2023; Lee et al., 2017) offers strong support for the stance that there is a negative relationship between employees' job satisfaction and intention to leave the organization. Finally, the mediating effect of job satisfaction in the perceived overqualification–intention to leave the organization relationship has been acknowledged and only briefly examined by several authors (Maynard, Parfyonova, 2013; Kengatharan, 2020).

Organizational literature's acknowledged findings justify the construction of four distinct research hypotheses:

- $H_{01}$ : A statistically significant, negative relationship exists between perceived overqualification and job satisfaction;
- $H_{02}$ : A statistically significant, negative relationship exists between job satisfaction and intention to leave the organization;
- $H_{03}$ : A statistically significant, positive relationship exists between perceived overqualification and intention to leave the organization;
- $H_{04}$ : A statistically significant, mediating role of job satisfaction exists in the relationship between perceived overqualification and intention to leave the organization.

## **Research methodology**

### **Data collection methodology**

To gather original empirical data, the Google Forms online questionnaire was utilized and distributed in November 2022. A total of 28 questions were posed – 9 concerning

respondents' demographic characteristics (gender, age, region of residence, etc.) and current employment details, and 19 addressing the main research issue (these questions were extracted from relevant and verified survey questionnaires which are referenced in Table 1).

Table 1. Formulation of the research questionnaire

Construct	Questions	Variable	Reference
<b>Perceived Overqualification</b>	9	Independent variable	Maynard et al. (2006) <b>Scale of Perceived Overqualification (SPOQ)</b>
<b>Job Satisfaction</b>	6	Dependent, mediating variable	Tsui et al. (1992) <b>Short Satisfaction Instrument (SSI)</b>
<b>Intention to Leave the Organization</b>	4	Dependent variable	Kelloway et al. (1999) <b>Intention to Quit Scale (IQS)</b>

Source: Authors.

The respondents at their disposal had the five-point Likert scale of psychometrics to mark the answers that most closely correspond to their perceptions and current attitudes toward their work environment. A rating of 1 indicated total disapproval of the assertions, while a rating of 5 was indicative of absolute assent to the declared assertions.

### Sampling methodology

A cohort of 151 individuals, the Republic of Serbia's residents, who were proved to be in employment at the time of completing the questionnaire (and apropos verified as eligible for the survey) comprised the research sample. The obtained respondents' age demographics structure was uneven – Millennials (born between 1980-2000) made up by far the majority of contributors (even 120 of them responded to the survey questions), while Baby Boom generation members (born between 1946-1964) made up the smallest fraction of the sample (only 6 of them took part in the research). The distinct IT literacy level of the age generations involved in the research partially justifies this state of affairs (not to mention the fact that the Baby Boomers are nearing the end of their professional lifetime).

When it comes to the frequency, it can be noted that within the research cohort, female employees outnumbered male employees, with 88 respondents (58.3%), compared to 63 respondents (41.7%). Obtained region-specific data reveal that employees from all regions of the Republic of Serbia participated in the survey relatively evenly (Belgrade region encompassed 28 respondents, South and Eastern Serbia region 54, Šumadija and Western Serbia region 55, Vojvodina region 12, while Kosovo and Metohija region encompassed 2 respondents).

The average respondent is positioned high on the academic ladder (the survey included 54 respondents with a Master of Academic Studies degree and a Bachelor of Academic Studies degree – 35.8% of the research cohort each). Higher School, Vocational High School/Gymnasium, and Doctoral Academic Studies were completed by 5, 30, and 8 respondents, respectively.

As previously stated, only employed individuals took part in the study. Among them, there were as many as 19 respondents (12.6% of the research cohort) who reported performing duties without a formal contract in their present organization ("illegal" workers). In the observed sample, 68 respondents were hired for an indefinite period, and 51 were hired for

a predetermined period under fixed-term contracts (45.0% and 33.8%, respectively). Engagements outside the formal employment framework (additional/short-term/intermittent/occasional work) were documented in the case of 13 respondents (8.6% of the research cohort). Full-time employment arrangements (40 hours per week) predominated among the workers surveyed, accounting for 109 respondents (72.2% of the research cohort). In contrast, 42 respondents, representing 27.8% of the research cohort, were engaged in part-time employment.

When it comes to the review of the surveyed workers' professions, nearly half (75 of them, 49.7% of the research cohort) held the position of Professional worker-specialist for a specific field in the current organization. The number of Technical and operational workers was the smallest – only 6 respondents (4% of the research cohort). According to the position in the organization, the remaining respondents in the sample can be classified into the following categories: Physical worker – 12 respondents, Service worker, merchant or craftsman – 18, Administrative worker – 15; Manager – 15; and Owner/Partner – 10 respondents.

Regarding the length of service, it is important to emphasize that the average respondent's relatively young age justifies the obtained research findings – the number of employees with tenure ranging from 16 to 20, as well as 20 years and more within the organization was comparatively low, comprising respectively 3 and 10 respondents; whilst the number of employees who were engaged within the organization "shorter than 1 year" was significantly higher (34 respondents). Furthermore, the results obtained revealed that 68 respondents had a tenure of 1-5 years with their employer, 26 had been employed for 6-10 years, and 10 for 11-15 years.

As per the observed sample's monthly salaries data, the fact worth highlighting indicates that 151 respondents' monthly income ranged from up to 30,000 dinars (26 respondents), 30,001-60,000 dinars (66), 60,001-90,000 dinars (32), 90,001-120,000 dinars (15), and over 120,000 dinars (12 respondents).

## **Data processing methodology**

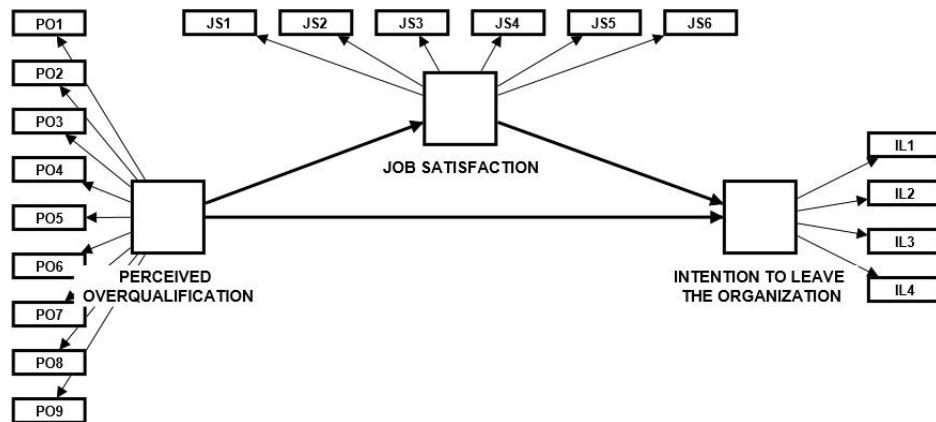
In order to investigate the nature of relations between perceived overqualification and intention to leave the organization, the research process included several research methods and data analysis tactics – the content and thematic analysis methods were utilized for the purpose of the nexus' empirical identification, whilst the analysis and synthesis methods were employed as reasoning methods. Prior to performing pivotal data evaluation through the mediation model approach within SmartPLS 4 statistical software, another statistical tool – IBM SPSS Statistics 26, was employed for the purpose of determining the average respondent's profile (calculation of frequencies) (Ringle et al., 2022; IBM Corporation, 2019). The testing of the proposed research model is done using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS.

## **Research results and discussion**

PLS-SEM is emerging as a preferred approach for estimating structural equation models (Hair et al., 2014; Wong, 2013). Figure 1 shows the reflective measurement model that was

developed for this study – its 19 indicators, three constructs, and their accompanying structural linkages. The measurement model's detailed overview follows.

Figure 1. Measurement model overview



Source: Authors, SmartPLS 4 software employed.

Outer Loadings for reflecting indicators are shown at the beginning of the overview with the aim of estimating their reliability. The criterion is established at a minimum of 0.708 for each indicator's value, implying that if the indicator reaches a prescribed value, a particular research construct explains over 50% of the variance within that indicator (Hair et al., 2019; Jolović, Jolović, 2022; Jolović, Jolović, 2023).

The reliability testing of research indicators gave the following results. The indicators JS3 (0.548), PO4 (0.454), PO5 (0.641), PO6 (0.582), and PO7 (0.642), which according to the computation did not meet the set reliability standard, were excluded from the subsequent calculation. Table 2 contains a list of the ones that did meet set standards, whilst Figure 2 graphically presents the remaining indicators.

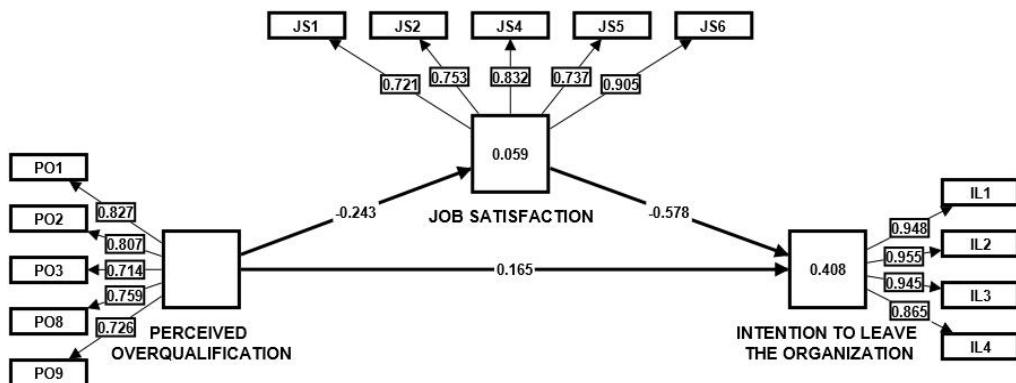
Table 2. Verification of indicators' reliability

Indicators	Constructs		
	Intention to Leave the Organization	Job Satisfaction	Perceived Overqualification
<b>IL1</b>	0.948		
<b>IL2</b>	0.955		
<b>IL3</b>	0.945		
<b>IL4</b>	0.865		
<b>JS1</b>		0.721	
<b>JS2</b>		0.753	
<b>JS4</b>		0.832	
<b>JS5</b>		0.737	
<b>JS6</b>		0.905	
<b>PO1</b>			0.827
<b>PO2</b>			0.807
<b>PO3</b>			0.714
<b>PO8</b>			0.759

<b>PO9</b>	0.726
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Source: Authors, SmartPLS 4 software employed.

Figure 2. Verification of indicators' reliability



Source: Authors, SmartPLS 4 software employed.

Utilizing Cronbach's Alpha and Composite Reliability (Rho\_A criteria), the internal consistency reliability of each construct measure is subsequently evaluated. The threshold for each construct reliability value to be identified as suitable for the study is established at 0.70 or higher (up to a value of 0.95, as surpassing this threshold may give rise to discussions concerning the potential redundancy of the indicators) (Hair et al., 2019; Jolović, Jolović, 2022; Jolović, Jolović, 2023).

Additionally, using the Average Variance Extracted (AVE) metric, the convergent validity of each construct measure is assessed. The criterion is established at a minimum of 0.50, implying that if the prescribed value is obtained, constructs are capable of explaining no less than 50% of the variance within their associated items (Hair et al., 2019; Jolović, Jolović, 2022; Jolović, Jolović, 2023).

Results of research constructs' internal consistency reliability and convergent validity testing are displayed in Table 3. All constructs will be included in the further calculation since they all satisfy the prescribed standards (of 0.70 and 0.50, respectively).

Table 3. Verification of constructs' internal consistency reliability and convergent validity

Constructs	Cronbach's Alpha	Composite Reliability (Rho_A)	Average Variance Extracted (AVE)
Intention to Leave the Organization	0.946	0.949	0.863
Job Satisfaction	0.849	0.865	0.628
Perceived Overqualification	0.830	0.836	0.590

Source: Authors, SmartPLS 4 software employed.

The Fornell-Larcker Criterion is employed to gauge the discriminant validity of each construct measure. Hair and co-authors (2019) argue that this criterion should demonstrate

the degree to which a singular construct conceptually stands apart from all other constructs integrated into the research model (the AVE value of each construct is contrasted with the squared inter-construct correlation of that and all other reflectively measured constructs; if the shared variance for all constructs does not exceed their individual AVE values, discriminant validity is confirmed) (Hair et al., 2019; Jolović, Jolović, 2022; Jolović, Jolović, 2023).

Supplementary examination of the discriminant validity of each construct measure is done by utilizing the Heterotrait-monotrait ratio (HTMT). This ratio is calculated as the mean of the item correlations across constructs (heterotrait-heteromethod correlations) relative to the geometric mean of the average correlations for the items measuring the same construct (monotrait-heteromethod correlations) (Hair et al., 2019). When HTMT levels are high, discriminant validity issues exist. Structured models have a threshold value of 0.90 (Hair et al., 2019).

The results of both discriminant validity tests for research constructs are presented respectively in Table 4 and Table 5. All constructs met the previously described criteria, indicating they all possess discriminant validity and may be treated as distinct entities within this research.

Table 4. Verification of constructs' discriminant validity (Fornell-Larcker criterion)

Constructs	Intention to Leave the Organization	Job Satisfaction	Perceived Overqualification
Intention to Leave the Organization	<b>0.929</b>		
Job Satisfaction	-0.618	<b>0.792</b>	
Perceived Overqualification	0.305	-0.243	<b>0.768</b>

Source: Authors, SmartPLS 4 software employed.

Table 5. Verification of constructs' discriminant validity (Heterotrait-monotrait ratio – HTMT)

	Heterotrait-monotrait ratio (HTMT)
Job Satisfaction <=> Intention to Leave the Organization	0.680
Perceived Overqualification <=> Intention to Leave the Organization	0.323
Perceived Overqualification <=> Job Satisfaction	0.284

Source: Authors, SmartPLS 4 software employed.

The structural model's evaluation comes next in the stepwise interpretation of the PLS-SEM data after the measurement model's estimation has been deemed satisfactory. To ensure it does not influence the regression findings, collinearity in a structural model should be investigated first. Calculating the inner VIF values in this method involves using the latent variable values of the predictor constructs in partial regression. The acceptable value's limit is at 5 or lower, as greater values may signal potential collinearity issues between the predictor constructs (Hair et al., 2019; Jolović, Jolović, 2022; Jolović, Jolović, 2023).

The structural research model's collinearity testing findings are displayed in Table 6. The constructs all adhered to the earlier discussed threshold of 5 indicating their independence

from one another and confirming that changes in one do not have an impact on changes in the others, as well as the opposite.

Table 6. Verification of the structural research model's collinearity

	VIF
<b>Job Satisfaction → Intention to Leave the Organization</b>	1.063
<b>Perceived Overqualification → Intention to Leave the Organization</b>	1.063
<b>Perceived Overqualification → Job Satisfaction</b>	1.000

Source: Authors, SmartPLS 4 software employed.

