

# Economics of Enterprise

EKONOMIKA PREDUZEĆA



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## Economics of Enterprise

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In this issue of *Economics of Enterprise*, ESGs are once again under the spotlight. The first paper in the *Sustainability and Climate Risks* section, professor *D. Tipurić* and colleagues combine semi-structured interviews and focus groups to assess the extent of ESG adoption in pharma industry. The authors reveal that while some companies have partially integrated ESG principles into their operations, others have not adopted them at all. They point to the findings that environmental aspects still represent a leading concern. The long-term benefits of ESG compliance including improved reputation, better risk management, and financial sustainability are fortunately recognized by the companies in this sector. The second paper in this section, presented by *E. Vlačić* and coauthors, studies the role of banks in supporting SMEs green transition in emerging small open economies such as Serbian. Using the questionnaires and focus groups as data collection methods, the authors explore the extent to which ESG principles influence the banking sector's interactions with SMEs. They conclude that the integration of ESG practices in the Serbian banking sector remains at an early stage, particularly in relation to SME financing. The findings from the study clearly demonstrate that while there has been some progress in the adoption of ESG principles, particularly among systemic banks, significant gaps remain in both the breadth and depth of ESG integration.

In the *Economic Growth and Development* section, *K. Radosavljević* sheds light on the changes that have occurred in the marketing channel structure in Serbia, particularly important for future traffic operations and new opportunities arising from market conditions. By applying econometric analysis, the author estimates the level of development of raspberry distribution channels in Serbia.

*N. Stanojević*, in the *International Economics and Business* section, explores the Middle East as a promising market for the Serbian industry of weapons and military equipment. The results of the econometric analysis indicate the special importance of several markets. The largest military export potentials of the Serbian defense industry were identified in Saudi Arabia, Egypt, and Iraq, as the countries that are already large importers. Significant future markets are also the UAE and Algeria, to which exports were significantly higher than potential.

The first paper in the *Tourism* section, written by *M. Zrnić*, investigates the quality of gastronomy services in hotels with higher category in Serbia, focusing on factors that influence guest experience satisfaction. The author utilized a systematic approach based on the APUCI model. Based on multiple surveys, the author shows that almost half of respondents identified multiple factors contributing to their quality experience, with a significant emphasis on the quality of food and drinks, ambience, and service professionalism. The second paper in this section deals with rather hot issue of EXPO27 in Serbia. *I. Kovačević* and colleagues provide

an extensive literature review of the legacy concept in the meetings and events industry as well as explore weather after organizing a mega event there is always a legacy that remains for the hosting destination, and research in what directions legacy should be managed. Special focus has been given to the EXPO financial cost-benefit impacts analysis for the period 2010-2021. The authors identify three major legacy areas: destination marketing and branding, urban development and urbanization process, and monitoring and measuring economic impact.

Finally, in the *Marketing* section, *J. Filipović* and coauthors analyse social media as a determinant of green products purchase. The authors investigate the relationship between various dimensions of social media and consumer behavior in the context of purchasing green products. By extending knowledge in the fields of sustainability and social media marketing, based on a conducted survey this paper proposes a model that integrates variables such as social media customer experience, green word-of-mouth, and greenwashing. The research indicates that consumer experience on social media and green word-of-mouth positively influence attitudes toward the purchase of both global and local green products, while greenwashing exerts a negative influence only on attitudes toward local green products.

Prof. Dragan Đuričin, Editor-in-Chief

A handwritten signature in black ink, appearing to read 'Dragan Đuričin', written in a cursive style.

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# IMPLEMENTING ESG PRINCIPLES IN PHARMA INDUSTRY IN EMERGING MARKETS

## Implementacija ESG principa u farmaceutskoj industriji na tržištima u razvoju

### Abstract

The implementation of Environmental, Social, and Governance (ESG) principles in the pharmaceutical industry within emerging markets presents both a significant challenge and a valuable opportunity for sustainable development. Given the crucial role of this sector in public health, adopting ESG practices can substantially influence not only the industry's environmental footprint but also its social and governance responsibilities. In emerging markets, where regulatory frameworks may be less stringent compared to developed economies, the pharmaceutical industry often operates under increased scrutiny. Therefore, alignment with global ESG standards is essential for companies aiming to enhance competitiveness, attract investment, and meet the rising expectations of stakeholders. This study focuses on the Serbian pharmaceutical sector and employs a mixed-method approach, combining semi-structured interviews and focus groups to assess the extent of ESG adoption. The findings reveal that while some companies have partially integrated ESG principles into their operations, others have not adopted them at all. Key challenges, such as limited financial resources, diverse regulatory frameworks, and potential resistance to change, hinder widespread ESG implementation. However, the long-term benefits of ESG compliance including improved reputation, better risk management, and financial sustainability, underscore the importance of these principles for companies in this sector. Environmental aspects are leading concern, such as waste reduction, carbon footprint minimization through sustainable supply chains, and proper disposal of pharmaceutical products remain crucial.

**Keywords:** *company competitiveness, ESG, pharmaceutical industry, small open economies*

### Sažetak

Implementacija principa zaštite životne sredine, društvene odgovornosti i upravljanja (ESG) u farmaceutskoj industriji na tržištima u razvoju predstavlja značajan izazov, ali i vrednu priliku za održivi razvoj. S obzirom na ključnu ulogu ovog sektora u javnom zdravlju, usvajanje ESG praksi može imati veliki uticaj ne samo na ekološki otisak industrije, već i na njene društvene i upravljačke obaveze. Na tržištima u razvoju, gde regulatorni okviri mogu biti manje strogi u poređenju sa razvijenim ekonomijama, farmaceutska industrija često posluje pod pojačanom pažnjom. Stoga je usklađivanje sa globalnim ESG standardima ključno za kompanije koje žele da poboljšaju svoju konkurentnost, privuku investicije i zadovolje rastuća očekivanja stakeholdera. Ova studija se fokusira na srpski farmaceutski sektor i koristi kombinovani metodološki pristup, uključujući polustrukturirane intervjue i fokus grupu kako bi se procenio stepen usvajanja ESG principa. Rezultati pokazuju da su neke kompanije delimično integrisale ESG principe u svoje poslovanje, dok ih druge uopšte nisu usvojile. Ključni izazovi, kao što su ograničeni finansijski resursi, različiti regulatorni okviri i potencijalni otpor prema promenama, otežavaju širu implementaciju ESG principa. Međutim, dugoročne koristi usklađenosti sa ESG standardima, uključujući poboljšanje reputacije, bolji menadžment rizika i finansijsku održivost, ukazuju na značaj ovih principa za kompanije u ovom sektoru. Ekološki aspekti predstavljaju vodeći izazov, kao što su smanjenje otpada, minimiziranje ugljeničkog otiska kroz održive lance snabdevanja i pravilno odlaganje farmaceutskih proizvoda, ostaju od suštinskog značaja.

**Ključne reči:** *konkurentnost kompanija, ESG, farmaceutska industrija, male otvorene ekonomije*

## Introduction

The global pharmaceutical industry is undergoing significant transformations as companies increasingly incorporate Environmental, Social, and Governance (ESG) principles into their business strategies. ESG criteria, which assess a company's impact on the environment, its relationship with stakeholders, and its governance practices, have become central to how businesses are evaluated, particularly in industries with substantial social and environmental responsibilities. This paper focuses on how Serbian pharmaceutical companies, both domestic and foreign-owned, are implementing ESG practices in an emerging market context. Using semi-structured interviews and a case study approach, we aim to analyze the current state of ESG adoption in Serbia's pharmaceutical industry and identify key challenges and opportunities.

ESG adoption has become a global priority due to growing regulatory frameworks, investor demands, and societal pressures. The pharmaceutical sector is no exception, as it faces significant scrutiny regarding its environmental impact, ethical labor practices, and governance structures [12]. Globally, ESG reporting is becoming more standardized, particularly in sectors like pharmaceuticals, which are subject to stringent regulatory requirements related to product safety, supply chain transparency, and corporate governance [16]. Many multinational pharmaceutical companies have set ambitious sustainability goals, such as achieving carbon neutrality, reducing water consumption, and ensuring ethical sourcing of raw materials [26].

Emerging markets, such as Serbia, present unique challenges and opportunities for ESG integration. Serbia, as a small open economy, is heavily influenced by global market trends but faces internal constraints such as limited financial resources, less mature regulatory environments, and lower public awareness of sustainability issues [14]. In the pharmaceutical sector, these challenges are compounded by the industry's high regulatory burden and capital intensity, which can make the integration of ESG principles more complex [9].