The  $R^2$  examination of the endogenous constructs is presented next (Table 7 results). The coefficient of determination (R Square –  $R^2$ ) quantifies the proportion of variance explained in each endogenous construct, serving as a verified measure of the model's explanatory ability (power). It reveals what amount of change in the dependent variable can be explained by one of more independent variables.  $R^2$  values for endogenous latent variables are typically interpreted as follows: 0.26 (substantial), 0.13 (moderate), 0.02 (weak); or even 0.67 (substantial), 0.33 (moderate), 0.19 (weak) (Hair et al., 2019). Nevertheless, the acceptability of the  $R^2$  values depends on the specific research context and the discipline of the study.

The  $R^2$  result for the construct Intention to Leave the Organization is 0.408, indicating that the research model demonstrates moderate to substantial predictive ability for the mentioned variable. In contrast, the  $R^2$  result for construct Job Satisfaction is 0.059, suggesting that the constructed research model exhibits weak predictive ability in explaining this variable.

Table 7. Verification of the structural research model's explanatory ability

	R-square	R-square adjusted
<b>Intention to Leave the Organization</b>	0.408	0.400
<b>Job Satisfaction</b>	0.059	0.053

Source: Authors, SmartPLS 4 software employed.

Finally, subsequent to the demonstration of the model's explanatory ability, the structural path significance check is performed. Table 8 provides information on the outcomes of the Bootstrapping method and the t-test for the 5% and 1% significance level. In total, 5,000 repetitions of the Bootstrapping technique were performed.

The calculation described confirmed the existence of three direct and statistically significant relationships between:

- Perceived Overqualification and Job Satisfaction – negative relation ( $\beta=-0.243$ ,  $t=2.838$ ,  $p=0.005$ ;  $p<0.05$  and  $p<0.01$ ), which consequently provides sufficient evidence for the acceptance of the  $H_{01}$  hypothesis;
- Job Satisfaction and Intention to Leave the Organization – negative relation ( $\beta=-0.578$ ,  $t=10.783$ ,  $p=0.000$ ;  $p<0.05$  and  $p<0.01$ ), which consequently provides sufficient evidence for the acceptance of the  $H_{02}$  hypothesis;

- Perceived Overqualification and Intention to Leave the Organization – positive relation ( $\beta=0.165$ ,  $t=2.267$ ,  $p=0.023$ ;  $p<0.05$ ), which consequently provides sufficient evidence for the acceptance of the  $H_03$  hypothesis.

These first two findings enable examination of the possible mediating role of Job Satisfaction variable in the association between the variables Perceived Overqualification and the employee's Intention to Leave the Organization.

Table 8. Verification of the structural research model's direct effects

	Original sample	Sample mean	Standard deviation	T statistics	P values
<b>Job Satisfaction → Intention to Leave the Organization</b>	-0.578	-0.581	0.054	10.783	<b>0.000</b>
<b>Perceived Overqualification → Intention to Leave the Organization</b>	0.165	0.172	0.073	2.267	<b>0.023</b>
<b>Perceived Overqualification → Job Satisfaction</b>	-0.243	-0.256	0.086	2.838	<b>0.005</b>

Source: Authors, SmartPLS 4 software employed.

Last but not least, the findings shown in Table 9 undoubtedly reveal whether the variable Job Satisfaction mediates the relationship between the variables Perceived Overqualification and Intention to Leave the Organization. This effect appears to be statistically significant ( $\beta=0.140$ ,  $t=2.776$ ,  $p=0.006$ ;  $p<0.05$  and  $p<0.01$ ), which consequently provides sufficient evidence for the acceptance of the  $H_04$  hypothesis.

Since there is a confirmed statistically significant indirect (mediating) effect in the relation Perceived Overqualification → Job Satisfaction → Intention to Leave the Organization, and since the direct effect Perceived Overqualification → Intention to Leave the Organization also exists and it is significant, it can be concluded that mediation within this model can be described as partial. For the purpose of distinguishing whether this partial mediation is complementary or competitive, the following calculation will be performed (precisely, multiplying  $\beta$  coefficients of corresponding p values from direct relationships in the research model), according to Hair and co-authors (2021) proposition:

$$p1 \times p2 \times p3 = -0.243 \times (-0.578) \times 0.165 = 0.02$$

Given that the calculated result is positive, it can be inferred that within the research model, complementary partial mediation is present (for clarification, complementary partial mediation refers to a scenario where both the direct and indirect effect  $p1 \times p2$  point in the same direction; and where the product of the direct effect and the indirect effect  $p1 \times p2 \times p3$  remains positive) (Hair et al., 2021).

Table 9. Verification of the structural research model's indirect (mediating) effect

	Original sample	Sample mean	Standard deviation	T statistic	P value
<b>Perceived Overqualification → Job Satisfaction → Intention to Leave the Organization</b>	0.140	0.148	0.051	2.776	<b>0.006</b>

Source: Authors, SmartPLS 4 software employed.

The final critical step in evaluating the structural research model involves assessing the total effects registered (Table 10). Total model effects are consistent with previous results, and once again confirm the set research hypotheses (by observing the entire model effects, it is possible to conclude that the effect on the relation Perceived Overqualification → Intention to Leave the Organization is strengthened – p value changed from 0.023 to 0.000).

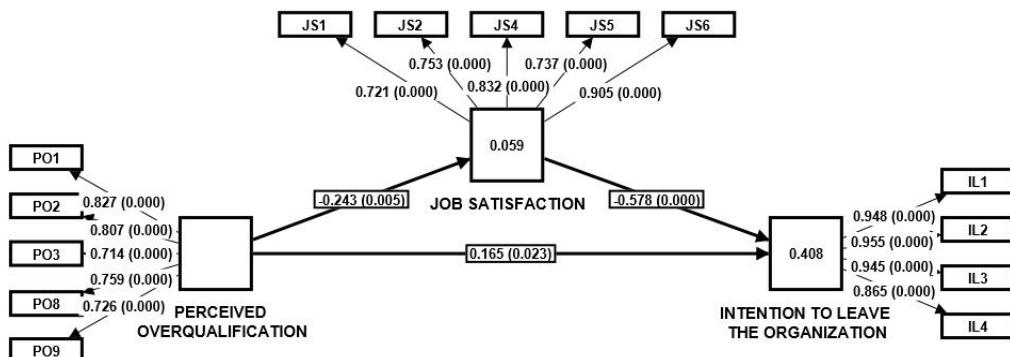
Table 10. Verification of the structural research model's total effects

	Original sample	Sample mean	Standard deviation	T statistics	P values
<b>Job Satisfaction → Intention to Leave the Organization</b>	-0.578	-0.581	0.054	10.783	0.000
<b>Perceived Overqualification → Intention to Leave the Organization</b>	0.305	0.320	0.069	4.397	<b>0.000</b>
<b>Perceived Overqualification → Job Satisfaction</b>	-0.243	-0.256	0.086	2.838	0.005

Source: Authors, SmartPLS 4 software employed.

Figure 3 shows the reflective structural model used in the research, and its detailed results.

Figure 3. Structural research model's results



Source: Authors, SmartPLS 4 software employed.

## Conclusion

The conducted research confirmed that intention to leave the organization does not have to be “triggered” solely by the employee’s dissatisfaction with the salary, relations in the work collective or lack of advancement opportunities – that is, by the factors that most frequently capture the management’s attention and raise owner’s concerns regarding the sustainability of the work team. The employee’s individual impression of “superiority” regarding the work being performed, and/or the expertise of work collective/co-workers who are simultaneously performing the same work “unlocks” an entirely new threat. More specifically, the employee’s perception of himself/herself as dominant over others (regardless of genuine reality) significantly affects his/her behavior in the context of staying/leaving current job position. As assumed by the  $H_0$  research hypothesis and the prior empirical evidence, the employee’s perceived overqualification and, therefore, superiority in the workplace negatively affect his/her job satisfaction ( $\beta=-0.243$ ,  $t=2.838$ ,  $p=0.005$ ;  $p<0.05$  and  $p<0.01$ , results shown in Table 8).

The individual's realization that he/she has much more potential than the organization initially recognizes in him/her, i.e., which the organization nurtures and ultimately pays for, causes frustration and dissatisfaction with work duties, and often develops into discontentment with the workplace and thoughts of resigning (high job satisfaction, on the other hand, is associated with less frequent development of the desire to quit). This observation is in line with the  $H_{02}$  hypothesis, which states that high job satisfaction is negatively associated with a likelihood of leaving the organization ( $\beta=-0.578$ ,  $t=10.783$ ,  $p=0.000$ ;  $p<0.05$  and  $p<0.01$ , results shown in Table 8). Additionally, the research confirmed the  $H_{03}$  hypothesis, according to which perceived overqualification directly and positively affects the employee's intention to leave the organization ( $\beta=0.165$ ,  $t=2.267$ ,  $p=0.023$ ;  $p<0.05$ , results shown in Table 8).

The central research hypothesis  $H_{04}$ , which reads "A statistically significant, mediating role of job satisfaction exists in the relationship between perceived overqualification and intention to leave the organization", was confirmed by the following results available in Table 9 ( $\beta=0.140$ ,  $t=2.776$ ,  $p=0.006$ ;  $p<0.05$  and  $p<0.01$ ). This mediation is justly evaluated (by Hair and co-authors' " $p_1 \times p_2 \times p_3$ " equation) as complementary partial mediation.

From a comparison of these research findings with earlier literature evidence, one can draw the conclusion that novel findings support the earlier empirical conclusions of distinguished scholars (Maynard, Parfyonova, 2013; Rasheed et al., 2022; Rasheed et al., 2024; Kengatharan, 2020; Andrade et al., 2023; Yildiz et al., 2017; Vinayak et al., 2021; Ye et al., 2017; Li et al., 2020; Biaobin et al., 2021; Harari et al., 2017; Chen et al., 2021; Alves et al., 2016; Johnson, Johnson, 2000; Mah, Shin, and Min, 2024; Erdogan, Bauer, 2009; Erdogan et al., 2011; Arvan et al., 2019; Lobene et al., 2014; Tian-Foreman, 2009; Azeez et al., 2016; Alam, Asim, 2019; Scanlan, Still, 2019; Mobley, 1977; Ramalho Luz et al., 2018; Lee et al., 2017; Liu et al., 2015; Liu, Wang, 2012; Maltarich et al., 2011; Wassermann et al., 2017). The research question that merits further research concerns the opposite scenario – if an employee feels unqualified for the work position he/she presently holds, which behavior will prevail – the one to leave the organization (given his/her sensation that he/she cannot keep up with the pace of the work team and adequately respond to workplace demands) or the one to hold onto a position he/she is not "up to" (despite the fact that he/she lacks the knowledge and abilities necessary for mentioned work position). Examining research variable relationships while accounting for objective overqualification might also be a sound research concept.

This research contributes to the frontiers of management literature and may serve as a great reference point for the timely building of plans, strategies, and actions for (practically) all organizations that employ a diverse workforce and aspire for its sustainability. The study's limitations include the sample's modest size (in relation to the total number of employed people in the Republic of Serbia), the study's exclusive focus on the national labor market which prevents generalization of the research's conclusions (a broader regional perspective could have been considered), the uneven representation of respondents from different demographic groupings, having distinct living and working conditions (which is a drawback associated with the study's small sample size), and the utilization of an electronic online questionnaire (an alternative approach, such as conducting interviews, could have been utilized to gain a deeper and more nuanced understanding of employees' individual

perspectives and professional attitudes). Nonetheless, if the advantages and drawbacks of the completed research were compared and weighed, the advantages would still prevail.

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# RAZJAŠNAVANJE KONEKCIJE PERCIPIRANA PREKVALIFIKOVANOST–NAMERA ODLASKA IZ ORGANIZACIJE: POSREDNIČKA ULOGA ZADOVOLJSTVA POSLOM

Ivana Jolović, Nevena Jolović, Elena-Alexandra Sinoi

## *Apstrakt*

*U organizacionom sistemu koji se konstantno razvija, vršenje strateškog manevrisanja zaposlenih je neophodnost. Širok spektar percepcija zaposlenih zahteva menadžersku veština koja treba da suzbije često konsekventne, ali nepoželjne stavove i ponašanja zaposlenih. Primarni cilj naučnoistraživačkog rada bio je da podrobnije istraži složenost sve prisutnije problematike ove vrste, odnosno da ispita konekciju „percipirana prekvalifikovanost–namera odlaska iz organizacije”, te dodatno, prouči da li zadovoljstvo poslom posreduje u gore pomenutoj relaciji. Uzorak istraživanja obuhvatio je 151 ispitanika, srpskih državljana, koji su prema zvaničnim podacima činili deo nacionalne radne snage na kraju 2022. godine (vreme popunjavanja upitnika). Podaci prikupljeni putem adekvatno strukturisanog Google Forms online upitnika podvrgnuti su naknadnoj analizi korišćenjem statističkih alata IBM SPSS Statistics 26 i SmartPLS 4. Sprovedeno istraživanje empirijski je testiralo i potvrdilo pretpostavku da percepcija zaposlenog o prekvalifikovanosti (prekoračenje zahteva trenutnog radnog mesta) stvara plodno tlo za razvoj njegovog/njenog nezadovoljstva (niski nivoi zadovoljstva poslom), koje može kulminirati namerom napuštanja posla. Rad doprinosi aktuelnoj debati o konsekventnosti relacije „percepcije–stavovi–ponašanje” zaposlenih i može poslužiti kao dragocena referentna tačka u konstruisanju dugoročnih planova i strategija organizacije.*

***Ključne reči:*** percepcija zaposlenih, prekvalifikovanost, zadovoljstvo zaposlenih, namera fluktuacije, PLS-SEM.

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## **FINANSIRANJE ZELENE TRANZICIJE: ULOGA BANKA U SPROVOĐENJU ESG STANDARDA I UPRAVLJANJU ODRŽIVIM RIZICIMA**

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### ***Apstrakt***

*Bankarski sektor ima ključnu ulogu u mobilizaciji kapitala potrebnog za sprovođenje zelene tranzicije i ostvarivanje ciljeva održivog razvoja. Integracija ekoloških, društvenih i upravljačkih (ESG) kriterijuma u bankarske procese predstavlja centralni mehanizam za usmeravanje finansijskih tokova ka održivim ekonomskim aktivnostima. Evropska unija je uspostavila regulatorni okvir koji obuhvata EU taksonomiju, Uredbu o objavljivanju podataka o održivosti u finansijskom sektoru (SFDR) i smernice Evropske bankarske agencije (EBA), sa ciljem unapređenja transparentnosti i upravljanja rizicima održivosti. Cilj rada je da analitički ispita ulogu banaka u sprovođenju ESG standarda i upravljanju održivim rizicima. Rad se zasniva na kvalitativnoj analizi regulatornih dokumenata i relevantne literature. Rezultati ukazuju da integracija ESG kriterijuma dovodi do promena u upravljanju kreditnim rizicima i omogućava bankama da kroz održive finansijske proizvode aktivno doprinesu zelenoj tranziciji.*

**Ključne reči:** održivo finansiranje; ESG; klimatski rizici; bankarski sektor; zelene obveznice; zeleni krediti.

**JEL:** G21, G32, Q01, Q56

### **Uvod**

U savremenim uslovima ubrzanih tehnoloških promena, digitalizacije poslovanja i širenja društvenih mreža kao kanala komunikacije i uticaja, transformacije zahvataju gotovo sve sektore, pri čemu održivost postaje centralni okvir za donošenje strateških odluka i upravljanje rizicima. (Trifunović et al, 2023; Mihajilović et al., 2024; Dašić et al. 2024; Stanković, et al, 2023) Uloga banaka u održivoj transformaciji privrede postaje sve značajnija u uslovima intenziviranja globalnih napora usmerenih na

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ublažavanje klimatskih promena, unapređenje energetske efikasnosti i izgradnju otpornih ekonomskih sistema. Kao dominantan izvor spoljnog finansiranja za preduzeća u Evropskoj uniji, bankarski sektor ima ključnu odgovornost u mobilizaciji kapitala potrebnog za prelazak na poslovne modele koji su usklađeni sa ciljevima održivog razvoja i evropskim klimatskim ambicijama (European Commission, 2023).