Despite these challenges, the integration of ESG principles into the Serbian pharmaceutical sector is becoming

increasingly important as Serbia aligns its regulatory framework with the European Union's sustainability directives [11]. Serbian companies are now being held to higher standards of corporate governance, environmental responsibility, and social impact. For instance, the country's focus on harmonizing its regulatory standards with the EU has led to stricter environmental regulations, impacting how pharmaceutical companies manage waste, water usage, and emissions [8].

Pharmaceutical companies in Serbia are divided between domestically owned firms and subsidiaries of multinational corporations. Domestic companies often face resource constraints that limit their ability to fully integrate ESG principles, while foreign-owned subsidiaries are subject to both local regulations and global sustainability mandates from their parent companies [9]. As a result, the level of ESG adoption within the sector is inconsistent, with some firms actively pursuing sustainability initiatives and others struggling to meet even basic compliance requirements.

The relationship between small open economies and ESG adoption is complex. In Serbia, as in many emerging markets, businesses are highly integrated into global markets but must also contend with domestic regulatory and financial challenges [1]. Small economies are particularly vulnerable to external shocks, and ESG principles can help build resilience by promoting long-term sustainability and stability [29]. However, companies in these markets often prioritize short-term financial stability over long-term sustainability goals, leading to slower ESG adoption.

The pharmaceutical industry in Serbia is a critical component of the country's economy, with both domestic and foreign-owned companies playing a significant role in meeting healthcare needs. However, this sector is also highly regulated, with strict requirements related to product safety, environmental impact, and governance. The adoption of ESG principles in the pharmaceutical sector is therefore not only a matter of corporate social responsibility but also a necessity for maintaining compliance with both local and international regulations [8].

The research question in this paper is *'How are ESG principles being implemented in the pharmaceutical*

*industry in Serbia, and what are the key challenges and opportunities for advancing sustainability and innovation in both domestic and foreign-owned companies within an emerging market context?* In order to give an answer on it the paper employs a dual-methodology approach to investigate how ESG principles are being implemented in the Serbian pharmaceutical sector. First, semi-structured interviews with decision-makers from both domestic and foreign-owned pharmaceutical companies will provide insights into the perceived importance of ESG principles and the challenges they face in implementing them. Second, a case study approach will examine specific instances of ESG adoption within the sector, focusing on how companies navigate the complex regulatory and financial landscape in Serbia.

The following chapters of this paper will include: Literature Review, which provides an overview of global and local ESG trends, particularly in the pharmaceutical industry; Research Question and Methodology, which outlines the research design; Results, Discussion, and Recommendations, where we analyze the findings from interviews and case studies; and **Conclusion**, summarizing the key insights and offering recommendations for improving ESG adoption in Serbia's pharmaceutical sector.

Through this analysis, we aim to contribute to the growing body of research on ESG adoption in emerging markets, particularly in small and open economies like Serbia. As global pressures to adopt sustainable practices increase, Serbian pharmaceutical companies must find ways to integrate ESG principles into their operations to remain competitive in both domestic and international markets.

## Literature review

### Importance of ESG in the Pharmaceutical Industry

Environmental, Social, and Governance (ESG) principles have become increasingly vital for companies across industries, but the pharmaceutical sector faces unique pressures to implement robust ESG practices due to its far-reaching societal and environmental impact. As a sector responsible for producing essential healthcare products, the pharmaceutical industry operates under

intense scrutiny from regulators, investors, and the public. ESG principles serve as a framework to guide companies toward reducing their environmental footprint, enhancing social responsibility, and ensuring good governance. ESG considerations in pharmaceuticals range from managing carbon emissions and water usage in production processes to ensuring equitable access to medicine and maintaining ethical standards throughout the supply chain [4].

The pharmaceutical sector's environmental responsibilities are profound. Production processes often involve substantial energy and resource consumption, contributing to greenhouse gas emissions and pollution [10]. As such, leading pharmaceutical companies have begun adopting measures to reduce their carbon footprints, with initiatives ranging from energy efficiency improvements to utilizing renewable energy sources [28]. Moreover, water scarcity is a critical issue, particularly in regions where pharmaceutical production is concentrated. Effective water management strategies, such as water recycling and reducing water consumption in manufacturing processes, are increasingly becoming central to ESG efforts within the industry [13]. In addition, integrating the principles of circular economy [23] into pharmaceutical operations can minimize waste, enhance resource efficiency, and promote the reuse of materials, thereby reducing the industry's environmental footprint. By adopting both ESG and circular economy models, pharmaceutical companies can achieve long-term sustainability while meeting growing regulatory and stakeholder expectations.

Social responsibility is another major pillar of ESG in the pharmaceutical sector. Companies are expected to ensure that their operations not only provide safe and effective products but also contribute positively to the communities they serve [32]. This involves addressing issues like affordable access to medication, ethical marketing practices, and maintaining transparency in research and development, especially regarding clinical trials [15]. Furthermore, companies are being called upon to improve labor conditions throughout their supply chains, particularly in emerging markets where labor rights may be less rigorously enforced [25].

Governance, the third pillar of ESG, is essential for ensuring transparency, accountability, and ethical

behavior in pharmaceutical companies. This is particularly important in an industry prone to controversies related to drug pricing, intellectual property rights, and the transparency of clinical trial results [5]. Strong governance structures that include diverse boards, clear accountability mechanisms, and transparent reporting are increasingly being demanded by investors and regulators alike [7].

Finally, innovation is critical in driving the adoption of ESG principles, particularly in industries as complex and regulated as pharmaceuticals. Innovation not only drives economic growth but also fosters the development of sustainable practices by enabling companies to improve resource efficiency, reduce environmental impacts, and adapt to evolving regulatory environments [35], [36], [6]. In the pharmaceutical industry, innovation is essential for addressing challenges related to ESG integration, including the development of green chemistry, renewable energy use, and sustainable supply chain management [35]. In Serbia, where access to advanced technologies and capital is often limited, innovation plays a crucial role in enabling companies to adopt ESG practices despite these constraints.

### Small Open Economies: Characteristics and Pharmaceutical Industries

Small open economies (SOEs) like Serbia are characterized by their high degree of integration into global markets, their dependence on international trade, and their vulnerability to external economic shocks [30], [20]. These economies often face significant challenges in maintaining sustainable economic growth due to their limited domestic markets and their reliance on foreign investment and exports. In the context of the pharmaceutical industry, SOEs are particularly exposed to shifts in global supply chains, regulatory changes in major markets, and fluctuations in demand for pharmaceutical products [2].

The pharmaceutical industry in SOEs plays a crucial role in ensuring public health while also serving as a significant contributor to the economy through job creation, innovation, and exports. However, pharmaceutical companies in these economies often operate under different constraints compared to those in larger, more developed markets. For instance, limited access to capital

can restrict the ability of SOE-based pharmaceutical companies to invest in advanced technologies, which are necessary for improving production efficiency and meeting international environmental standards [22]. Moreover, SOEs frequently face challenges related to regulatory alignment with larger markets such as the European Union (EU), which can complicate their ability to compete internationally.

One of the major difficulties for pharmaceutical companies in small open economies is adapting to the stringent ESG requirements imposed by foreign investors and regulators, particularly those in the EU and the United States. These companies must balance compliance with international ESG standards while navigating the local regulatory landscape, which may be less stringent or not fully aligned with global best practices [31]. This creates a complex operating environment in which companies are pressured to innovate and adopt sustainable practices, even when such investments may strain their limited financial resources [24].

Moreover, the pharmaceutical industries in SOEs must address both local and global ESG concerns. Locally, companies are often expected to contribute to public health initiatives, ensure affordable access to essential medicines, and adhere to national environmental regulations. Globally, they are expected to meet the expectations of foreign investors and customers regarding sustainability and ethical governance [17]. This dual burden can be particularly challenging for smaller companies with limited resources, but it also presents opportunities for innovation and growth in sustainable business practices.

### Current Situation of ESG in the Serbian Corporate Sector

Serbia, like many emerging markets, is in the early stages of adopting ESG principles across its corporate sector. While there is growing awareness of the importance of sustainability and corporate governance, many Serbian companies are still struggling to fully integrate ESG practices into their operations. This is particularly true in industries such as pharmaceuticals, where companies face a range of challenges related to environmental impact, social responsibility, and governance.

The Serbian government has begun aligning its regulatory framework with European standards, particularly as the country moves toward EU accession. This has led to a gradual tightening of environmental regulations, increased scrutiny of corporate governance practices, and growing expectations for social responsibility from companies operating in Serbia. However, the enforcement of these regulations remains inconsistent, and many companies lack the resources or expertise to meet these evolving standards.