Savremeni regulatorni okvir Evropske unije uspostavljen je kako bi podstakao integraciju faktora održivosti u strategije upravljanja rizicima finansijskih institucija. Evropska bankarska agencija (EBA) posebno naglašava obavezu uključivanja rizika održivosti u procese ocene kreditne sposobnosti, internog upravljanja i kapitalnih zahteva, imajući u vidu da ESG faktori mogu značajno uticati na kreditni, tržišni i operativni rizik (EBA, 2024). Paralelno s tim, EU taksonomija i Uredba o objavljivanju podataka o održivosti u finansijskom sektoru (SFDR) uspostavljaju standardizovan pristup klasifikaciji održivih aktivnosti i zahtevima za transparentnost, čime omogućavaju investitorima jasnije prepoznavanje ekonomskih aktivnosti koje doprinose klimatskim i društvenim ciljevima (European Commission, 2022; EFRAG, 2023).

EU taksonomija predstavlja referentni okvir za identifikovanje ekonomskih aktivnosti koje se mogu smatrati održivim, pod uslovom da značajno doprinose jednom od definisanih ciljeva održivosti i da ne nanose značajnu štetu drugim oblastima („do no significant harm“ princip). Time se povećava transparentnost tržišta i olakšava uporedivost zelenih finansijskih proizvoda (Platform on Sustainable Finance, 2022). Istovremeno, SFDR uvodi detaljne zahteve objavljivanja na nivou finansijskih institucija i pojedinačnih proizvoda, čime se doprinosi jačanju odgovornosti finansijskog sektora i poboljšanju informisanosti investitora (European Supervisory Authorities, 2023).

Iako je regulatorni okvir ESG u Evropskoj uniji normativno jasno definisan, u literaturi i praksi i dalje postoji potreba za sistematizovanim sagledavanjem načina na koji se ovi zahtevi operacionalizuju u svakodnevnim procesima bankarskog poslovanja, naročito u oblasti upravljanja kreditnim rizicima i alokacije kapitala. Posebno je važno razumeti kako integracija ESG kriterijuma utiče na transformaciju tradicionalnih bankarskih modela i razvoj održivih finansijskih proizvoda.

Cilj ovog rada je da analitički ispita ulogu banaka u sprovođenju ESG standarda i upravljanju održivim rizicima, sa posebnim fokusom na regulatorni okvir Evropske unije i njegove implikacije na kreditno poslovanje i finansiranje zelene tranzicije. Rad se zasniva na kvalitativnoj analizi regulatornih dokumenata EU, relevantne akademske literature i izveštaja međunarodnih institucija, pri čemu se primenjuju analitičko-sintetički i komparativni metod.

U skladu sa definisanim ciljem, u radu se polazi od sledećih hipoteza:

**H1:** Integracija ESG kriterijuma u regulatorni i nadzorni okvir Evropske unije dovodi do značajnih promena u načinu upravljanja kreditnim rizicima u bankama.

**H2:** Primena EU taksonomije i SFDR povećava transparentnost i uporedivost održivih finansijskih proizvoda, čime se unapređuje alokacija kapitala ka održivim ekonomskim aktivnostima.

**H3:** Razvoj održivih finansijskih instrumenata, poput zelenih obveznica i zelenih kredita, predstavlja ključni mehanizam putem kojeg banke aktivno doprinose sprovođenju zelene tranzicije.

Na taj način, rad pruža konceptualni okvir za razumevanje uloge bankarskog sektora u procesu održive transformacije privrede i doprinosi produbljivanju naučne rasprave o integraciji ESG standarda u savremeno bankarstvo. U tom smislu, sinergija održivog razvoja i savremenih digitalnih tehnologija postaje ključni faktor jačanja otpornosti finansijskog sistema i efikasnog usmeravanja kapitala ka dugoročno održivim ekonomskim aktivnostima (Trifunović, et al 2024; Jovanović & Paunković, 2023; Žikić, et al., 2022).

### **Finansiranje održivog razvoja**

Finansiranje održivog razvoja predstavlja jedan od ključnih stubova zelene tranzicije, jer omogućava preusmeravanje kapitala ka aktivnostima koje doprinose smanjenju emisija, unapređenju energetske efikasnosti i stvaranju otpornijih ekonomskih struktura. U Evropskoj uniji ovaj proces se odvija kroz regulatorni okvir koji ima za cilj standardizaciju, transparentnost i jasno definisanje kriterijuma održivosti, kako bi se finansijski tokovi usmerili ka projektima od strateškog značaja za klimatske ciljeve (European Commission, 2023).

Banke, kao dominantni posrednici u finansijskom sistemu, imaju presudnu ulogu u određivanju načina na koji se kapital alocira. Njihove kreditne i investicione odluke mogu ili podržati postojeće, neodržive modele, ili poslužiti kao snažan mehanizam ubrzavanja strukturnih promena u pravcu održive ekonomije. Istraživanja potvrđuju da kvalitet alokacije kapitala utiče na brzinu prelaska na niskougljenične tehnologije i na ukupnu finansijsku stabilnost (Weber, 2018; *Journal of Banking & Finance*). Stabilnost bankarskog sektora takođe se oslanja na adekvatnu kapitalnu osnovu, koja predstavlja osnov poverenja i otpornosti finansijskog sistema (Amrein, 2025).

Usmeravanjem kapitala ka održivim projektima — kao što su obnovljivi izvori energije, efikasna infrastruktura i cirkularni ekonomski modeli — banke doprinose ubrzaju strukturnih promena, ali istovremeno i unapređuju sopstvene portfolije kroz smanjenje dugoročnih rizika. Studije pokazuju da održive investicije nose niži nivo sistemskih rizika i doprinose dugoročnoj finansijskoj stabilnosti (Busch & Friede, 2020; *Business Strategy and the Environment*).

Ovi nalazi podržavaju hipotezu H1, prema kojoj integracija ESG kriterijuma utiče na promenu strukture i rizika bankarskih portfolija.

Paralelno, banke se suočavaju sa rastućom potrebom integracije klimatskih rizika u svoje procese upravljanja. Fizički klimatski rizici, poput ekstremnih vremenskih događaja, kao i tranzicioni rizici, proistekli iz regulatornih i tehnoloških promena, postaju relevantni finansijski faktori koji utiču na kreditni, tržišni i operativni rizik (Bolton et al., 2020; *Finance Research Letters*). U tom kontekstu, koncept ekonomskog kapitala pruža metodološku osnovu za kvantitativnu procenu izloženosti i adekvatno pokriće potencijalnih gubitaka (Basel Committee, 2008).

Savremeni pristupi održivom finansiranju ističu potrebu za potpunom integracijom ESG kriterijuma u strateške i operativne odluke finansijskih institucija, uz koordinaciju tržišnih signala, investicionih politika i regulatornih normi. Takav pristup potvrđuje hipotezu H2, prema kojoj regulatorni okvir EU doprinosi efikasnijoj i transparentnijoj alokaciji kapitala ka održivim aktivnostima. Krajnji cilj je mobilizacija kapitala na način koji istovremeno podstiče privredni rast, smanjuje rizike i ubrzava klimatsku tranziciju (Sustainable Finance Committee, 2021).

### **Uloga banaka i EU Taksonomija**

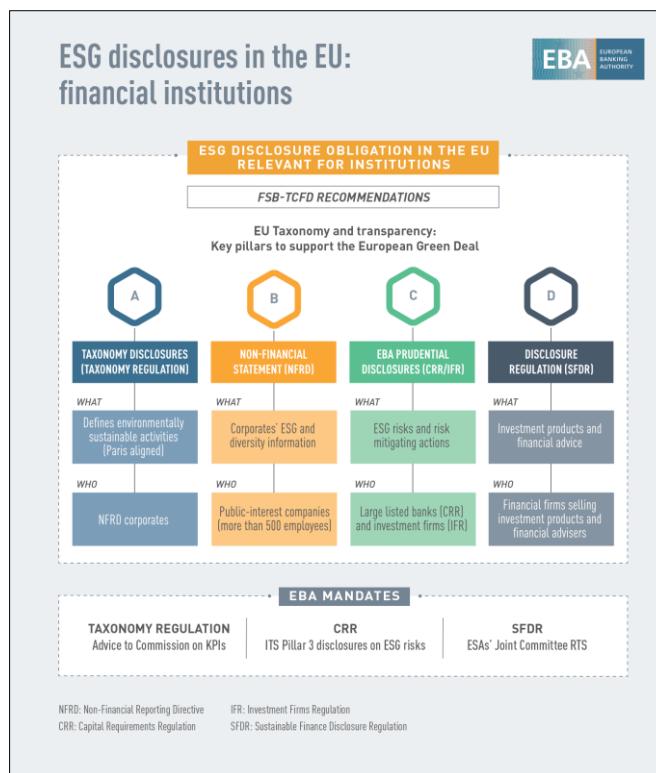
EU taksonomija predstavlja centralni regulatorni instrument kojim se definiše koje se privredne aktivnosti mogu smatrati ekološki održivim. Njena svrha je da obezbedi jedinstveni klasifikacioni okvir koji omogućava finansijskim institucijama, regulatorima i investitorima doslednu primenu kriterijuma održivosti. Prema *Final Report of the Technical Expert Group on Sustainable Finance*, „EU taksonomija je jedan od najznačajnijih razvojnih iskoraka u oblasti održivog finansiranja i imaće dalekosežne implikacije na investitore i izdavaoce finansijskih instrumenata u EU i van nje“ (European Commission, 2020). Taksonomija počiva na tri osnovna principa: značajan doprinos jednom od šest ciljeva održivosti, izbegavanje negativnih efekata na preostale ciljeve i poštovanje minimalnih društvenih standarda.

Uloga EU taksonomije dodatno se osnažuje kroz *Sustainable Finance Disclosure Regulation* (SFDR), koja uvodi obavezu finansijskim institucijama da objavljaju podatke o stepenu usklađenosti svojih finansijskih proizvoda i strategija sa kriterijumima održivosti. SFDR unapređuje transparentnost tržišta i omogućava investitorima uporedivost informacija o održivim ulaganjima. U izveštaju *Platform on Sustainable Finance – Simplifying the EU Taxonomy* navodi se: „EU taksonomija predstavlja osnovni stub evropskog okvira održivog finansiranja, obuhvatajući šest ekoloških ciljeva i više od 150 ekonomskih aktivnosti, te predstavlja temelj za usklađivanje proizvoda i regulatorno izveštavanje u skladu sa SFDR-om“ (European Commission, 2025). Na taj način, EU taksonomija i SFDR ne deluju samo kao instrumenti transparentnosti, već i kao mehanizmi koji direktno utiču na usmeravanje kapitala, čime se potvrđuje hipoteza H2 o njihovoj ulozi u unapređenju efikasne alokacije sredstava ka održivim aktivnostima.

Treći važan element regulatornog okvira čine Smernice Evropske bankarske agencije (EBA) o upravljanju ESG rizicima iz 2025. godine. One obavezuju

finansijske institucije da rizike povezane sa životnom sredinom, društvenim faktorima i korporativnim upravljanjem integrišu u sve kategorije finansijskih rizika — kreditni, tržišni, likvidnosni, reputacioni i rizik poslovnog modela. Poseban naglasak stavljen je na dugoročnu procenu rizika sa horizontom planiranja od najmanje deset godina, kao i na izradu tranzicioneih planova koji omogućavaju fazno prilagođavanje ciljevima klimatske neutralnosti (EBA, 2025). Integracija ESG rizika u sve kategorije finansijskih rizika, kako je propisano EBA smernicama, potvrđuje hipotezu H1 da regulatorni ESG okvir dovodi do suštinskih promena u tradicionalnim modelima upravljanja kreditnim rizicima u bankama.

Slika 1: ESG objave u EU – finansijske institucije



Izvor: <https://www.eba.europa.eu/regulation-and-policy/transparency-and-pillar-3>, preuzeto 21.08.2025

U narednom periodu očekuje se dalje proširenje taksonomije, naročito u oblastima biodiverziteta, cirkularne ekonomije i održivih lanaca snabdevanja, uz intenzivnije usklađivanje sa međunarodnim standardima kao što su ISSB i TCFD. Očekivana harmonizacija globalnih standarda ima za cilj povećanje uporedivosti podataka i smanjenje regulatorne fragmentacije. Takođe se predviđa jačanje zahteva za obelodanjivanje informacija i eksternu verifikaciju izveštaja, što će doprineti unapređenju kvaliteta podataka i većoj pouzdanosti sistema izveštavanja. Za banke to podrazumeva dublju integraciju ESG faktora u sve faze poslovanja — od razvoja

finansijskih proizvoda, preko kreditnih politika, do upravljanja portfoliom i strategijskog odlučivanja.

Posmatrano u celini, EU taksonomija, SFDR i EBA smernice čine koherentan regulatorni okvir koji ne samo da postavlja zahteve za izveštavanje, već aktivno preoblikuje način na koji banke donose kreditne i investicione odluke. Time se regulatorni ESG okvir transformiše iz normativnog u operativni alat bankarskog upravljanja, sa direktnim implikacijama na finansiranje zelene tranzicije.

### Strateški i regulatorni značaj ESG

Uloga banaka u održivoj transformaciji privrede posebno se ogleda kroz proces kreditiranja, koji predstavlja ključni mehanizam za usmeravanje finansijskih tokova. Kreditne odluke banaka ne utiču samo na obezbeđivanje kapitala privrednim subjektima, već direktno oblikuju strukturu ekonomskih aktivnosti i njihov doprinos održivim ciljevima. Sa porastom značaja ESG rizika — rizika koji proizlaze iz ekoloških, društvenih i upravljačkih faktora — kriterijumi za procenu kreditne sposobnosti postali su znatno sveobuhvatniji. Pored tradicionalne procene sposobnosti dužnika da uredno izmiruje obaveze, banke danas analiziraju dugoročnu održivost poslovnog modela i njegovu usklađenost sa ciljevima klimatske neutralnosti Evropske unije do 2050. godine.

Evropska centralna banka (ECB) još je 2020. godine ukazala na nužnost integracije klimatskih rizika u nadzorne i upravljačke prakse, ističući da će „ECB nastaviti da razvija svoj nadzorni pristup upravljanju i obelodanjivanju klimatskih i ekoloških rizika, uzimajući u obzir regulatorni razvoj i evoluciju tržišnih praksi“ (European Central Bank, 2020). Ovaj stav potvrđuje da ekološki i klimatski rizici više nisu spoljašnji faktori, već sastavni deo sveukupnog okvira upravljanja rizicima.

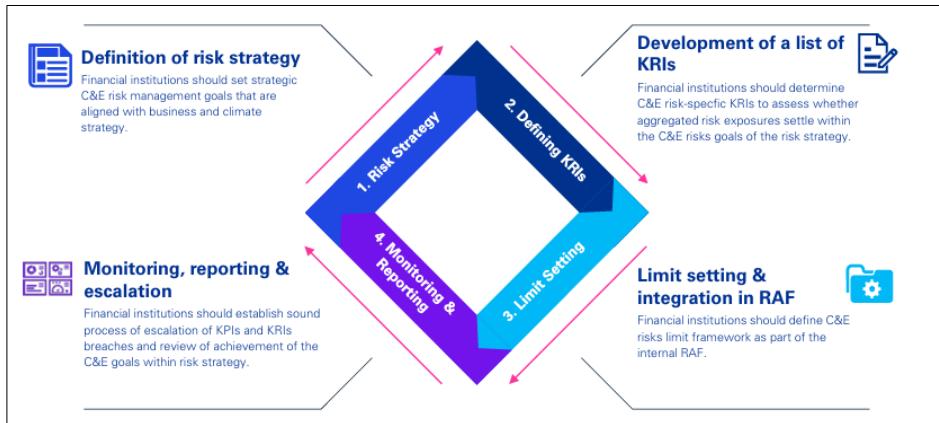
Ovakav pristup dodatno je institucionalizovan u Smernicama Evropske bankarske agencije (EBA) o upravljanju ESG rizicima iz 2025. godine. Prema smernicama, finansijske institucije dužne su da identifikuju, mere, upravljaju i prate ESG rizike u okviru svih relevantnih kategorija rizika — kreditnog, tržišnog, likvidnosnog, reputacionog i rizika poslovnog modela. Uvedena je i obaveza dugoročnog planiranja rizika, sa horizontom od najmanje deset godina, kao i priprema tranzisionih planova usklađenih sa ciljevima klimatske neutralnosti (EBA, 2025). Zajednički izveštaji evropskih nadzornih tela (ESA) dodatno naglašavaju potrebu za integracijom klimatskih ciljeva u kreditne politike i sveobuhvatne procese upravljanja rizikom. Kako ističe UNEPFI (2024), prelazak ka klimatski održivom poslovanju predstavlja višeslojan i dugoročan proces koji menja sve elemente organizacionih struktura, strategija i operativnih modela banaka. Ovakav regulatorni pristup potvrđuje hipotezu H1, prema kojoj integracija ESG kriterijuma dovodi do suštinske transformacije tradicionalnih modela upravljanja kreditnim rizicima u bankama.

U metodološkom smislu, ključnu ulogu imaju ESG rejting i ESG skorovi. Ovi indikatori obuhvataju specifične elemente poput emisija, energetske efikasnosti, upravljačkih praksi ili društvenog uticaja preduzeća, a sve češće se integriraju u modele procene boniteta. Empirijska istraživanja upućuju na njihov značaj: pokazano je da veća neslaganja između različitih agencija u pogledu ESG rejtinga dovode do smanjenja obima novoodobrenih bankarskih kredita, što ukazuje da nesigurnost u vezi sa ESG rezultatima direktno utiče na dostupnost financiranja (Qin, 2025). Integracija ESG rejtinga u modele procene boniteta predstavlja operativni mehanizam kroz koji se regulatorni zahtevi prevode u svakodnevne kreditne odluke, čime se dodatno potvrđuje hipoteza H1.

Pored rejtinga, značajan mehanizam predstavlja ESG određivanje cene kredita. Banke sve češće povezuju kreditne uslove sa ESG performansama klijenata — preduzeća sa slabijim ESG pokazateljima suočavaju se sa višim troškovima zaduživanja, dok visoko održiva preduzeća i ona sa pouzdanim Net-Zero planovima mogu ostvariti povoljnije uslove finansiranja. Međutim, efekti ESG-vezanog određivanja cene snažno zavise od kvaliteta objavljenih podataka. Istraživanja ukazuju da se tržišta pozitivno odnose prema izdavanju ESG-vezanih kredita samo kada je nivo objavljivanja podataka visok, dok nedovoljna transparentnost povećava rizik od greenwashinga i može dovesti do pogoršanja ESG performansi dužnika nakon odobrenja kredita (Kim, 2022). Na taj način, ESG-vezano određivanje cene kredita predstavlja direktni kanal putem kojeg banke utiču na ponašanje klijenata i aktivno doprinose sprovođenju zelene tranzicije, čime se potvrđuje hipoteza H3.

Na strateškom nivou, ESG faktori se sve više integrišu u okvir za apetit prema riziku (RAF). U ovom okviru banke definišu nivo rizika koji su spremne da prihvate (KRI), određuju ključne pokazatelje učinka (KPI) i uspostavljaju limite koji omogućavaju operativnu primenu ESG ciljeva. KPMG (2023) identificiše četiri ključna koraka za operacionalizaciju klimatskih i ekoloških obaveza u bankarskom sektoru: (1) definisanje strategije upravljanja rizikom, (2) identifikacija C&E KRI pokazatelja, (3) postavljanje limita i (4) kontinuirano praćenje i izveštavanje. Interaktivna priroda ovog procesa podrazumeva stalno prilagođavanje strategije na osnovu rezultata i iskustava iz prakse, kao i mehanizme eskalacije prema višem menadžmentu u slučaju odstupanja.

Slika 2: Stilizovani primer postavljanja KRI i KPI pokazatelja



Izvor: KPMG (2023): The need to act: Climate and environmental indicators in banks' strategies, str. 5. <https://assets.kpmg.com/content/dam/kpmg/de/pdf/Themen/2023/05/the-need-to-act.pdf>

Uprkos napretku, izazovi ostaju značajni. ESG podaci neretko su neujednačeni, neuporedivi ili zasnovani na različitim metodologijama, što otežava procenu rizika. Postoji i opasnost od formalnog usklađivanja bez stvarnih promena u poslovanju preduzeća. Međutim, koristi su znatno izraženije: integracija ESG rizika povećava otpornost bankarskog sektora, unapređuje reputaciju, smanjuje regulatorne rizike i otvara mogućnost za razvoj novih, održivo orijentisanih finansijskih proizvoda. Kroz ESG rejtinge, određivanje cena kredita i implementaciju ESG pokazatelja u RAF, održivost postaje merljiva i operativno primenljiva kategorija, čime banke postaju ključni akteri u izgradnji klimatski neutralne i održive privrede.

Posmatrano u celini, strateški i regulatorni značaj ESG ne ogleda se isključivo u normativnim zahtevima, već u njihovoj transformaciji u merljive i operativne bankarske prakse. Time ESG okvir prerasta u centralni element savremenog upravljanja rizicima i kreditne politike, sa direktnim implikacijama na stabilnost finansijskog sistema i finansiranje održivog razvoja.

### Održivi finansijski proizvodi

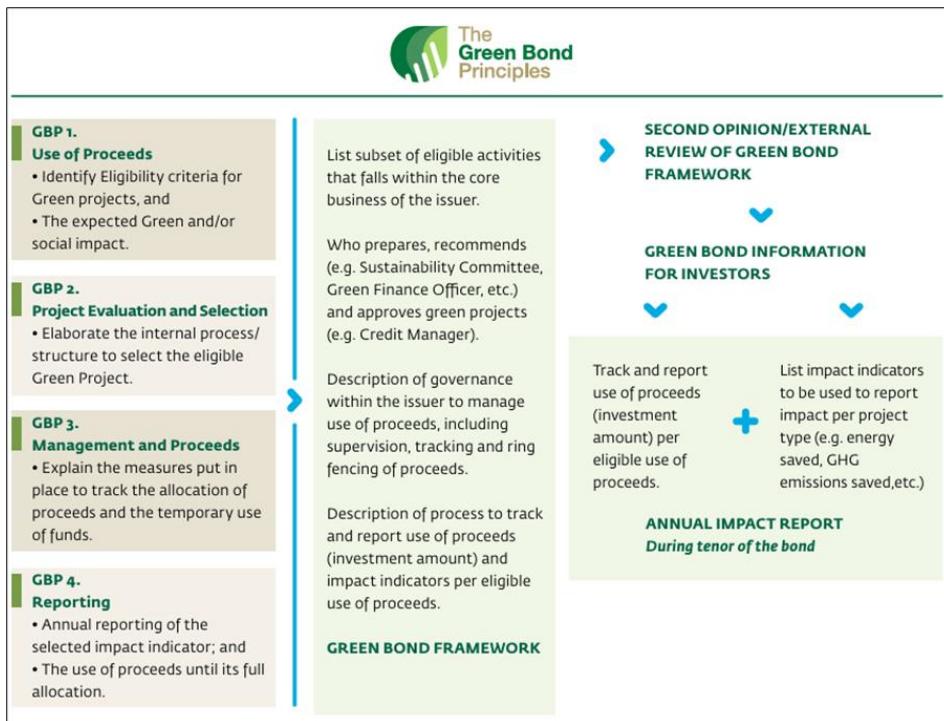
Tokom poslednje decenije održivi finansijski proizvodi doživeli su ubrzanu afirmaciju, prelazeći put od perifernog koncepta do jednog od ključnih elemenata savremenog finansijskog tržišta i bankarskog poslovanja (IFC–Amundi Joint Report, 2025). Porast značaja ekoloških, društvenih i upravljačkih faktora (ESG) u investicionom odlučivanju doveo je do razvoja različitih instrumenata koji omogućavaju usmeravanje kapitala ka aktivnostima koje doprinose održivosti. (Bučaline, et al, 2024; Ristanović, et al 2024) U okviru evropskog strateškog okvira „Zelenog dogovora“, ovi proizvodi imaju centralnu ulogu u mobilizaciji investicija potrebnih za transformaciju energetskog sistema i privrede u celini. Evropska komisija potvrđuje ovu ulogu ističući da održivi finansijski proizvodi omogućavaju

investitorima preusmeravanje kapitala ka održivim tehnologijama i poslovnim modelima, čime doprinose ostvarivanju klimatskih i ekoloških ciljeva Evropske unije (European Commission, 2021). Time održivi finansijski proizvodi postaju ključni instrument putem kojeg banke aktivno učestvuju u sprovođenju zelene tranzicije, čime se potvrđuje hipoteza H3.

Zelene finansije obuhvataju širok spektar instrumenata, uključujući zelene obveznice, zelene kredite, zelene hipoteke i srodne proizvode, čiji je zajednički cilj finansiranje aktivnosti koje doprinose zaštiti životne sredine i smanjenju emisija gasova sa efektom staklene baštne. Regulatorni okviri koji uređuju zelene finansijske instrumente razlikuju se po detaljnosti i strukturi, uključujući *Green Bond Principles* (GBP) Međunarodnog udruženja kapitalnog tržišta (ICMA) i *Green Finance Catalogue* Narodne Republike Kine, koji predstavljaju dominantne standarde u globalnoj praksi (European Commission, Platform on Sustainable Finance, 2021). Uprkos napretku, brzi rast tržišta bez jedinstvenih međunarodnih standarda doprineo je pojavi fenomena greenwashinga, koji označava preuveličavanje ili pogrešno prikazivanje ekoloških karakteristika finansijskih proizvoda. Nasuprot tome, koncept održivih finansija (sustainable finance) obuhvata širi spektar instrumenata i uključuje ekološke, društvene i upravljačke aspekte, pri čemu se analiziraju ne samo pozitivni uticaji, već i potencijalni negativni efekti investicija na ekosisteme i društvo (European Commission, Platform on Sustainable Finance, 2021).

Centralnu ulogu među održivim finansijskim instrumentima imaju zelene obveznice (Green Bonds). One predstavljaju hartije od vrednosti čiji se prikupljeni kapital koristi isključivo za projekte sa pozitivnim ekološkim efektima, kao što su obnovljivi izvori energije, energetska efikasnost, održivi transport i infrastruktura otporna na klimatske promene. Prema *IFC Green Bond Handbook* (2022), izdavanje zelene obveznice istovremeno predstavlja finansijski instrument i ključni signal posvećenosti banke sopstvenoj održivoj transformaciji. Zelene obveznice mogu se emitovati u više strukturnih formata, uključujući *Green Revenue Bonds*, *Green Project Bonds* i *Green Securitised Bonds*, ali najrasprostranjeniji oblik ostaje *Green Use of Proceeds Bond*, koji ICMA definiše kao standardni instrument zasnovan na regresnom pravu, usklađen sa GBP. Proces izdavanja zelene obveznice obuhvata faze usklađivanja sa principima GBP, identifikaciju kvalifikovanih projekata, eksternu verifikaciju i naknadno izveštavanje, što je prikazano na slici 3. Kroz mehanizam namenskog korišćenja sredstava i obavezu transparentnog izveštavanja, zelene obveznice predstavljaju konkretni kanal putem kojeg banke operacionalizuju ESG ciljeve u praksi, čime se dodatno potvrđuje hipoteza H3.