In the pharmaceutical sector, ESG adoption has been uneven. While multinational corporations operating in Serbia are generally more advanced in their implementation of ESG practices, domestic companies often lag behind, largely due to financial constraints and limited access to technology and expertise. Foreign-owned pharmaceutical companies in Serbia are typically held to the global ESG standards set by their parent corporations, which include stringent environmental management systems, robust governance structures, and comprehensive social responsibility initiatives.

However, domestic companies face a different set of challenges. For these firms, the adoption of ESG principles is often hampered by a lack of access to capital, which limits their ability to invest in the technologies and processes needed to reduce environmental impact and improve governance. Moreover, public awareness of ESG issues in Serbia remains relatively low compared to more developed markets, reducing the pressure on companies to adopt these practices.

Despite these challenges, there are signs that ESG adoption in Serbia's corporate sector is gaining momentum. The country's move towards EU accession is creating both regulatory and market-based incentives for companies to adopt sustainable practices. Moreover, Serbian companies are beginning to recognize the competitive advantages of ESG integration, particularly in terms of attracting foreign investment and accessing new markets.

In the pharmaceutical sector, the adoption of ESG principles is increasingly seen as a necessity for companies seeking to compete in the global marketplace. Companies that fail to align with international ESG standards risk being excluded from key markets, particularly in the EU,

where regulatory requirements related to environmental impact and governance are becoming more stringent. As a result, there is growing recognition among Serbian pharmaceutical companies of the need to invest in ESG initiatives, despite the financial, operational and labor challenges they may face [27].

## Research Question and Methodology

Building on the previously conducted literature review, the research question for this paper is: *'How are ESG principles being implemented in the pharmaceutical industry in Serbia, and what are the key challenges and opportunities for advancing sustainability and innovation in both domestic and foreign-owned companies within an emerging market context?'*

This research employed a qualitative approach, utilizing two complementary methods: semi-structured interviews and a structured focus group discussion. These methods were chosen to provide an in-depth understanding of the implementation of Environmental, Social, and Governance (ESG) principles in the Serbian pharmaceutical sector. The combination of one-on-one interviews and group discussion allows for both individual insights and collective validation of the key challenges and opportunities in adopting ESG practices.

### Semi-Structured Interviews

Semi-structured interviews were conducted in 2024 with ten decision-makers from both foreign and domestic pharmaceutical companies operating in Serbia. This methodology was selected to gather detailed and nuanced insights while allowing flexibility in exploring various topics related to ESG implementation. Semi-structured interviews are a common qualitative research technique that enables researchers to ask open-ended questions while maintaining a structure that ensures all key themes are addressed [18]. By allowing the interviewees to elaborate on their experiences, the researcher can gather rich, qualitative data that are essential for understanding the complex processes of ESG integration.

A standardized semi-structured questionnaire was used during the interviews, consisting of six semi-

structured questions. These questions focused on the companies' current ESG practices, challenges in implementing ESG standards, and potential opportunities for future sustainability initiatives. The interviews lasted approximately one hour, with each participant given the opportunity to share their thoughts and insights freely. Interviews were conducted one-on-one, allowing for confidential and open discussions, which often leads to more candid and in-depth responses.

After each interview transcripts were prepared to ensure accuracy and provide a comprehensive record of the responses. Transcription of interviews is crucial for maintaining the integrity of the qualitative data and enabling further analysis [33]. The transcripts were subsequently analyzed using thematic analysis, a method often employed in qualitative research to identify patterns, themes, and recurring issues in the data [19]. This allowed the researcher to systematically categorize the responses and extract key insights into the implementation of ESG principles in Serbia's pharmaceutical industry.

### Focus Group Discussion

In addition to the semi-structured interviews, a focus group was organized to complement and validate the findings from the interviews. Focus groups are a powerful qualitative research tool, particularly effective when exploring shared experiences or when interaction among participants can stimulate new ideas or clarify complex topics [21]. The focus group was conducted by NALED<sup>1</sup> in May 2024. While the focus group included participants from industries beyond the pharmaceutical sector, the findings were deemed applicable to the pharmaceutical industry as well, given the cross-sectoral relevance of ESG practices.

The focus group was structured and moderated to ensure that all participants had the opportunity to share their views and contribute to the discussion. A structured approach in focus group facilitation ensures that the conversation remains focused on the research objectives while allowing

participants to freely engage in discussion [3]. The main topics covered in the focus group were the challenges and opportunities associated with ESG implementation, the regulatory environment, and strategies for improving ESG adoption across industries. The interactive nature of the focus group allowed participants to discuss and build upon each other's ideas, leading to a more dynamic and comprehensive exploration of the subject.

The findings from the focus group reinforced the insights gained from the semi-structured interviews. While the group discussion involved participants from a range of industries, the issues raised—such as limited access to ESG-related financing, the need for clearer regulatory guidelines, and the importance of innovation in driving ESG adoption—were highly relevant to the pharmaceutical sector. Moreover, the focus group provided a broader perspective on how cross-industry collaboration could enhance the implementation of ESG principles in Serbia, highlighting the importance of collective action and regulatory support.

The data gathered from the semi-structured interviews and the focus group were analyzed using thematic analysis. This method was chosen to identify, analyze, and report patterns within the data [33]. Thematic analysis is particularly suited for research that seeks to uncover underlying themes or issues in qualitative data, as it allows the researcher to organize and describe data in rich detail. In this study, thematic analysis enabled the identification of key themes related to the implementation of ESG principles, including the challenges faced by pharmaceutical companies, the opportunities for innovation, and the role of regulatory frameworks in shaping ESG adoption.

Ethical considerations were of utmost importance throughout the research process. All interviewees provided informed consent, ensuring they understood the purpose of the study, how the data would be used, and their right to withdraw at any point. Confidentiality was maintained, and the identities of participants were anonymized to protect their privacy. The focus group participants were similarly informed about the study's objectives and gave consent to share their insights within the scope of the research.

By combining semi-structured interviews and a structured focus group discussion, this research provides

<sup>1</sup> National Alliance for Local Economic Development (NALED) is an independent, non-profit and non-partisan association advocating better business environment in Serbia and the region, <https://naled.rs/en/upoznajte-naled>

a comprehensive view of ESG implementation in Serbia's pharmaceutical sector. The semi-structured interviews allowed for deep, individualized exploration of how decision-makers in the pharmaceutical industry view and approach ESG practices, while the focus group provided a collective industry perspective, validating and expanding upon the interview findings. This methodological approach ensured that the research captured both personal insights and broader industry trends, contributing to a holistic understanding of the challenges and opportunities associated with ESG integration in the Serbian pharmaceutical industry.

## Results and discussion

The results from the semi-structured interviews conducted with decision-makers from both foreign-classified as Group A, and domestic pharmaceutical companies - classified as Group B, operating in Serbia reveal varying levels of Environmental, Social, and Governance (ESG) adoption across the industry.

### ESG Adoption by Foreign-Owned Companies

Companies classified as Group A represent foreign-owned entities with strong ties to multinational corporations. These companies demonstrate a higher level of ESG integration, primarily driven by corporate policies and global sustainability strategies. Interviews with decision-makers from these companies reveal that their adherence to ESG principles is largely aligned with global standards, including the use of renewable energy, comprehensive waste management systems, and stringent health and safety protocols.

A recurring theme among Group A companies is the emphasis on compliance with international frameworks such as ISO certifications and the United Nations Sustainable Development Goals (SDGs). For example, one company highlighted its efforts to reduce carbon emissions by transitioning to electric vehicles in its supply chain, an initiative mandated by its global headquarters. Similarly, companies in this group regularly conduct environmental impact assessments and actively engage in corporate social responsibility (CSR) programs that benefit the local communities where they operate.

The adoption of these practices is not only driven by corporate policies but also by the need to meet the expectations of international customers and investors, who are increasingly prioritizing sustainability in their decision-making processes.

### ESG Practices Among Domestic Companies

In contrast, Group B companies, which represent domestically owned pharmaceutical firms, display a more limited approach to ESG integration. These companies tend to focus primarily on compliance with local environmental and health regulations, with less emphasis on broader sustainability initiatives. Interviews with decision-makers from Group B companies reveal that their ESG efforts are often reactive, driven by legal requirements rather than proactive sustainability strategies.