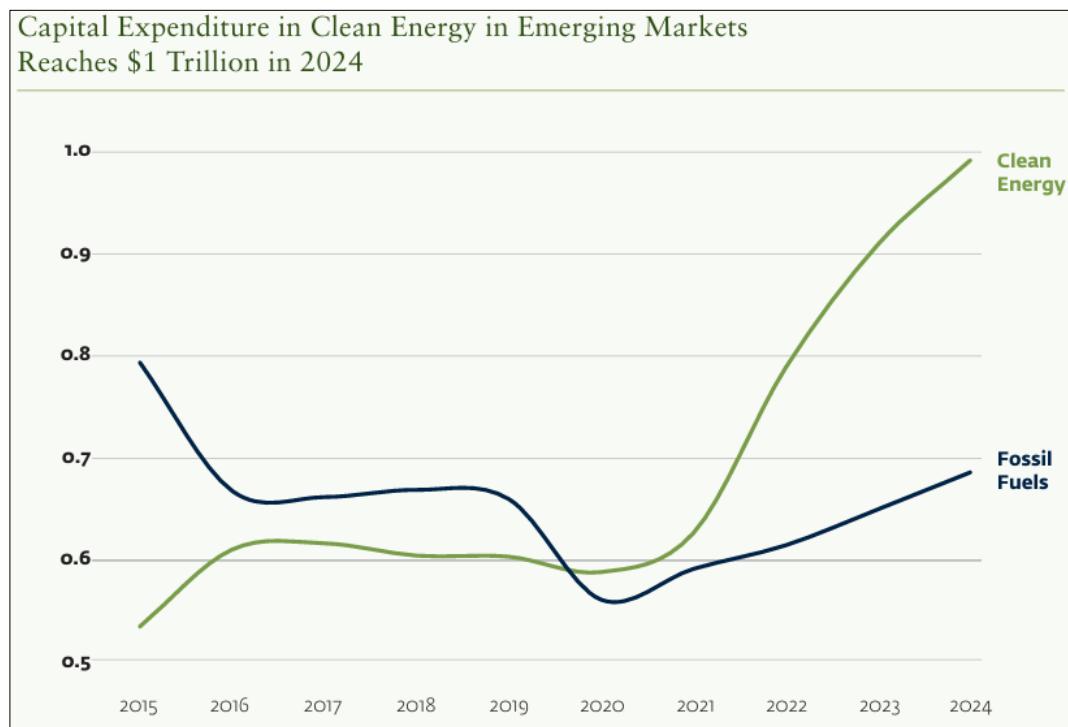
Slika 3: Smernice zelenih obaveznica



Izvor: IFC (2022): Green Bond Handbook, str. 6. <https://www.ifc.org/content/dam/ifc/doc/mgrt/202203-ifc-green-bond-handbook.pdf>

Od emitovanja prvih zelenih obveznica pre više od deset godina, tržište se značajno diversifikovalo pojavom socijalnih obveznica (Social Bonds), obveznica održivosti (Sustainability Bonds) i obveznica povezanih sa održivošću (Sustainability-linked Bonds). Zajedno one formiraju kategoriju GSSS instrumenata, koja je prema IFC–Amundi Joint Report (2025) od 2012. godine dostigla kumulativni globalni obim emisija od 5,5 biliona američkih dolara. Nagli rast potražnje za finansiranjem energetske tranzicije — uključujući obnovljive izvore energije, elektroenergetske mreže, skladištenje energije i tehnologije sa niskim emisijama — predstavlja ključni pokretač širenja GSSS tržišta. Međunarodna agencija za energiju (IEA, 2024) navodi da su ulaganja u čistu energiju od 2020. godine premašila ukupna ulaganja u fosilna goriva, što ilustruje strateški značaj ovih instrumenata za globalne procese dekarbonizacije.

Slika 4. Kapitalni izdaci za čistu energiju na tržištima u razvoju dostižu 1 bilion USD u 2024.



Izvor: IFC-Amundi Joint Report (2025), Emerging Market Green Bonds, str.9.  
<https://www.ifc.org/content/dam/ifc/doc/2025/emerging-market-green-bonds-2024.pdf>

Posmatrano u celini, održivi finansijski proizvodi predstavljaju tačku u kojoj se regulatorni zahtevi, tržišna potražnja i strateški ciljevi banaka prepliću u operativno primenljive instrumente. Njihov razvoj ne samo da omogućava efikasnije finansiranje zelene tranzicije, već i doprinosi transformaciji poslovnih modela banaka ka dugoročno održivom i otpornom bankarstvu.

### Zaključak

Sistematska integracija ESG kriterijuma u poslovanje banaka danas predstavlja jedan od ključnih pokretača transformacije ka održivom finansijskom sistemu. Empirijska istraživanja i metastudije dosledno potvrđuju da portfelji zasnovani na ESG parametrima ostvaruju prinose koji su najmanje jednaki, a često i superiorni u odnosu na tradicionalne investicione strategije, pri čemu se pozitivan efekat održivosti na finansijske performanse zadržava dugoročno (Friede, Busch & Bassan, 2015). Time se održiva ulaganja ne definišu samo kao etički prihvatljiva, već i kao ekonomski racionalna.

Koncept „Return on Sustainability“ pokazuje da se vrednost održivosti u bankarskom sektoru manifestuje na više nivoa: kroz finansijske prinose, jačanje otpornosti poslovnog modela, smanjenje rizika i stvaranje šireg društvenog i ekološkog doprinosa. Uključivanje ESG rizika u okvire upravljanja rizicima omogućava bankama da pravovremeno identifikuju klimatske, regulatorne i reputacione rizike, čime se smanjuje volatilnost i povećava stabilnost prihoda (NYU Stern, 2022). Paralelno, rastući zahtevi investitora za transparentnošću i verodostojnošću održivih finansijskih proizvoda dodatno podstiču banke da prilagode svoje strategije, čime se povećava njihova tržišna relevantnost i reputaciona vrednost.

Dugoročne razvojne perspektive održivih finansijskih obaveza se na regulatorne reforme Evropske unije, pre svega EU taksonomiju i SFDR, koje usmeravaju tokove kapitala ka ekonomskim i ekološkim održivim aktivnostima. Banke koje proaktivno integrišu ove standarde i razvijaju održive kreditne i investicione proizvode otvaraju pristup brzorastućim tržištima, uključujući projekte u oblasti obnovljivih izvora energije, zelene infrastrukture i održive mobilnosti. Time održivost prerasta iz regulatorne obaveze u strateški izvor konkurenčne prednosti.

Rezultati sprovedene kvalitativne analize potvrđuju postavljene hipoteze rada. Integracija ESG kriterijuma u regulatorni i nadzorni okvir Evropske unije dovodi do suštinskih promena u upravljanju kreditnim rizicima u bankama, čime je potvrđena hipoteza H1. Dalje, analiza EU taksonomije i SFDR ukazuje na njihov značajan doprinos povećanju transparentnosti i efikasnijoj alokaciji kapitala ka održivim ekonomskim aktivnostima, čime je potvrđena hipoteza H2. Konačno, razvoj održivih finansijskih instrumenata, poput zelenih obveznica i ESG-vezanih kredita, pokazuje da banke kroz ove proizvode aktivno učestvuju u sprovođenju zelene tranzicije, čime je potvrđena hipoteza H3.

U celini, prelazak na održivo bankarstvo više nije pitanje moralnog izbora, već ekonomske racionalnosti i dugoročne otpornosti. Banke koje uspešno povežu regulatorne zahteve, ESG instrumente i tržišne prilike postaju ključni akteri zelene tranzicije, obezbeđujući stabilnost finansijskog sistema i doprinoseći ostvarivanju ciljeva klimatske neutralnosti.

Originalni naučni doprinos ovog rada ogleda se u sistematizaciji regulatornih zahteva Evropske unije i njihovom povezivanju sa operativnim instrumentima bankarskog upravljanja rizicima i kreditne politike. Predloženi analitički pristup omogućava razumevanje načina na koji se ESG okvir transformiše iz normativnog u primenljivi mehanizam bankarskog poslovanja, čime se pruža teorijska osnova za buduća empirijska istraživanja u oblasti održivih finansijskih obaveza.

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# **FINANCING THE GREEN TRANSITION: THE ROLE OF BANKS IN IMPLEMENTING ESG STANDARDS AND MANAGING SUSTAINABILITY RISKS**

Mladen Savić, Toma Marjanović

## ***Summary***

*The banking sector plays a key role in mobilizing capital necessary for implementing the green transition and achieving sustainable development goals. The integration of environmental, social, and governance (ESG) criteria into banking processes represents a central mechanism for directing financial flows toward sustainable economic activities. The European Union has established a regulatory framework encompassing the EU Taxonomy, the Sustainable Finance Disclosure Regulation (SFDR), and the guidelines of the European Banking Authority (EBA), with the aim of enhancing transparency and improving the management of sustainability risks. The objective of this paper is to analytically examine the role of banks in implementing ESG standards and managing sustainability risks. The study is based on a qualitative analysis of regulatory documents and relevant academic literature. The results indicate that the integration of ESG criteria leads to changes in credit risk management and enables banks to actively contribute to the green transition through sustainable financial products.*

**Keywords:** sustainable finance; ESG; climate risks; banking sector; green bonds; green loans.

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## THE IMPACT OF PUBLIC EXPENDITURE AND PUBLIC DEBT ON ECONOMIC GROWTH DECLINE

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### *Abstract*

*This study analyzes the impact of public expenditure on economic growth in Southeast European countries, using data for Serbia, Bosnia and Herzegovina, Croatia, Montenegro, North Macedonia, Romania, Bulgaria, Albania, and Greece for the period from 2005 to 2021. The empirical analysis was conducted using Prais-Winsten regression with panel-corrected standard errors (PCSE) to correct for heteroskedasticity, autocorrelation, and cross-sectional dependence. The results show that an increase in public expenditure positively affects economic growth, while a high level of public debt negatively impacts growth. However, the interaction effect between public expenditure and high debt is not statistically significant, suggesting that public expenditure in countries with high debt does not have a pronounced negative effect on economic growth. These findings highlight the need for more careful consideration of fiscal policies in high-debt countries, particularly in the context of military expenditure.*

**Keywords:** economic growth, public expenditure, public debt, southeast Europe.

**JEL:** F50, H56, H63

### **Introduction**

The issue of public expenditure, viewed through military spending and its impact on economic growth, has become increasingly significant in contemporary economic analyses, particularly in countries with high public debt (Badmus and Okunola, 2017). The role of the state budget in the context of military spending presents a

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complex dilemma between preserving national security and maintaining economic stability (Kalaš and Milenković, 2021).

Given that public debt represents a burden on state finances, increasing military spending in countries with high debt levels can create additional fiscal pressure and slow down economic growth (Dunne, Nikolaïdou, & Smith, 2002). In Southeast Europe, a region that has undergone intense political and economic transitions, military spending plays a key role in national policies, especially in the context of security challenges and international relations (Šare, 2024). Countries such as Serbia, Bosnia and Herzegovina, Croatia, Montenegro, North Macedonia, Romania, Bulgaria, Albania, and Greece face specific fiscal challenges, where high levels of public debt impose constraints on economic performance. These countries, although at different stages of economic transition, commonly grapple with the issue of how to balance military spending with the need for sustainable economic growth. These transitions have been accompanied by rising public debt and shifting fiscal policies, in which military spending has taken an important place.

Various factors, such as regional security challenges, NATO integration, and historical and political circumstances, have contributed to military budgets in these countries remaining a priority, even when economic conditions do not allow for significant increases in government expenditures (Løvereide, 2020). Previous research often highlights the dual role of military spending. Theoretical frameworks, such as Keynesian approaches to military spending, suggest that in the short term, military expenditure can boost aggregate demand and contribute to growth (Ceyhan & Kostekci, 2021).

On the other hand, approaches emphasizing the negative long-term consequences of high debt (Khan et al., 2020; Trifunović et al., 2023) point out that increasing military spending without corresponding revenue inflows can lead to fiscal imbalances (Durucan & Yeşil, 2022) and reduced investment in productive sectors (Aydin, 2021; Neševski & Bojičić, 2024; Penjišević, et al 2024). In this context, rising debt may cause increased interest rates, inflation (Friedman, 1970; Hartley, 2007), and reduced economic activity (Na & Bo, 2013; Barile et al., 2023; Trifunović, et al, 2024), particularly in countries with less developed economies (Goković, et al., 2023). Advocates of this theory also argue that large investments in military spending reduce the capital available for economically more productive opportunities (Kentor & Kick, 2008).

This study analyzes how military spending in high-debt countries affects economic growth in Southeast Europe during the period from 2005 to 2021, taking into account the region's specific economic characteristics (Korkomaz, 2015). The empirical analysis aims to provide insight into whether military spending in these countries stimulates or slows economic growth, with a special focus on the interaction between military spending and the level of public debt. Political stability also plays an

important role in determining the funds allocated for defense in these countries (Elbargathi & Al-Assaf, 2023).

The question of whether increasing military spending contributes to fiscal instability and slows economic growth in high-debt countries poses a significant challenge for policymakers in the region. Understanding this relationship is crucial not only for shaping fiscal policy but also for the long-term prospects of sustainable development and stability in Southeast Europe. Using advanced econometric techniques such as Prais-Winsten regressions with panel-corrected standard errors (PCSE), this study will provide empirical insight into the relationship between military spending and growth, with a particular focus on public debt as a moderating factor.

### **Methodological Framework of the Research**

This study investigates the impact of public spending, observed through military expenditures, on economic growth in Southeast European countries, which will be conducted by testing the following hypothesis:

H0: An increase in public spending, observed through military expenditures in Southeast European countries with high public debt, contributes to a reduction in economic growth.

To test this hypothesis, panel data covering the period from 2005 to 2021 were used for nine Southeast European countries: Serbia, Bosnia and Herzegovina, Croatia, Montenegro, North Macedonia, Romania, Bulgaria, Albania, and Greece.

The sample selection was made by choosing countries that share a similar level of economic-political development and geographical location. These countries share historical, political, and economic characteristics, making Southeast Europe a distinct region. All have undergone various forms of political and economic transitions, from wars to the process of European Union integration, which has significantly influenced their fiscal policies, including the level of public debt and military spending.

The period from 2005 to 2021 was chosen due to the stabilization of political and economic trends in the region following the turbulent 1990s. This period allows for a detailed examination of how fiscal and military policies have evolved in the post-conflict era and during the process of European integration.

In the data collection process, a desk research method was employed, drawing from two secondary data sources: the annual report of the World Bank and the Stockholm International Peace Research Institute (SIPRI). The research was conducted using econometric methodology within the scope of regression panel models, utilizing the STATA software package. Four variables were used in the empirical analysis:

Table 1. Variables used in the regression model

No.	Variable	Opis varijable
1.	GDPpc	GDP per capita, PPP (current international \$)
2.	POLSTAB	Political Stability and Absence of Violence/Terrorism: Percentile Rank, Upper Bound of 90% Confidence Interval
3.	TROD	Military Expenditure (current USD)
4.	JDUG	Public Debt (percentage of GDP)

Source: Authors

The variables listed in Table 1 will be used in the regression model where the dependent variable is GDPpc, while the independent variables are POLSTAB, TROD, and JDUG:

$$GDPpc_i = \beta_0 + \beta_1 TROD_i + \beta_2 JDUG_i + \beta_3 POLSTAB_i + u_i$$

The specified model will serve as the basis for applying econometric methods of panel data analysis to identify the effects of military spending on economic growth in the context of high public debt. Panel data is suitable for this type of analysis as it allows for the consideration of heterogeneities among countries, as well as changes over time (Marković & Nojkočić, 2012). The advantages of panel analysis include the ability to capture both time series and cross-sectional variability, thereby increasing the robustness and reliability of the results.

## Data Analysis and Results

The data analysis revealed that the dataset is unbalanced, after which descriptive statistics were conducted for the variables used:

Table 2. Descriptive statistics of the variables used

Variable	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
GDPpc	17.51073	7.109507	5.865291	36.27732	0.597963	2.470013
TROD	1483.946	2221.607	56.89143	10641.35	2.187759	7.325514
JDUG	58.87707	42.13474	11.94916	212.3881	1.979966	6.557544
POLSTAB	61.60192	14.66176	25.72816	94.78673	0.119492	2.335467

Source: Authors

These data provide insights into the central tendency, variability, skewness, and kurtosis of the distributions for each variable.

The mean value of GDP per capita growth is 17.51, with a standard deviation of 7.11, indicating significant variability among the countries during the analysis period. The minimum recorded value is 5.87, while the maximum is 36.28, suggesting that some countries experienced substantial growth, while others performed less favorably. The skewness of the distribution is 0.60, indicating a slight positive skew, where most countries have values below the average, but a few have significantly higher growth.

The kurtosis of 2.47 suggests that the GDPpc distribution is close to normal, with slightly fewer extreme values.

The average military expenditure as a percentage of GDP for the analyzed countries is 1483.95, with a very high standard deviation of 2221.61, indicating significant variability among countries in terms of military budget allocations. The minimum value is 56.89, while the maximum reaches 10,641.35, showing that some countries spend exceptionally large amounts on the military compared to others. The distribution's skewness is 2.19, indicating a high positive skew, where most countries spend below the average, but a few have significantly higher military expenditures. The kurtosis of 7.33 indicates the presence of extreme values, characteristic of one or a few countries allocating substantial resources to defense.

The mean public debt as a percentage of GDP is 58.88, with a standard deviation of 42.13, indicating considerable variability among the countries. The lowest recorded debt is 11.95, while the maximum reaches 212.39% of GDP, highlighting the serious indebtedness of certain countries. The skewness of the distribution is positive at 1.98, suggesting that most countries have debt levels below the average, but a few have exceptionally high debt levels. The kurtosis of 6.56 also points to the presence of extreme values, reflecting the high indebtedness of certain countries.

The average political stability in the analyzed countries is 61.60, with a standard deviation of 14.66, indicating a relatively stable political situation, though with variability among countries. The lowest recorded value is 25.73, while the maximum is 94.79, showing significant differences in political stability. The skewness of 0.12 indicates an almost symmetrical distribution, where values are evenly distributed around the mean. The kurtosis of 2.34 suggests that the distribution of political stability does not deviate significantly from normal.

Descriptive statistics clearly show significant variability among the countries regarding GDP growth, military spending, public debt, and political stability. It is particularly noticeable that military spending and public debt have high values of skewness and kurtosis, suggesting that a few countries have extremely high military expenditures and debt levels. These data provide important insights for further analyses, especially in the context of econometric models that will examine the effects of military spending on economic growth in Southeast European countries.

The next step in the analysis was to test the stationarity of the time series variables using the Fisher test (Dickey-Fuller tests), which is a first-generation unit root test. In this test, the null hypothesis is  $H_0$  – all panels contain a unit root, while the alternative is  $H_a$  – at least one panel is stationary.

Table 3. Results of the stationarity test for variables

Variable	Inverse chi-sq. (P)	P-val.	Inverse normal (Z)	P-val.	Inverse logit t (L*)	P-val.	Modif.in v. chi-squared (Pm)	P-val.	Stac.
TROD	16.017	0.591	0.460	0.677	0.523	0.698	-0.331	0.630	NO
POLSTAB	20.674	0.296	-1.091	0.138	-1.014	0.158	0.446	0.328	NO
GDPpc	2.541	1.000	5.109	1.000	5.523	1.000	-2.577	0.995	NO
JDUG	5.011	0.999	2.514	0.994	2.408	0.990	-2.165	0.985	NO

Source: Authors

Based on the results presented in Table 3, we can conclude that none of the variables are stationary, and it is necessary to differentiate the variables. After the differentiation of the variables, the stationarity check was performed again, confirming that all variables are now stationary.

Table 4. Results of the stationarity test for differentiated variables

Variable	Inverse chi-sq. (P)	P-val.	Inverse normal (Z)	P-val.	Inverse logit t (L*)	P-val.	Modif.in v. chi-squared (Pm)	P-val.	Stac.
TROD	82.292	0.000	-6.049	0.000	-7.417	0.000	10.715	0.000	YES
POLSTAB	121.42	0.000	-8.887	0.000	-11.262	0.000	17.237	0.000	YES
GDPpc	137.69	0.000	-9.638	0.000	-12.776	0.000	19.948	0.000	YES
JDUG	98.014	0.000	-7.506	0.000	-9.064	0.000	13.336	0.000	YES

Source: Authors

After the variables were brought to the same level of stationarity, a multicollinearity check was conducted on the panel data.

**Table 6.** Results of the Multicollinearity Check

Variable	VIF	1/VIF
dPOLSTAB	1.01	0.994703
dTROD	1.06	0.939259
dJDUG	1.07	0.934651
Mean VIF	1.05	

Source: Authors

It was determined that there is no multicollinearity. Such low multicollinearity (VIF < 5) indicates that there is no significant linear dependence between the independent variables, meaning each independent variable is only weakly correlated with the other variables in the model. Furthermore, the estimated regression coefficients will be reliable, and the standard errors will not be inflated beyond what they should be.

The next step in the analysis is to choose the appropriate model between the Fixed Effects (FE) model and the Random Effects (RE) model. First, we estimated the Fixed Effects (FE) model using the command `xtreg var1..varn, fe`, after which

the obtained results were saved (estimate store fe). The same procedure was applied for the Random Effects (RE) model.

Table 6. Results of the Fixed and Random Effects Models

Variable	Fixed Effects (FE)			Random Effects (RE) model		
	Coefficient	Std. error	p-value	Coefficient	Std. error	p-value
dTROD	0.00075***	0.00014	0.000	0.00079***	0.00014	0.000
dJDUG	-0.09459***	0.00922	0.000	-0.09301***	0.00921	0.000
dPOLSTAB	0.02840***	0.01028	0.007	0.02764***	0.01032	0.007
Constant	1.01375***	0.06261	0.000	1.01063***	0.10194	0.000
R <sup>2</sup> (within)	0.5871			0.5869		
R <sup>2</sup> (between)	0.1797			0.1883		
R <sup>2</sup> (overall)	0.5427			0.5436		
Number of obs.	143			143		
Number of gro.	9			9		
F – stat. (FE)	F(3, 131) = 62.09, Prob > F = 0.000					
Wald Chi – sq				Chi2(3)=184.37, Prob > chi2 = 0.000		
R <sup>2</sup> (within)	0.5871			0.5869		
$\sigma_u$	0.35327			0.23692		
$\sigma_e$	0.70814			0.70814		
$\rho$	0.19928			0.10067		

Source: Authors

After obtaining the results for both models, the Hausman test was applied to assess which model is better for further analysis (hausman fe re), and the results are presented in the following table:

Table 7. Results of the Hausman Test

Variable	Coefficient FE(b)	Coefficient RE (B)	Difference (b-B)	Std.error
dTROD	0.0007544	0.0007867	-0.0000323	-
dJDUG	-0.0945919	-0.093009	-0.0015828	0.0004303
dPOLSTAB	0.0283987	0.0276359	0.0007628	-
chi2(5)	2.60			
Prob > chi2	0.4577			

Source: Authors

The null hypothesis of the Hausman test states that there is no correlation between the independent variables and the random effects (RE model), while the alternative hypothesis suggests that there is a correlation between the independent variables and the random effects (FE model). Based on the test results, with a Prob > chi2 of 0.4577 (< 0.05), we reject the null hypothesis and accept the alternative, indicating that the fixed effects model (FE) is more appropriate in our case.

After selecting the model, we proceeded with testing it for the presence of heteroskedasticity, autocorrelation, and cross-sectional dependence among entities in the panel data. The first test was conducted to check for autocorrelation using the

Wooldridge test, one of the most commonly used tests for detecting first-order autocorrelation in panel regressions.

Table 8. Results of the Autocorrelation Test

Test	Statistic	Value	p - value
Wooldridge Test for Autocorrelation	F(1, 8)	0.763	0.4078

Source: Authors

Given that the null hypothesis of this test states there is no autocorrelation, and the alternative hypothesis states there is first-order autocorrelation, we reject the null hypothesis and accept the alternative hypothesis of the presence of autocorrelation in our model, as the p-value result is 0.4078 ( $< 0.05$ ).

The next test performed was the Pesaran test (xtcsd, pasaran abs), which is used to test for cross-sectional dependence, i.e., whether changes in one entity affect changes in other entities.

Table 9. Results of the Cross-Sectional Dependence Test

Test	Test value	p - value	Average absolute value
Pesaran test	5.852	0.0000	0.323

Source: Authors

The null hypothesis of this test states that there is no correlation between the residual errors across different units in the panel, while the alternative hypothesis suggests that there is correlation between the residual errors across different panel units. Given the test result with a p-value of 0.000 ( $< 0.05$ ), we accept the alternative hypothesis indicating the presence of cross-sectional dependence.

The final test conducted was the heteroskedasticity test, which was performed using the Modified Wald test (xttest3). The results are presented in the following table.

Table 10. Results of the Heteroskedasticity Test

Test	Test Statistic (chi <sup>2</sup> )	P-value (Prob > chi <sup>2</sup> )
Modified Wald test for heteroskedasticity	246.84	0.0000

Source: Authors

The null hypothesis of this test states that the variance is constant (no heteroskedasticity), while the alternative hypothesis states that the variance is not constant (heteroskedasticity is present). Given the p-value result of 0.0000 ( $< 0.05$ ), we reject the null hypothesis and accept the alternative hypothesis, confirming the presence of heteroskedasticity.

Since our model exhibits autocorrelation, heteroskedasticity, and cross-sectional dependence, we will use the Prais-Winsten method (xtpcse dGDPpc dTROD dJDUG dPOLSTAB, correlation(psar1)) for the final interpretation of the results, as it

corrects for the previously mentioned issues and is also reliable when working with unbalanced panel data.

Table 11. Results of the Prais-Winsten Regression with PCSE

Variable	Prais-Winsten Regression with PCSE (Panel-Corrected Standard Errors)		
	Coefficient	Std. error	p-value
dTROD	0.000697***	0.000154	0.0000
dJDUG	-0.098877***	0.011426	0.0000
dPOLSTAB	0.024026**	0.010693	0.0250
Constant	1.072044***	0.096263	0.0000
R <sup>2</sup> (overall)		0.6153	
Number of obs.		143	
Number of gro.		9	
Wald Chi - sq	Chi2(5)=121.52, Prob > Chi2 ) 0.0000		

Source: Authors

To test the given hypothesis of this research, "An increase in military spending in Southeast European countries with high public debt contributes to a reduction in economic growth," using the final model of the Prais-Winsten regression with PCSE, we will add an interaction between defense spending (dTROD) and a dummy variable indicating high debt. This will allow us to assess whether military spending has a different effect on economic growth in countries with high debt compared to countries with low debt.

After creating the dummy variable (gen visokJDUG=0), we classified all countries in years where their debt exceeded 60% (which is the standard according to the Maastricht criterion for EU countries) as high-debt countries (replace visokDUG=1 if dJDUG>60). Once we identified all the countries and years where debt exceeded 60%, we added the interaction effect between military spending (dTROD) and high debt (visokDUG) to our model.

$$dGDPpc_{it} = \beta_0 + \beta_1 dTROD_{it} + \beta_2 visokDUG_i + \beta_3 (dTROD_{it} \times visokDUG_{it}) + \beta_4 dJDUG_{it} + \beta_5 dPOLSTAB_{it} + u_i + \varepsilon_{it}$$

Where:

- $dGDPpc_{it}$  the dependent variable representing the change in GDP per capita in the country  $i$  during year  $t$ .
- $dTROD_{it}$  the change in military spending as a percentage of GDP in the country  $i$  during year  $t$ .
- $visokDUG_i$  a dummy variable indicating countries with high public debt (above 60% of GDP).
- $dTROD_{it} \times visokDUG_{it}$  an interaction term that measures the effect of military spending in countries with high debt.

- $dJDUG_{it}$  the change in the level of public debt in the country  $i$  during year  $t$ .
- $dPOLSTAB_{it}$  the change in political stability in the country  $i$  during year  $t$ .
- $u_i$  are the time-invariant characteristics specific to each country (fixed effects).
  - $\varepsilon_{it}$  the stochastic error specific to each country and time period.

Interpretation coefficients:

- $\beta_1$  : The effect of military spending on GDP in countries with low debt.
- $\beta_2$  : The effect of high public debt on GDP.
- $\beta_3$  : The effect of the interaction between military spending and high public debt on GDP. This term is crucial for testing the hypothesis that military spending in high-debt countries negatively impacts economic growth.
- $\beta_4$  : The effect of changes in public debt on economic growth.
- $\beta_5$  : The effect of political stability on economic growth.

When we applied the Prais-Winsten regression with PCSE (xtpcse dGDPpc c.dTROD##i.visokDUG dJDUG dPOLSTAB, correlation(psar1)), we obtained the following result:

Table 12. Results of the Prais-Winsten Regression with PCSE, including the interaction effect

Variable	Prais-Winsten Regression with PCSE (Panel-Corrected Standard Errors)		
	Coefficient	Std. error	p-value
<i>dTROD</i>	0.00110***	0.000345	0.0001
<i>I. visokDUG</i>	0.216015	0.147245	0.142
<i>visokDUG#c.dTROD##I</i>	-0.000486	0.000400	0.225
<i>dJDUG</i>	-0.10032***	0.011353	0.0000
<i>dPOLSTAB</i>	0.02393**	0.01042	0.022
Constant	0.976633***	0.108805	0.0000
R <sup>2</sup> (overall)		0.6153	
Number of obs.		143	
Number of gro.		9	
Wald Chi - sq	Chi2(5)=121.52, Prob > Chi2 ) 0.0000		

Source: Authors

The coefficient for defense spending is positive and statistically significant at the 1% level ( $p < 0.01$ ). This means that, on average, an increase in military spending by 1 unit (as a percentage of GDP) has a positive impact on the GDP per capita growth rate in the analyzed Southeast European countries. This finding suggests that military spending, by itself, can have a stimulative effect on economic growth.

The coefficient for high debt (visokDUG) is not statistically significant ( $p > 0.1$ ), meaning that a high level of public debt does not show a significant direct effect on economic growth. In this model, countries with high debt do not significantly differ in terms of economic growth compared to countries with lower debt levels.

Although the interaction coefficient between military spending and high debt is negative, which would suggest that military spending in high-debt countries reduces economic growth, this coefficient is not statistically significant ( $p > 0.1$ ). Therefore, there is not enough evidence to suggest that military spending in high-debt countries significantly negatively affects economic growth. The coefficient for dJDUG is negative and highly statistically significant ( $p < 0.01$ ). This means that an increase in public debt negatively affects economic growth. Every 1% increase in debt as a percentage of GDP reduces the GDP per capita growth rate. This aligns with theoretical expectations that rising public debt burdens fiscal stability and slows down the economy. The coefficient for dPOLSTAB is positive and statistically significant at the 5% level ( $p < 0.05$ ), indicating that greater political stability positively impacts economic growth. An increase in the political stability index by 1 unit leads to an increase in GDP per capita growth.

## Discussion

The research results suggest that military spending in Southeast European countries positively impacts economic growth in general, while an increase in public debt significantly negatively affects GDP growth. These findings align with some of the literature indicating that military spending can have positive effects on economic growth, particularly in the short term, through increased aggregate demand and stimulation of certain economic sectors (Dunne et al., 2002). The literature often emphasizes that military spending can have a stimulative effect in economies facing recession or slow growth, which is partially reflected in the results of this research.

However, the finding that military spending does not have a significantly negative effect in countries with high debt differs from some of the literature, which indicates that increasing military spending in countries with fiscal constraints can further exacerbate economic growth. Studies such as those by Knight, Loayza, and Villanueva (1996) suggest that high military spending combined with high public debt can divert resources away from productive sectors, negatively affecting long-term growth. In this research, the interaction between military spending and high debt is not statistically significant, indicating that military spending does not contribute to significant growth slowdowns in the context of high public debt.