For instance, one company in Group B noted that while it adheres to national health and safety standards and complies with environmental regulations, it has not implemented any formal ESG policies beyond these basic requirements. This company acknowledged the growing importance of ESG in the global market but cited a lack of resources and expertise as key barriers to further integration. The absence of formal ESG training programs and limited access to financing for sustainability initiatives were also mentioned as significant challenges.

However, despite these limitations, some companies in Group B are beginning to recognize the potential benefits of ESG adoption, particularly in terms of enhancing their competitive advantage in international markets. For example, one firm expressed interest in exploring renewable energy options and improving waste management practices, although it noted that such initiatives would require substantial investment and external support.

### Key Challenges in ESG Implementation

The results from both Group A and Group B companies point to several common challenges in the implementation of ESG principles within Serbia's pharmaceutical sector. One of the most frequently cited challenges is the difficulty of integrating high ESG standards within the local business environment. Many companies noted that while they are willing to adopt more sustainable practices, they often

face barriers such as limited access to financing for green projects, a lack of skilled professionals with expertise in ESG, and the absence of clear regulatory guidelines from the Serbian government.

Another significant challenge is the supply chain. Both, Group A and Group B companies reported difficulties in ensuring that their local suppliers meet the same ESG standards as their own operations. For foreign-owned companies, in particular, this poses a challenge, as they are required to maintain compliance with global sustainability policies while working with suppliers that may not have the resources or capabilities to meet these expectations. This gap in supply chain sustainability was seen as a major barrier to full ESG integration, with several companies expressing concerns about the potential reputational risks associated with working with non-compliant suppliers.

### Drivers of ESG Adoption

Despite the challenges, the interviews reveal several drivers that are pushing companies toward greater ESG adoption. For Group A companies, the primary driver is alignment with corporate policies and global sustainability strategies. These companies are motivated by the need to maintain their standing in international markets, where ESG compliance is becoming increasingly important to investors and customers. The decision-makers interviewed from these companies emphasized that failure to adhere to ESG principles could result in lost business opportunities and diminished access to capital from sustainability-focused investors.

For Group B companies, the drivers of ESG adoption are more varied. While compliance with local regulations is the main motivator for most domestic firms, some

companies are beginning to recognize the potential market advantages of adopting ESG practices. As Serbia moves toward EU accession and aligns its regulatory framework with European standards, domestic companies are increasingly aware that ESG compliance will be necessary to compete in both domestic and international markets. Additionally, some firms in Group B have identified ESG as a way to attract international partners and investors, who are increasingly prioritizing sustainability in their decision-making processes.

### Industry-Wide Implications

The findings from this research suggest that ESG adoption in Serbia's pharmaceutical sector is highly dependent on a company's ownership structure and access to resources. Foreign-owned companies (Group A) are generally more advanced in their implementation of ESG principles, driven by corporate policies and global market pressures. In contrast, domestic companies (Group B) are at an earlier stage of ESG adoption, with most firms focusing on compliance with local regulations rather than proactive sustainability strategies.

However, the interviews indicate that both groups face significant challenges in fully integrating ESG principles, particularly with regard to supply chain sustainability and access to financing. The growing importance of ESG in the global market, coupled with Serbia's ongoing alignment with EU standards, suggests that companies in both groups will need to invest more heavily in sustainability initiatives to remain competitive.

The results of this study highlight the need for greater support from the Serbian government and financial institutions to help companies overcome the barriers to

**Table 1. Summary of semi structured interviews**

Interview Number	Company Ownership	ESG Integration Level	Main ESG Driver	Challenges
Interview 1	Foreign	High	Corporate Policy	Supplier Non-compliance
Interview 2	Domestic	Low	Regulatory Compliance	Limited Resources
Interview 3	Foreign	Moderate	Market Demand	Financing
Interview 4	Domestic	Low	Regulatory Compliance	Limited Resources
Interview 5	Foreign	High	Corporate Policy	Supplier Non-compliance
Interview 6	Domestic	Moderate	Customer Demand	Knowledge Gap
Interview 7	Foreign	High	Corporate Policy	Supply Chain Management
Interview 8	Domestic	Low	Regulatory Compliance	Financing
Interview 9	Foreign	Moderate	Market Demand	Supplier Non-compliance
Interview 10	Domestic	Moderate	Customer Demand	Knowledge Gap

ESG adoption. This could include providing incentives for green projects, offering training programs to build ESG expertise, and developing clearer regulatory guidelines for sustainability. By addressing these challenges, Serbia's pharmaceutical sector can move toward more comprehensive ESG integration, enhancing both its competitiveness and its contribution to sustainable development.

This section provides an analysis of the key themes that emerged from the interviews, offering insights into how different types of pharmaceutical companies in Serbia are approaching ESG implementation and the challenges they face in doing so. Table 1 captures the ownership type, the level of ESG integration, the primary driver for ESG practices, and the key challenges faced by each company based on the interviews.

### Results and Discussion of the Focus Group

The focus group discussion, centered on ESG principles in Serbia's economic landscape, offered valuable insights into the challenges and opportunities specific to the pharmaceutical industry. Although the participants came from diverse sectors, the findings reveal several key themes that are highly relevant to the Serbian pharmaceutical sector's ongoing transition toward more sustainable business practices.

#### *Focus Group - Lack of ESG Awareness and Understanding*

A major challenge highlighted by the focus group participants was the general lack of awareness and understanding of ESG principles, particularly within smaller companies that are not integrated into global supply chains. This is highly applicable to many domestic pharmaceutical companies in Serbia, which tend to prioritize legal compliance over proactive ESG integration. The participants noted that while foreign-owned companies in Serbia are more familiar with ESG due to their multinational structures, local companies are still grappling with the concept. This gap in understanding highlights the need for capacity building, targeted training programs, and awareness-raising initiatives to help local pharmaceutical firms better understand the strategic importance of ESG for competitiveness and long-term sustainability.

#### *Focus Group - Financial Constraints and the Cost of Implementation*

The financial burden associated with implementing ESG practices was another critical challenge discussed during the focus group. This is particularly relevant for Serbia's pharmaceutical sector, where many companies face financial constraints that limit their ability to invest in sustainability initiatives. The participants pointed out that, while banks and financial institutions are beginning to offer green financing options, the overall intensity of support is still low. This lack of financial resources poses a significant barrier to domestic pharmaceutical companies that need to invest in technologies, processes, and infrastructure to align with international ESG standards.

In the pharmaceutical sector, which is capital-intensive and highly regulated, the cost of transitioning to more sustainable operations—such as adopting energy-efficient production processes or improving waste management—can be prohibitively high. This financial barrier may limit the ability of local pharmaceutical companies to compete on the global stage, particularly as international markets increasingly demand compliance with ESG standards.

#### *Focus Group - Challenges in Data Collection and Reporting*

The focus group participants also discussed the difficulties companies face in collecting and reporting ESG data, a challenge that resonates strongly within the pharmaceutical sector. Accurate data collection and transparent reporting are essential for demonstrating compliance with ESG standards, but the complexity of the pharmaceutical supply chain—coupled with the sector's stringent regulatory requirements—makes this a particularly challenging task.

For pharmaceutical companies in Serbia, which are often reliant on a combination of domestic and international suppliers, ensuring the traceability of raw materials and tracking the environmental impact of production processes can be difficult. Furthermore, the lack of standardized reporting mechanisms in Serbia adds to the complexity. The participants emphasized the need for investment in advanced technologies, such as artificial intelligence, to streamline data collection and reporting processes. This would help companies in the pharmaceutical sector better track their ESG performance and prepare for the

increasingly stringent reporting requirements expected in both the EU and global markets.

#### *Focus Group - Supply Chain Sustainability*

Supply chain sustainability emerged as a major concern during the focus group, particularly with regard to compliance with international ESG regulations. The participants pointed out that ensuring the sustainability of the entire supply chain is challenging, especially for companies that source materials from regions with less rigorous environmental and social governance standards. This is directly relevant to the pharmaceutical industry, where the sourcing of raw materials, packaging, and chemicals involves a complex global supply chain.

The pharmaceutical sector in Serbia, much like in other industries, struggles to ensure that its supply chain partners adhere to the same ESG standards. The introduction of EU regulations such as the Corporate Sustainability Reporting Directive (CSRD) and the Carbon Border Adjustment Mechanism (CBAM) will place further pressure on companies to demonstrate sustainability throughout their supply chains. Pharmaceutical companies operating in Serbia will need to work closely with their suppliers to ensure compliance with these regulations, particularly as the EU tightens its standards on carbon emissions and supply chain transparency.

#### *Focus Group - Integration of ESG into Business Strategies*

The discussion also touched on the need for better integration of ESG principles into corporate business strategies. For pharmaceutical companies in Serbia, this is a particularly relevant point, as many firms still view ESG as a peripheral concern rather than a core component of their long-term strategy. The participants stressed the importance of aligning ESG initiatives with business goals to ensure long-term sustainability and competitiveness. This is especially true for larger pharmaceutical companies, which have the resources and capacity to lead by example in the sector.

The focus group also identified governance as a critical area that needs attention in the pharmaceutical industry. While environmental concerns tend to dominate the ESG conversation, governance issues—such as ethical

business practices, transparency, and accountability—are equally important for building trust with stakeholders and ensuring regulatory compliance. Participants recommended that pharmaceutical companies in Serbia invest in training programs for executives and managers to help them better understand the strategic value of ESG and how to integrate these principles into their corporate governance frameworks.

#### Conclusion Focus Group

The focus group discussion offered significant insights into the challenges and opportunities that the pharmaceutical industry in Serbia faces in implementing ESG practices. Key issues such as a lack of ESG awareness, financial constraints, data collection challenges, supply chain sustainability, and the need for better integration of ESG into business strategies emerged as critical areas for improvement. These findings indicate that while the pharmaceutical sector is beginning to recognize the importance of ESG, significant efforts are still needed to fully integrate these principles into corporate operations and ensure long-term sustainability. Addressing these challenges will be essential as the industry prepares to meet the increasingly stringent ESG requirements of global markets and regulators.

#### Conclusion

The growing global emphasis on Environmental, Social, and Governance (ESG) principles represents a pivotal shift in how industries, including the pharmaceutical sector, conduct business. In the attempt to answer on the research question this paper has explored the adoption and implementation of ESG principles in the pharmaceutical industry in Serbia, highlighting the challenges and opportunities that companies, both domestic and foreign-owned, face in this context. Through a combination of semi-structured interviews and a focus group discussion, we have gained valuable insights into how pharmaceutical companies in Serbia are navigating the complexities of integrating ESG into their business practices.

The findings reveal that foreign-owned companies are generally more advanced in their implementation of

ESG principles, largely driven by corporate policies from their global headquarters. These companies benefit from access to resources, technologies, and expertise that enable them to meet international ESG standards, including environmental management, waste reduction, and adherence to the United Nations Sustainable Development Goals (SDGs). However, these companies also face significant challenges in ensuring that their local suppliers meet the same stringent ESG requirements, particularly when it comes to environmental and social sustainability within supply chains.

On the other hand, domestic pharmaceutical companies in Serbia are still in the early stages of ESG adoption, with their efforts largely focused on compliance with local regulations. These companies face a range of barriers, including limited financial resources, a lack of ESG expertise, and a lower level of awareness about the strategic value of sustainability. While there is growing recognition among domestic firms that ESG compliance will be necessary to compete in both domestic and international markets, particularly as Serbia moves toward EU accession, many companies lack the capacity to make the necessary investments in sustainability initiatives. This is compounded by the absence of strong government support or clear regulatory guidelines that could help drive ESG adoption in the sector.

A recurring theme throughout the interviews and focus group discussion was the financial burden associated with implementing ESG practices. Both foreign-owned and domestic companies noted that the cost of transitioning to more sustainable operations such as investing in renewable energy, improving waste management, and reducing carbon emissions can be prohibitively high. For domestic firms, in particular, this financial barrier limits their ability to compete on a global scale, where ESG compliance is increasingly becoming a prerequisite for doing business. There is a clear need for financial institutions and the Serbian government to offer more robust support for green financing initiatives, subsidies, and grants to encourage the adoption of ESG practices across the sector.

Another key finding from this research is the challenge of data collection and reporting, particularly with regard

to supply chain transparency. Pharmaceutical companies in Serbia face significant difficulties in ensuring that their suppliers meet international ESG standards, particularly in areas such as environmental impact and labor practices. This challenge is exacerbated by the lack of standardized ESG reporting mechanisms in Serbia, which makes it difficult for companies to track their performance and demonstrate compliance with international regulations. To address this issue, companies will need to invest in advanced technologies and develop more robust systems for collecting and reporting ESG data.

The focus group discussion also emphasized the need for better integration of ESG principles into corporate business strategies. Many pharmaceutical companies in Serbia still view ESG as a secondary concern rather than a core component of their long-term strategic planning. However, as global markets increasingly prioritize sustainability, it will be essential for companies to align their ESG initiatives with their broader business goals. This includes not only focusing on environmental sustainability but also improving governance practices, such as enhancing transparency, ensuring ethical business conduct, and maintaining accountability to stakeholders.

Looking ahead, it is clear that the pharmaceutical industry in Serbia is at a crossroads when it comes to ESG adoption. While foreign-owned companies are leading the way, domestic firms must make significant strides in integrating ESG principles into their operations if they are to remain competitive in the evolving global marketplace. To achieve this, companies will need to overcome the financial, regulatory, and operational challenges that currently hinder ESG adoption. This will require a concerted effort from both the private and public sectors, including greater support from financial institutions, clearer regulatory frameworks from the Serbian government, and increased collaboration with international partners.

In conclusion, the pharmaceutical sector in Serbia is beginning to recognize the importance of ESG, but much work remains to be done to fully integrate these principles into corporate operations. The findings from this study highlight the need for targeted financial support, capacity-building initiatives, and regulatory reforms to drive ESG adoption in the industry. By addressing these challenges,

the pharmaceutical sector in Serbia has the potential to not only meet international ESG standards but also to enhance its competitiveness, contribute to sustainable development, and play a leading role in the country's transition to a more sustainable economy.

The adoption of ESG principles in the pharmaceutical sector represents a significant opportunity for companies to build resilience, reduce their environmental footprint, and enhance their reputation in the global market. However, achieving these goals will require sustained investment, innovation, and collaboration across the industry. As the global demand for sustainability continues to grow, companies that embrace ESG as a strategic priority will be well-positioned to succeed in the future, both in Serbia and beyond.

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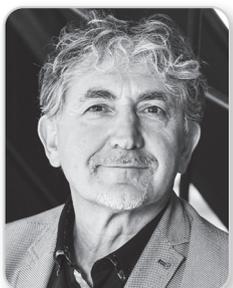
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# BRIDGING THE ESG GAP: THE ROLE OF BANKS IN SUPPORTING SMES' GREEN TRANSITION IN SMALL OPEN ECONOMIES

Premošćavanje ESG jaza - Uloga banaka u podršci  
zelenoj tranziciji MMSP-ova na tržištima u malim  
otvorenim ekonomijama

## Abstract

Small and medium-sized enterprises (SMEs) in emerging and small open economies are significantly lagging in the adoption of Environmental, Social, and Governance (ESG) principles. This gap is further exacerbated by the reluctance and hesitation of banks to incorporate ESG considerations into their financing approaches, particularly in supporting the green transition of SMEs. This study explores the implementation of ESG principles by Serbian banks in their dealings with SMEs, focusing on how financial institutions are strategically positioning themselves in their business relationships with these enterprises, regardless of industry. Using data collected through a detailed questionnaire completed by banks, and verified through a focus group that provided additional insights and recommendations, we analyze the extent to which ESG principles influence the banking sector's interactions with SMEs. Our findings identify key barriers and opportunities for enhancing ESG integration in this crucial segment of the economic ecosystem and offer potential pathways for aligning financial strategies with sustainable development goals in the context of SMEs.

**Keywords:** *ESG, banking sector, small and medium enterprises, green financing, small open economies*

## Sažetak

Mikro, mala i srednja preduzeća (MMSP) u zemljama u razvoju i malim otvorenim ekonomijama značajno zaostaju u primeni principa životne sredine, društvene odgovornosti i korporativnog upravljanja (ESG). Ovaj jaz dodatno je pogoršan oklevanjem banaka da uključe ESG razmatranja u svoje pristupe finansiranju, posebno u podršci zelenoj tranziciji MMSP-ova. Ova studija istražuje primenu ESG principa od strane srpskih banaka u njihovom poslovanju sa MMSP-ovima, sa fokusom na to kako se finansijske institucije strateški pozicioniraju u svojim poslovnim odnosima sa ovim preduzećima, bez obzira na industriju u kojoj MMSP-ovi posluju. Koristeći podatke prikupljene putem detaljnog upitnika popunjenog od strane banaka, a verifikovane kroz fokus grupu koja je pružila dodatne uvide i preporuke, analiziramo u kojoj meri ESG principi utiču na interakcije bankarskog sektora sa MMSP-ovima. Naši nalazi identifikuju ključne prepreke i mogućnosti za unapređenje integracije ESG principa u ovom ključnom segmentu ekonomskog ekosistema i nude potencijalne puteve za usklađivanje finansijskih strategija sa ciljevima održivog razvoja u kontekstu MMSP-ova.