Furthermore, the finding that increasing public debt significantly negatively affects economic growth is entirely consistent with numerous studies that show high public debt reduces fiscal space and threatens growth sustainability (Reinhart and Rogoff,

2010). This result clearly shows that countries with rising debt need to carefully balance their fiscal policies, especially in the context of military spending.

The theoretical contribution of this paper lies in further clarifying the relationship between military spending and economic growth in Southeast European countries, with particular attention to the role of public debt. While there are numerous studies examining the effect of military spending on growth in a global context, there are few that focus on the specific region of Southeast Europe, characterized by high levels of public debt and specific geopolitical challenges. This paper contributes to the literature by showing that military spending does not play a negative role in high-debt economies in this region, contrary to some global findings.

Additionally, the results emphasize the importance of political stability as a factor that positively influences economic growth. The literature often highlights the connection between political stability and economic progress, but few studies have included political stability as a key variable in the analysis of military spending and growth. This paper shows that political stability can mitigate the negative effects of fiscal burdens and contribute to sustainable growth, opening new space for discussions on long-term economic stability strategies in the region.

The practical implications of this research are significant for policymakers in Southeast European countries. First, the results suggest that military spending, in itself, does not necessarily slow economic growth, even in countries with high debt. This could be important for countries balancing between fiscal constraints and geopolitical demands for higher defense spending, such as Greece, Romania, and Serbia. Policymakers in these countries may consider military spending as an instrument for short-term economic stimulation but must be cautious not to increase public debt to levels that could jeopardize long-term growth.

Second, the negative impact of public debt on growth highlights the need for stricter fiscal discipline in high-debt countries. Policymakers should align their fiscal strategies with sustainable development goals, including rationalizing military expenditures and redirecting resources toward productive investments with greater potential for stimulating long-term growth.

Finally, the finding on the significance of political stability provides further insight into how a stable political environment can support economic growth. For Southeast European countries, which often face political instability, ensuring political stability can be a key strategy for achieving sustainable economic progress. Policymakers should work on improving institutional efficiency and reducing political tensions to support long-term growth.

## **Conclusion**

This research provides significant insights into the impact of public spending, observed through military expenditures, and public debt on economic growth in

Southeast European countries. The findings show that military spending has a positive and statistically significant effect on economic growth, suggesting that military allocations can stimulate the economy, particularly in the short term. This is consistent with the theory that increased military spending can boost aggregate demand, which may benefit economic growth under certain conditions. On the other hand, the results clearly indicate that an increase in public debt significantly negatively affects economic growth, confirming the importance of fiscal discipline in maintaining economic stability.

One of the key aspects of this study was the interaction between military spending and high public debt. Although the coefficient for this interaction was negative, which could suggest that military spending in high-debt countries reduces economic growth, the results were not statistically significant. This indicates that the increase in military spending in high-debt countries did not show a significant negative effect on growth during the analyzed period. This finding contrasts with some previous studies suggesting that military spending could further burden economies in high-debt countries.

Additionally, the research shows that political stability has a positive effect on economic growth, highlighting the importance of a stable political environment for economic progress. This result is consistent with expectations, as political stability creates a favorable environment for investment and economic development.

However, this research has certain limitations. First, the time span of the analysis covers the period from 2005 to 2021. While this is a substantial timeframe, future research could deepen the analysis by exploring longer-term trends to capture broader effects of military spending and fiscal policies. Second, the availability and quality of data on public debt, political stability, and military spending vary across countries, which may affect the precision of the results.

Future studies could include a deeper analysis of the structure of military spending to examine how different aspects of defense expenditures impact economic growth. Additionally, geopolitical factors and the foreign policy context could provide further insight into the dynamics of military spending and its impact on economic growth. Further research with a longer time horizon would allow for an examination of the long-term effects of military expenditures. Comparative studies involving other regions, such as Western Europe or the Middle East, could deepen the understanding of the specific impacts of military spending on economic growth in different geopolitical contexts.

This research emphasizes the importance of carefully balancing fiscal policy and military expenditures in Southeast European countries. While military spending may have a positive short-term effect on economic growth, rising public debt clearly slows economic progress. The practical implications of this research are significant for policymakers, who must consider the sustainability of fiscal policies in the

context of military and economic priorities. Future studies could expand on these findings and provide additional guidance for policymaking in the region.

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# UTICAJ JAVNE POTROŠNJE I JAVNOG DUGA NA SMANJENJE EKONOMSKOG RASTA

Dalibor Šare, Danko Kosorić, Dejan Tošev

## Apstrakt

*Ova studija analizira uticaj javne potrošnje na ekonomski rast u zemljama jugoistočne Evrope, koristeći podatke za Srbiju, Bosnu i Hercegovinu, Hrvatsku, Crnu Goru, Severnu Makedoniju, Rumuniju, Bugarsku, Albaniju i Grčku u periodu od 2005. do 2021. godine. Empirijska analiza sprovedena je koristeći Prais-Winsten regresiju sa panel-corrected standard errors (PCSE) kako bi se ispravila heteroskedastičnost, autokorelacija i cross-sectional dependence. Rezultati pokazuju da povećanje javne potrošnje pozitivno utiče na ekonomski rast, dok visok nivo javnog duga negativno utiče na rast. Međutim, interakcioni efekat između javne potrošnje i visokog duga nije statistički značajan, što sugerije da javna potrošnja u zemljama sa visokim dugom nema izražen negativan efekat na ekonomski rast. Ovi nalazi ukazuju na potrebu za pažljivijim razmatranjem fiskalnih politika u zemljama sa visokim dugom, posebno u kontekstu vojne potrošnje.*

**Ključne reči:** privredni rast, javna potrošnja, javni dug, jugoistočna Evropa.

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## THE IMPACT OF ARTIFICIAL INTELLIGENCE ON CONTEMPORARY BUSINESS: A SCOPING REVIEW

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Pregledni nučni rad

### Abstract

*With its rapid development, artificial intelligence (AI) has become a significant factor influencing contemporary business, with important implications across various organizational domains. By mapping the literature on the impact of AI on modern business, this article seeks to identify relevant studies and classify them according to key areas of application, including business efficiency and innovation, user experience, data analysis and decision-making, as well as issues related to ethics, security, and the risks of AI adoption. The study is based on a systematic approach to reviewing existing literature, applying established scoping review methodologies to identify and select relevant studies and research. We have highlighted certain limitations and gaps in the existing body of research, which could serve as a foundation and starting point for further investigation. Finally, the article presents a set of conclusions and proposes potential directions for future research.*

**Keywords:** artificial intelligence, contemporary business, innovation, business efficiency.

**JEL:** M15, O33, L86

### Introduction

The development of information and communication technologies has influenced all aspects of contemporary society (Stanković, Čerović, & Panić, 2023). Very often, companies that were pioneers in adopting innovative technologies over the past twenty years have experienced significant growth and business development. AI is one of the latest advances in this field and a key factor in modern business

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transformation. According to a PwC report, by 2030 AI could add up to 15.7 trillion US dollars to the global economy (PwC, 2020). However, some authors point out that for a broader application of AI, certain prerequisites must be fulfilled: Natural Language Processing (NLP) for communication in natural language; identification and storage of new knowledge; Automated Reasoning for creating answers and drawing conclusions based on stored information; and Machine Learning (ML) for adapting to new circumstances, as well as for discovering and extrapolating patterns (Russell & Norvig, 2016; Huang & Rust, 2018).

With increasing availability and technological progress (Dašić, Pavlović, & Savić, 2024; Praća et al., 2024), AI has opened numerous opportunities for automation, data analysis, and business decision-making. As a result, companies are facing a growing impact of AI on their daily operations, strategies, and competitiveness. The application of AI in business will lead to fundamental changes in the development and design of user experience (UX), as well as significant improvements in business efficiency using advanced technologies (Butenko, 2018; Ilić et al., 2022).

The main aim of this review is to map the existing literature and to analyze the impact of AI on contemporary business. In addition, the article seeks to identify the key areas where AI has the strongest impact, as well as the benefits and challenges related to its implementation. This literature review provides a broad insight into the current state of research on the application of AI in business environments and examines the implications that arise from this technology. Through the analysis of relevant studies, the article explores how AI transforms business models, improves efficiency of operations, optimizes decision-making, and creates new opportunities for innovation and growth.

This review also considers ethical, legal, and social aspects of AI in contemporary business. Issues such as data privacy, data security, algorithm transparency, and the impact on the workforce are becoming increasingly important in the context of the widespread use of AI.

The analyzed literature emphasizes that AI contributes to contemporary business by increasing efficiency, supporting better decision-making and services, and creating competitive advantage (Dash, McMurtrey, Rebman, & Kar, 2019; Mihajlović & Todorov, 2024). At the same time, it also faces challenges in relation to legal, social, ethical, economic, and regulatory aspects (Di Vaio, Palladino, Hassan, & Escobar, 2020; Krunic et al., 2023).

Through this research, the author aims to clarify the key factors that contribute to the successful application of AI in business environments, as well as to identify the challenges that must be addressed to fully realize the potential of this technology.

## **Methodological Framework and Data Sources**

The methodology applied in this article is based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses – Scoping Review extension (PRISMA-ScR) (Tricco et al., 2018; Čavlin et al., 2023; Vladisavljević et al., 2023).

The literature for this review was collected by searching the following databases: Scopus, Web of Science (WOS), EBSCO, and ScienceDirect, as well as platforms such as Google Scholar and ResearchGate. These data sources were chosen because they represent a set of the most relevant scientific results in the fields of business and management. They also enable the organization and integration of academic literature from various sources (e.g., journal articles, book chapters, etc.), which is fully consistent with the methodology used for preparing this review. Figure 1 shows the protocol followed in the selection of relevant studies and sources.

The search keywords included combinations of terms such as “artificial intelligence”, “economic”, “business”, “business management”, “corporation”, “business value”, and “business innovation”. The time frame for the search was limited to publications from 2015 until the end of June 2025, considering the dynamics of digital technology development and the rapid progress of Large Language Models (LLMs) and Natural Language Processing (NLP) tools.

To ensure the relevance of the selected studies, authors established inclusion and exclusion criteria. Studies included in the review had to deal with the analysis of the impact of AI on different aspects of contemporary business and provide relevant insights into the real-world application of AI in business environments. Excluded were studies that were not available in full text, those outside the scope of this review, articles published before 2015, and studies not available in English, Serbian, or languages related to Serbian.

Following the initial phase of the search, the analysis focused on publication year, abstracts, applied research methodology, key findings, and conclusions. The selected studies were carefully reviewed, and relevant data were extracted to present the impact of AI on contemporary business. The extracted data covered the domains of AI applications, the types of algorithms and technologies used in business processes, and the effects achieved on business performance.

Based on the data collected from different studies, a synthesis of results was conducted to identify key trends and areas where AI has the most significant influence on modern business. Through this analysis, the study examined how AI transforms business models, optimizes processes and decision-making, and creates new opportunities for innovation and growth (Machucho & Ortiz, 2025; Bučalina Matić, et al., 2024; Majstorović & Obrić 2023). Bickley et al. (2022) emphasize that the application of AI in economics has often been discussed in the context of economic history and methodological considerations of various economic fields,

while relatively little research has been conducted in finance, macroeconomics, and the creation of monetary and fiscal policies.

This review relies exclusively on publicly available sources. During the preparation of the scoping review, only electronically accessible publications from academic databases such as Scopus, Web of Science, EBSCO, ScienceDirect, Google Scholar, and ResearchGate were used. The last search was performed on June 23, 2025.

During the search for relevant literature in the domain of AI impact on contemporary business and the transformation of business models (Figura, Juracka, & Imppola, 2025), various journals in economics, finance, marketing, and digital technologies were used, such as Journal of Business Research, Journal of Strategic Innovation and Sustainability, Journal of Service Research, Journal of Data and Network Science, Journal of Risk and Financial Management, Scholedge International Journal of Business Policy & Governance, Scientometrics, Information, International Journal on Semantic Web and Information Systems, Artificial Intelligence and Social Computing, Information Systems Frontiers, published until June 23, 2025. In addition to these journals, the authors also reviewed conference proceedings from various international conferences published by that date.

In the first iteration of database searches, broad key terms were used. Since the concept of “artificial intelligence” is very general and covers a much wider spectrum than the focus of this study, it was necessary to narrow down the scope by combining specific keywords (Mihajlović et al., 2025). Therefore, the databases and platforms were searched using the following terms and their combinations:

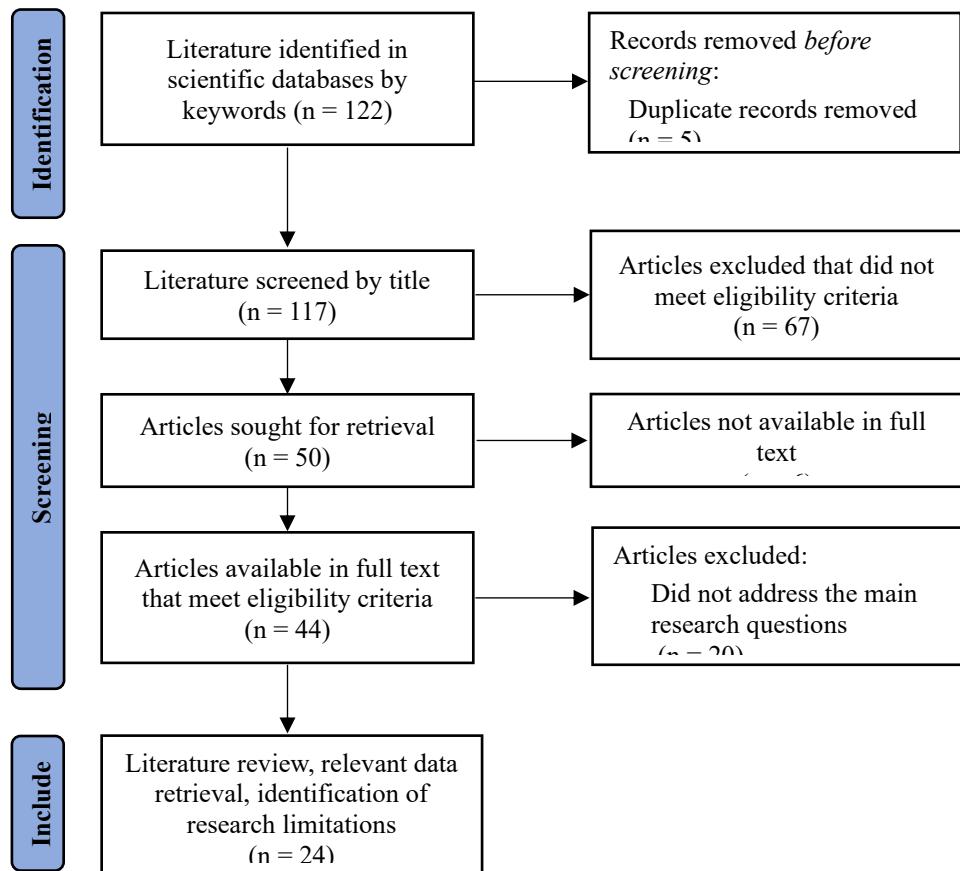
- “AI in economics”, “AI in business”, “AI in marketing”
- “AI and business transformation”, “business value”, “AI and organizational performance”
- “machine learning”, “large language model”, “natural language processing”
- “application”, “impact”, “benefits”, “influence”

Additional literature was identified using the snowball sampling method by reviewing the references of already included studies. No geographical limitations were applied in the search, although it was noted that much of the literature on AI in business originates from East Asia (Ao, 2025). Despite the global scope, the majority of selected publications were written in English. The search was limited to studies and articles published between 2015 and 2025, with results showing that the majority of relevant research has been published in the past four years, coinciding with the broader adoption of AI in society (Jorzik, Klein, Kanbach, & Kraus, 2024).