**Ključne reči:** *ESG, bankarski sektor, mikro mala i srednja preduzeća (MMSP), zeleno finansiranje, male otvorene ekonomije*

## Introduction

As the global focus on sustainability intensifies, Environmental, Social, and Governance (ESG) principles have emerged as critical components for fostering sustainable growth across all sectors, particularly within the financial industry. The integration of ESG principles into banking operations not only responds to increasing regulatory pressures but also aligns with the broader societal demand for corporate responsibility and sustainable development. Banks, as key players in financial ecosystems, are uniquely positioned to drive sustainability by incorporating ESG considerations into their lending practices, investment strategies, and governance frameworks. The objective of this paper is to assess the current state of ESG integration within the Serbian banking sector, with a specific focus on how banks engage with small and medium-sized enterprises (SMEs), which form the backbone of the national economy.

Globally, ESG criteria are becoming essential metrics for evaluating corporate performance. They encompass three key pillars: environmental factors, which address a company's impact on natural ecosystems; social factors, which focus on relationships with employees, customers, and communities; and governance factors, which pertain to the internal management structures that ensure accountability and transparency [14]. In recent years, the rise of responsible investing has increased the importance of ESG metrics, as institutional investors and stakeholders are increasingly favoring companies that demonstrate sustainable practices [9]. For banks, this trend translates into the need to develop ESG-aligned financial products, improve risk management practices, and ensure compliance with evolving regulations.

Serbia, as an emerging economy [11] faces unique challenges in the adoption of ESG principles within its financial sector. The banking sector in Serbia consists of a mix of domestic and foreign banks, many of which are subsidiaries of international financial institutions. These international connections can serve as channels for the diffusion of global ESG standards into the national banking system. However, the adoption of these standards has been uneven, with systemic banks generally leading

the way in ESG policy development, while smaller banks and domestic institutions are slower to integrate these practices [4].

The role of small and medium-sized enterprises (SMEs) in Serbia is particularly relevant to the discussion of ESG in banking. SMEs account for a significant portion of employment and economic activity in the country, yet they face numerous challenges in accessing finance, particularly when it comes to funding that aligns with sustainability objectives [26]. The integration of ESG principles in SME financing is therefore crucial, not only for fostering the growth of these enterprises but also for ensuring that Serbia's economic development is aligned with the global sustainability agenda. Given that SMEs typically lack the resources and knowledge to implement complex ESG practices on their own, the role of banks in providing guidance, financing, and risk management becomes even more critical [20].

The importance of integrating ESG into the banking sector is not only driven by ethical considerations but also by economic and regulatory factors. Research has shown that companies that adopt strong ESG practices tend to outperform their peers financially, with improved risk management, higher employee satisfaction, and stronger reputations [5]. In the financial sector, incorporating ESG criteria into lending and investment decisions can help mitigate long-term risks associated with environmental degradation, social unrest, and governance failures. For example, climate change poses significant risks to financial stability, particularly for banks with exposure to high-carbon industries [3]. By shifting their portfolios towards more sustainable investments, banks can not only reduce their risk exposure but also tap into growing markets for green finance.

In Serbia, the regulatory framework for ESG integration is still evolving, but there are signs of increasing government support for sustainability initiatives. For instance, the Serbian government has adopted several strategies to promote green growth, including initiatives to improve energy efficiency and reduce greenhouse gas emissions. Additionally, Serbia's alignment with European Union (EU) accession processes brings with it the expectation that the country will

gradually harmonize its regulatory frameworks with EU ESG standards, particularly those related to climate action and corporate governance [11].

Thus, the main research question guiding this study is: *“To what extent are Serbian banks incorporating ESG principles into their SME financing, and what are the key challenges and opportunities in advancing sustainable finance within the Serbian banking sector?”* This inquiry seeks to reveal the current level of ESG integration, highlight existing gaps, and offer insights into how Serbian banks can strengthen their contribution to sustainable development.

This paper aims to provide a comprehensive analysis of how banks in Serbia are currently integrating ESG principles into their operations, with a particular focus on their engagement with SMEs. The research adopts a two-fold methodological approach, combining a structured questionnaire distributed to banks with a focus group discussion that includes representatives from the banking sector, SMEs, academia, the public sector, and civil society. The questionnaire is designed to capture the breadth and depth of ESG adoption in banking practices, while the focus group aims to validate the findings and provide additional insights into the challenges and opportunities for ESG integration.

The analysis is structured around the three key pillars of ESG - environmental, social, and governance. For the environmental component, the paper examines the extent to which banks offer green financial products and assess environmental risks when financing SMEs. The social dimension focuses on how banks incorporate social responsibility into their financing decisions, including labor rights and community engagement. Finally, the governance section explores how banks ensure transparency, accountability, and ethical practices, both within their own operations and in their relationships with SME clients.

By exploring these dimensions, the paper seeks to highlight both the progress that has been made in ESG integration and the gaps that remain. Ultimately, the findings will contribute to a better understanding of how banks in Serbia can enhance their role in promoting sustainable development, particularly in the SME sector. The study also offers recommendations for improving ESG

practices, including the development of more tailored financial products, greater transparency in reporting, and increased collaboration between banks, SMEs, and other stakeholders.

In conclusion, the integration of ESG principles into the Serbian banking sector is a critical step towards ensuring long-term financial stability and sustainable economic growth. As global and regional pressures for sustainable finance continue to rise, Serbian banks must adapt their strategies and practices to align with these emerging trends. By doing so, they can not only mitigate risks but also unlock new opportunities for growth and innovation in a rapidly changing financial landscape [24], [6].

## Literature review

Small open economies are countries that rely heavily on international trade and capital flows due to their limited domestic markets. These economies are typically characterized by high degrees of openness, meaning they are exposed to global economic shifts, changes in commodity prices, and external shocks [13]. Examples of small open economies include countries in Eastern Europe, like Serbia, Croatia, the Baltic states, Ireland and others [23]. Due to their size and openness, these economies often face challenges in maintaining economic stability and ensuring sustainable growth. The influence of global markets means that small open economies are more vulnerable to external pressures such as trade disruptions, currency fluctuations, and capital flight.

In small open economies, banking systems play a pivotal role in fostering economic development by providing capital and facilitating international trade. However, these economies must contend with limited domestic resources and financial instruments, making them particularly susceptible to global financial crises [1], [21]. For small open economies to achieve sustainable economic development, they must balance the opportunities presented by global integration with the need to mitigate the risks associated with external volatility. One way this can be accomplished is through the incorporation of Environmental, Social, and Governance (ESG) principles, which promote stability, resilience, and long-term growth [15].

## The Relevance and Implications of ESG at the Global Level

ESG factors have emerged as critical components for assessing the sustainability and ethical impact of businesses globally. These factors are now central to investment decisions, corporate governance, and operational practices. The growing focus on ESG is driven by increased awareness of climate change, social inequality, and the need for transparent governance practices. Globally, institutions and investors are increasingly prioritizing companies that adhere to ESG principles due to the recognized long-term benefits, including risk mitigation, improved financial performance, and enhanced corporate reputation [10].

Environmental concerns such as climate change, carbon emissions, and resource scarcity have pushed businesses to adopt sustainable practices. International agreements, such as the Paris Climate Agreement, have created a regulatory framework that encourages companies to focus on reducing their environmental impact. Social factors, such as diversity, labor rights, and community engagement, are becoming equally important, as consumers and investors demand ethical and inclusive business practices. Governance factors, including board structure, executive compensation, and corporate ethics, are crucial for ensuring transparency and accountability [14].

The global adoption of ESG principles is transforming industries. For example, in the energy sector, companies are increasingly moving away from fossil fuels and investing in renewable energy solutions. In finance, ESG criteria are becoming critical for assessing investment risk and opportunities, with funds that incorporate ESG factors consistently outperforming traditional portfolios [4]. This trend is particularly important for small open economies that are reliant on global financial markets. By adopting ESG standards, businesses in these economies can attract foreign investment and enhance their competitiveness on the global stage. In addition, the growing relevance of ESG principles is also recognized in fostering circular economy practices [17], as banks play a pivotal role in financing SMEs that are transitioning towards more sustainable and resource-efficient business models.

## Financing ESG and SMEs

Small and medium-sized enterprises (SMEs) play a fundamental role in both developed and developing economies, contributing significantly to employment and GDP. However, integrating ESG principles into SMEs presents unique challenges. SMEs typically lack the resources, expertise, and capital to implement comprehensive ESG strategies compared to larger corporations [22]. Nevertheless, the potential benefits of adopting ESG practices are significant for SMEs. These include improved operational efficiency, better access to finance, enhanced reputation, and resilience against market and environmental shocks [19].

One of the primary barriers SMEs face in integrating ESG practices is access to finance. Many SMEs struggle to secure capital for sustainability projects due to the high costs associated with implementing ESG initiatives, such as transitioning to energy-efficient processes or meeting labor standards [2]. Banks and financial institutions can play a pivotal role in bridging this gap by offering financial products specifically tailored for SMEs to support their ESG transitions. However, evidence suggests that SMEs often lack awareness of available green financing options, further limiting their engagement with ESG practices [4].

Despite these challenges, SMEs are increasingly recognizing the value of ESG integration. For example, sustainable practices can help SMEs reduce operational costs by improving energy efficiency and waste management. Additionally, customers and larger corporations are placing greater emphasis on sustainable supply chains, prompting SMEs to adopt ESG principles to remain competitive. Governments and financial institutions are also starting to support SMEs through subsidies, grants, and green loans aimed at promoting sustainability [20].

In Serbia, banks play a crucial role in financing SMEs, which form the backbone of the national economy. The SME sector faces significant challenges in accessing finance [7], with banks often perceiving SMEs as high-risk clients due to their limited credit histories and collateral. Despite these challenges some Serbian banks have begun to tailor financial products specifically for SMEs, recognizing their potential for driving economic growth [8].

## Banks, ESG, and Financing: Differentiation Across Industries

Banks and financial institutions play a critical role in facilitating the transition to a more sustainable economy by offering financing solutions that align with ESG principles. The integration of ESG into banking operations involves assessing the environmental, social, and governance risks associated with lending and investment decisions. By incorporating ESG factors into their risk models, banks can mitigate long-term risks and contribute to broader societal goals [25].

Different industries pose varying levels of ESG risk, leading banks to adopt differentiated approaches when providing financing. For example, industries like energy, mining, and agriculture are more exposed to environmental risks due to their impact on natural resources and greenhouse gas emissions [16]. Banks financing these industries are increasingly applying strict environmental standards and requiring clients to comply with sustainability guidelines. In contrast, sectors like technology and healthcare may face fewer environmental risks but more social or governance concerns, such as data privacy or ethical labor practices. As a result, banks must tailor their ESG financing strategies to the specific risks and opportunities presented by different industries.

The availability of green and social finance products has expanded rapidly in recent years, driven by both regulatory pressures and market demand. Green bonds, for instance, have become a popular instrument for funding environmentally sustainable projects, such as renewable energy infrastructure and energy-efficient buildings [12]. Social impact bonds, which focus on financing projects that deliver positive social outcomes, are another example of how banks are innovating to meet ESG criteria [18].

However, the adoption of ESG financing products is uneven across regions and industries. In Europe, where regulatory frameworks and consumer demand for sustainability are strong, banks are leading the way in offering ESG-related financial products. In contrast, banks in emerging markets, including many small open economies, are still in the early stages of ESG integration [4]. While some banks have started offering green loans and sustainability-linked financing, the overall market

remains underdeveloped due to limited regulatory frameworks, lack of demand from SMEs, and challenges in assessing ESG risks.

In terms of governance, banks have a significant role in promoting transparency and ethical business practices. Strong governance frameworks ensure that banks not only comply with ESG regulations but also lead by example in fostering a culture of accountability. This is particularly important in industries with high governance risks, such as finance and construction, where corruption and unethical practices can undermine sustainable development goals [16].

## Research question and methodology

Given the growing importance of Environmental, Social, and Governance (ESG) principles in global finance, and the unique challenges faced by small open economies like Serbia in integrating these principles into their banking systems, this paper seeks to explore how Serbian banks are incorporating ESG into their financing practices, particularly with respect to small and medium-sized enterprises (SMEs). Specifically, the research focuses on understanding the extent to which Serbian banks have adopted ESG policies, the types of ESG-related financial products available to SMEs, and the challenges and opportunities associated with integrating ESG into lending decisions.

Therefore, the central research question of this study is: *“How are Serbian banks integrating ESG principles into their financing of SMEs, and what are the key challenges and opportunities in advancing sustainable finance in the Serbian banking sector?”* This question aims to uncover the current state of ESG integration, identify gaps, and provide insights into how Serbian banks can enhance their role in promoting sustainable development.

In this study, a two-fold approach combining a questionnaire and a focus group was utilized to gather comprehensive data from key stakeholders in the banking sector. This mixed-methods approach aimed to examine and validate the role of environmental, social, and governance (ESG) practices across banks operating with SMEs within the national ecosystem. The combination of quantitative data from the questionnaire and qualitative insights from the focus

group ensures a robust understanding of the perspectives and practices related to ESG within the banking sector.

#### *Questionnaire - sampling and Distribution*

The questionnaire was distributed by NALED<sup>1</sup> to a comprehensive pool of all banks operating within the national ecosystem, ensuring that every institution had the opportunity to participate in the study. A total of 31 banks responded to the questionnaire, providing initial data for analysis. However, in order to ensure the relevance and accuracy of the results, only those banks that fully completed the questionnaire were included in the final analysis. This criterion narrowed the dataset down to 17 banks, 10 of which were classified as systemic banks due to their size and influence within the financial system. The responses from these systemic banks were crucial for understanding the broader implications of ESG practices across the banking industry.

#### *Questionnaire - Structure*

The questionnaire consisted of 40 questions, divided into various sections to capture different dimensions of the banks' ESG practices and strategies. These sections were as follows:

- *Control Section:* This section collected basic information about the bank, including size, market share, and whether it was classified as systemic.
- *ESG Practices Section:* This core section focused on the bank's current practices related to environmental, social, and governance issues. Questions were designed to assess the extent to which ESG factors are integrated into decision-making processes, and how banks measure and report on ESG performance.
- *Industries Section:* This section examined the industries and sectors in which the banks are most active, with particular attention paid to sectors that are high-risk from an ESG perspective (e.g., manufacturing, energy, agriculture, mining, etc.).
- *Strategies Section:* The final section explored the banks' strategic responses to ESG pressures, including

whether they have adopted specific ESG strategies, the role of ESG in risk management, and how ESG is incorporated into long-term planning.

To analyze the data collected through the questionnaire descriptive statistics will be employed to provide a clear understanding of the distribution and trends in the responses. The use of descriptive statistics, including measures such as frequencies, percentages, means, will allow for the summarization of the banks' ESG practices and their engagement with SMEs. These statistics will help in identifying patterns in the adoption of ESG policies, the availability of green financial products, and the extent of social and governance practices across the sample of banks. By presenting the data in this structured manner, the study aims to highlight key areas of progress and gaps, facilitating a clearer interpretation of the results. This quantitative analysis will be complemented by qualitative insights gathered from the focus group discussion to provide a comprehensive overview of ESG integration within the Serbian banking sector.

#### *Questionnaire - Target Respondents*

The questionnaire was targeted at senior executives within the banks, specifically individuals holding C-level positions (e.g., CEOs, CFOs, and COOs). This approach ensured that the responses were reflective of strategic decision-making processes within the banks. Engaging with the highest level of management allowed the study to gain insights into how ESG policies are incorporated into overall corporate strategy, risk management, and operational activities.

#### *Focus Group to Validate Results - Composition and Scope*

The second phase of the methodology aimed to validate the results obtained from the questionnaire and gather additional insights. For this purpose, a two-hour moderated focus group discussion was organized by NALED, with over 20 participants from various sectors, including representatives from the banking sector, small and medium-sized enterprises (SMEs), academia, the public sector, and civil society. While the focus group featured a diverse group of participants from different industries, including banks and financial institutions, the discussions

<sup>1</sup> National Alliance for Local Economic Development (NALED) is an independent, non-profit and non-partisan association advocating better business environment in Serbia and the region, <https://naled.rs/en/upoznajte-naled>

were highly relevant to the banking sector, particularly in the context of ESG engagement with SMEs. The insights gained can be transposed to the banking sector, ensuring their applicability to SMEs' needs and challenges.