## Selection Strategy and Source Validation

Using the PRISMA-SCR framework, five levels of selection were applied to the identified studies and articles on the given topic. At the first level, the selection focused on the title of the article. Once this criterion was met, the process continued to the second level, which involved the review of keywords.

Figure 1. PRISMA-SCR FLOW Diagram for literature selection



Source: Authors based on Page et al. 2020, p. 5

At the third level, the author evaluated the abstracts of the articles that had satisfied the previous criteria. If the article met the requirements at this stage, a full-text review was conducted at the fourth level. Finally, at the fifth level, the conclusions and limitations of the reviewed studies were analyzed.

This review included a total of 24 articles that satisfied all requirements after applying the above criteria. The authors independently developed a matrix for mapping the selected studies. This matrix included the following key data points: names of authors, year of publication, type of article, research area, and key conclusions. Organizing the studies in this way facilitated comparison and the

synthesis of results. The articles that remained after the selection of the available literature were thoroughly analyzed and included in the developed matrix for the purpose of synthesizing the results.

We considered a broad spectrum of academic sources important in gathering the literature for this study on the impact of AI on contemporary business (Savić et al., 2025a). The reviewed literature on the impact of AI on contemporary business is considered relevant and provides valid research supported by credible data.

However, it's crucial to stress that we observed several potential limitations. Since AI is still a relatively new phenomenon in the business environment, the lack of empirical data may affect the completeness of the analysis of its impact (Perifanis & Kitsios, 2023). In addition, the rapid technological progress in the field of AI may lead to the quick obsolescence of data and information in certain studies (Savić et al., 2025b).

Given that AI is part of a complex economic and financial system, its influence may be affected by different factors such as geopolitical events, regulatory changes, technological development, and market demands (Bharadiya, 2023; Janković & Golubović, 2025). These factors are difficult to predict and may significantly shape research outcomes.

Despite these limitations, it is important to stress that the existing literature still provides valuable insights. To gain a more comprehensive understanding of this topic, future research should aim to address these limitations and include broader perspectives to create a more complete picture of the impact of AI on contemporary business (Kitsios & Kamariotou, 2021; Sira, 2022).

### **Integration of Key Findings**

The synthesis of this research followed several key steps in the preparation of the study. This included a comprehensive review of all collected sources and the recording of key findings, research methods, and identified limitations. Notes were then grouped according to relevant themes and subthemes related to the impact of AI on contemporary business. The main topics emerging from the reviewed sources were analyzed and compared to identify similarities and differences. A critical assessment of the quality of evidence in each source also considered the limitations mentioned in the reviewed studies, as well as those recognized by the author, considering the applied methodology and sample size. The final findings were synthesized to provide answers to the research questions concerning the impact of AI on contemporary business.

The main topics addressed in the articles include the application of AI in modern business and its effects on processes, performance, and innovation, with particular attention to reliability, transparency, and data availability. We also examined how AI transforms business models, optimizes decision-making, and enhances business

efficiency. In addition, the article contains the authors' predictions about the future application of AI in this context.

Relevant evidence and data on the impact of AI on contemporary business were grouped into several categories, including the use of AI in different industries, its influence on strategic decision-making, and its role in creating competitive advantages for companies.

As illustrated in the flow diagram for literature selection (Figure 1), the search initially identified 122 studies and articles. By applying the established selection process through five levels—title, keywords, abstract, relevance of the topic, and conclusions—the number of relevant studies was narrowed down to 23, which were analyzed in detail and synthesized in this review.

Special attention was given to literature that provided insights into the direct or indirect impact of AI on business processes, value creation, and ethical principles of AI application. The reputation of the authors was assessed based on citation counts, while the reputation of scientific articles was evaluated using impact factors obtained from the academic databases included in the search. Selected sources had to meet criteria of reliability and validity, considering the applied methodology, sample size, instrument validity, and other factors influencing the quality of data.

The authors carefully assessed the credibility and reliability of the selected sources to ensure that the review's objectives were achieved. The methodological approach to this critical evaluation included a systematic review of relevant studies and articles in the fields of information and digital technologies, artificial intelligence, economics, and business. To assess methodological quality and identify potential limitations, the CRAAP test (University of the West of Scotland, 2022) was used. Applying the CRAAP criteria (Currency, Relevance, Authority, Accuracy, and Purpose) ensured the relevance and reliability of the information and findings from the selected sources. This provided adequate information and a high level of reliability in addressing the objectives and purpose of the review. Nevertheless, it should be noted that certain limitations exist in the selected sources, which were transparently acknowledged with the aim of creating a comprehensive overview of the results obtained.

### **Review of Primary Sources of Evidence**

The results of the individual sources of evidence were synthesized in the table provided in Appendix 1 of this article. Based on the analysis of the available literature that met the relevance criteria, it can be concluded that AI has become a significant factor in contemporary business. Organizations that aim to ensure further development and growth must inevitably focus on the implementation of AI solutions into their business processes. On the other hand, the use of AI in company operations generates an increase in productivity, which creates conditions for

sustainable economic development and enables the formation of competitive advantages (Maslak et al., 2021).

The analysis also indicates that the field of AI application in business is still in its early stages. Although there is notable interest from both the academic community and business practice, there is a clear need for further research and deeper segmentation of studies across different business domains and processes.

The impact of AI on contemporary business is undeniably significant. Its advantages, such as the rapid and precise processing of large volumes of data, process automation, and improvements in efficiency, make it an indispensable resource for many companies.

Table 1. Synthesis of Research Results

<b>Business Strategy and Business Models:</b>	<b>User Interaction:</b>
AI revolutionizes company tactics and facilitates the development of novel business models.	AI facilitates the customization of services and products to align with user requirements.
Organizations that use AI get more flexibility and adaptability in volatile marketplaces.	Chatbots and virtual assistants enhance consumer communication and elevate satisfaction levels.
Enhanced data analysis facilitates more accurate identification of client requirements.	AI-enhanced targeted advertising enhances the efficacy of marketing campaigns.
AI-driven resource optimization enhances overall corporate efficiency.	AI enables the creation and introduction of products that satisfy market demands.
<b>Data Analysis and Decision-Making:</b>	<b>Ethics, Security, and Risks:</b>
AI facilitates more profound and intricate examination of extensive datasets.	The ethical application of AI underscores the necessity for algorithmic transparency.
Enhanced forecasting of market trends and demands substantially improves strategic planning.	Safeguarding user data privacy has emerged as a critical concern for commercial entities.
Data-driven automated decision-making facilitates prompt and informed actions.	The security dimensions of AI systems necessitate meticulous preparation and safeguarding against possible attackers.
The integration of AI with business systems enhances performance monitoring and problem identification.	The potential for job loss necessitates a prudent strategy and meticulous planning for employee transfer.

Source: Authors

Organizations that successfully implement AI into their operations have the opportunity to generate substantial innovations through new business models and

processes, thereby creating the potential to transform the global competitive landscape (Lee, Suh, Roy, & Baucus, 2019).

However, this progress also raises numerous questions and concerns. One of the main issues relates to data privacy and security. AI requires access to large datasets, which may lead to potential misuse or data breaches. Moreover, as with all new technologies, the application of AI in business has certain limitations, including insufficient awareness among decision-makers about the potential benefits of implementation, low levels of IT competencies, underdeveloped IT infrastructure, and the need to design customized solutions for each business organization (Grünbichler, 2023; Žikić et al. 2022).

## Conclusion

Artificial intelligence, as one of the modern digital technologies, is becoming an important factor in the development of business organizations and has a strong influence on contemporary business. The impact of AI can be considered from several aspects: business efficiency and business strategy, interaction with users, support to business analytics and decision-making, as well as ethical and social issues. The use of AI in business brings clear advantages, such as faster data processing, automation of processes, and better efficiency, but at the same time it creates risks. Because of that, each company has the challenge to find its own way to implement AI and to manage the risks that come with it.

This review shows that AI is not only a new trend but also a strategic resource for companies that want to stay competitive in the long term. Further development of information and communication technologies, the regulatory environment, and the fast changes on the global market suggest that AI will in the future become one of the tools without which companies cannot operate. According to Gonzalez-Tejero et al. (2023), the cooperation between academia, business organizations, and regulators should be used to develop principles that will help sustainable use of AI technologies and their introduction into business practice.

This article also points out several limitations. One limitation is the lack of access to some articles and the relatively narrow literature search, which means that some relevant works may have been left out. Another limitation is that only literature about company operations was used, while technical and technological aspects of AI were not included. In addition, the choice of sources could have been affected by the authors' bias. This means that some relevant articles might have been excluded from the final review because of subjective judgment during the selection process.

Since this is a relatively new topic and technology is changing very fast, many authors agree that current research does not cover all aspects of the problem. Some studies are based on a small number of sources, while others rely on assumptions

that can easily change over time. Because AI develops quickly, research in this field also needs to be updated often and followed continuously.

AI is both an opportunity and a challenge. It can have an impact on developing new business models, better efficiency, and innovation, but at the same time, the potential risk that this technology carries requires responsible use, ethical standards, and careful regulation.

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# UTICAJ VEŠTAČKE INTELIGENCIJE NA SAVREMENO POSLOVANJE: SCOPING PREGLED

Božidar Gojković, Ljubomir Obradović, Albina V. Kecman, Milosav Stojanović

## *Apstrakt*

*Svojim ubrzanim razvojem, veštačka inteligencija (VI) postala je značajan faktor koji utiče na savremeno poslovanje, sa važnim implikacijama u različitim organizacionim domenima. Mapiranjem literature o uticaju VI na moderno poslovanje, ovaj rad nastoji da identificiše relevantne studije i klasificiše ih prema ključnim oblastima primene, uključujući poslovnu efikasnost i inovacije, korisničko iskustvo, analizu podataka i donošenje odluka, kao i pitanja vezana za etiku, bezbednost i rizike primene VI. Studija se zasniva na sistematskom pristupu pregledu postojeće literature, uz primenu etabliranih metodologija scoping pregleda radi identifikacije i odabira relevantnih studija i istraživanja. Istaknuta su određena ograničenja i praznine u postojećem korpusu istraživanja, koja mogu poslužiti kao osnova i polazna tačka za dalja istraživanja. Na kraju, rad iznosi niz zaključaka i predlaže moguće pravce budućih istraživanja.*

**Ključne reči:** veštačka inteligencija, savremeno poslovanje, inovacije, poslovna efikasnost.

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### *Apstrakt*

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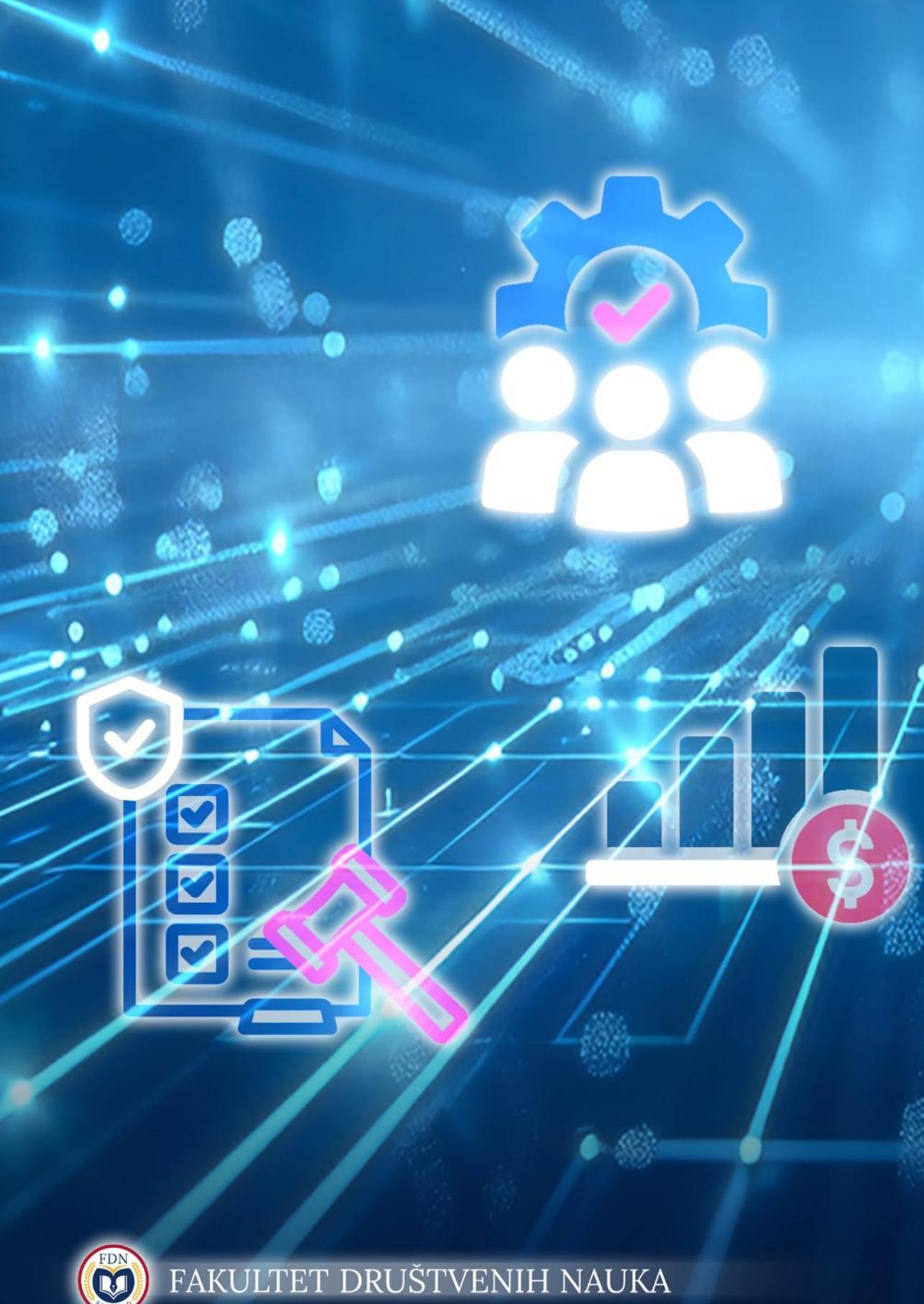
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