The focus group began with a presentation of the preliminary results derived from the questionnaire. This served as a foundation for the subsequent discussion, ensuring that all participants had a clear understanding of the key findings and issues at hand. Alongside the presentation, a semi-structured questionnaire was distributed to the participants to prompt deeper reflection on the results and encourage them to provide their own insights and perspectives on the issues discussed.

The discussion was structured around several key themes:

- *Validation of Findings:* Participants were asked to comment on the findings presented, focusing on confirming or challenging the responses from the questionnaire. This allowed for the identification of any discrepancies or inconsistencies between the quantitative data and the practical experiences of the focus group members.
- *ESG Challenges and Opportunities:* Participants explored the practical challenges and opportunities associated with implementing ESG principles, particularly within the banking sector and its interactions with SMEs. Discussions addressed how financial institutions could improve their strategies to support the green transition of SMEs.
- *Sectoral Strategies:* Although the participants represented various industries, the conversation centered around how the banking sector, specifically, could better align its financing practices with ESG goals. Insights from other industries helped contextualize sector-specific challenges, but the recommendations remained applicable to banking operations with a focus on SMEs.
- *Recommendations:* The group generated recommendations to enhance the integration of ESG considerations into the banking ecosystem, particularly in SME financing. These recommendations were noted for further analysis in the results and discussion sections of this paper.

This two-phase methodological approach, combining a structured questionnaire with a focus group discussion, allowed for both a broad quantitative analysis and a more detailed qualitative exploration. The focus group validated and contextualized the findings from the questionnaire, providing a robust understanding of how ESG principles could be better integrated into the banking sector, particularly in its dealings with SMEs. The recommendations generated during the session will serve as a valuable input for the policy-oriented aspects of this research, ensuring the relevance of the findings to current banking practices and ESG considerations.

## Results and discussion

The structured questionnaire revealed significant variations in the adoption and implementation of Environmental, Social, and Governance (ESG) practices across banks in Serbia, with key differences between systemic and other banks.

### Sample Composition and Respondent Overview

Of the 31 banks approached, 17 fully completed the questionnaire, with 10 classified as systemic banks operating in Serbia. This sample provides a comprehensive overview of ESG practices within the Serbian banking sector. The majority of respondents were from banks that play a systemic role in the economy, making their responses particularly valuable for understanding the current landscape of sustainable finance.

Among the 17 banks that completed the questionnaire, 71% reported having a defined ESG policy, though most of these policies are internal and not publicly available. Systemic banks were more likely to have comprehensive ESG policies in place, often integrated into broader corporate strategies like sustainable development goals (SDGs) or environmental risk management procedures. These policies focus on climate risk, environmental sustainability, and responsible finance.

However, while a majority have such policies, the implementation and transparency of these strategies remain limited. Many banks do not publicly disclose their ESG strategies, indicating a gap between internal governance

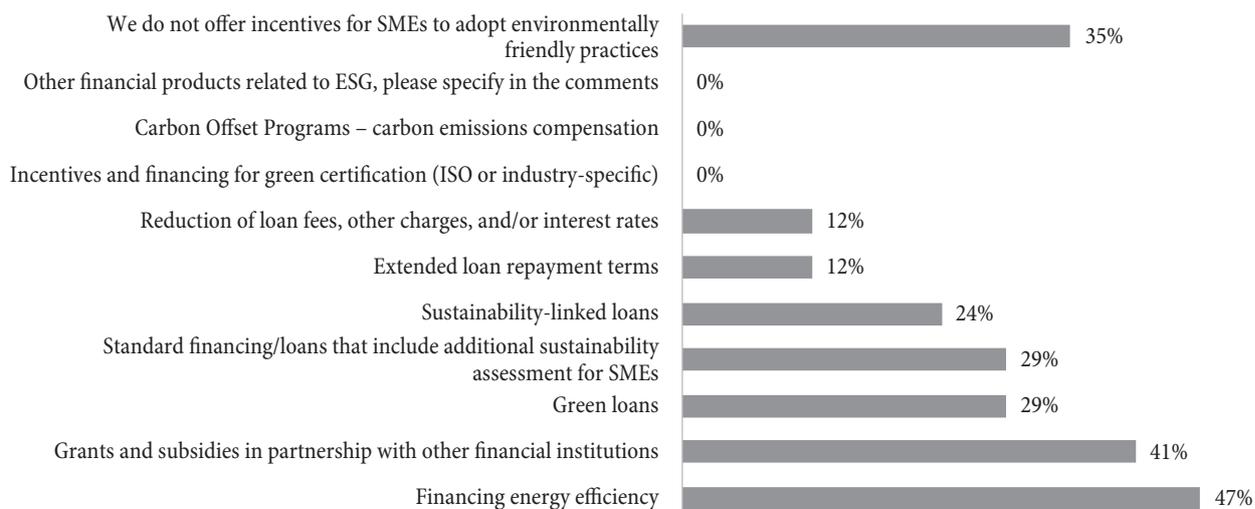
and public accountability. Only a small percentage of banks, primarily those under multinational ownership, make their ESG policies available on their websites.

### Environmental (E) Practices and Products

When examining the environmental dimension of ESG, the results highlight that a limited number of banks (47%) offer specific financial products aimed at promoting environmental sustainability among SMEs, such as green loans and energy efficiency financing. Systemic banks are more likely to provide these products, often in collaboration with international financial institutions or through grant programs. (Figure 1.)

Notably, 35% of banks do not offer any environmentally focused products for SMEs, underscoring a significant gap in the market.

**Figure 1. Types of products the bank offers to SMEs for introducing environmentally friendly practices**



While some banks offer training or advisory services to SMEs to support green practices, the majority do not provide such additional services (Figure 2.). This indicates that while financial products are available, broader support for SMEs to adopt sustainable practices is still lacking.

Furthermore, 47% of the banks reported not using specific environmental criteria when assessing loan applications from SMEs, and only 35% conduct continuous monitoring of environmental impacts. This lack of robust environmental risk assessments suggests that banks are not fully incorporating environmental considerations into their credit risk models.

The graph on Figure 3. shows how banks apply specific policies or criteria to assess the environmental impact of SMEs they finance. Notably, a significant percentage of banks (around 45%) do not apply specific criteria to

**Figure 2. Additional types of products that banks offer to SMEs with the goal of actively promoting environmental sustainability**

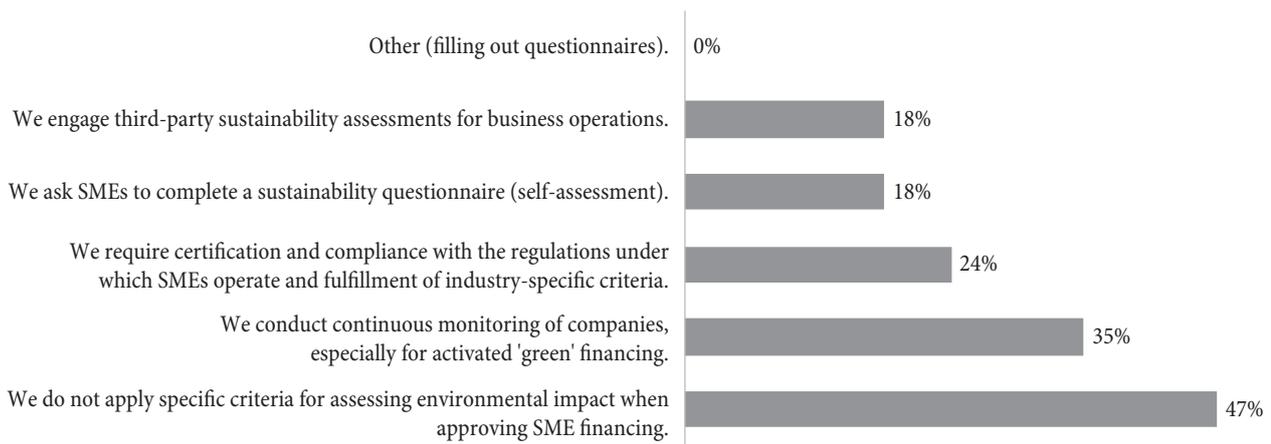


assess the environmental impact when approving SME financing, highlighting a gap in ESG risk assessment. While some banks engage third-party sustainability assessments and request sustainability self-assessments from SMEs (approximately 20% for both), there is still limited monitoring and certification efforts (about 25%). Continuous monitoring and green financing measures are slightly more common but still not widely adopted, which indicates room for improvement in banks' ESG strategies for SME financing. The lack of widespread implementation of environmental criteria underscores the need for stronger regulatory or market-driven incentives for banks to better integrate ESG assessments into their financing decisions.

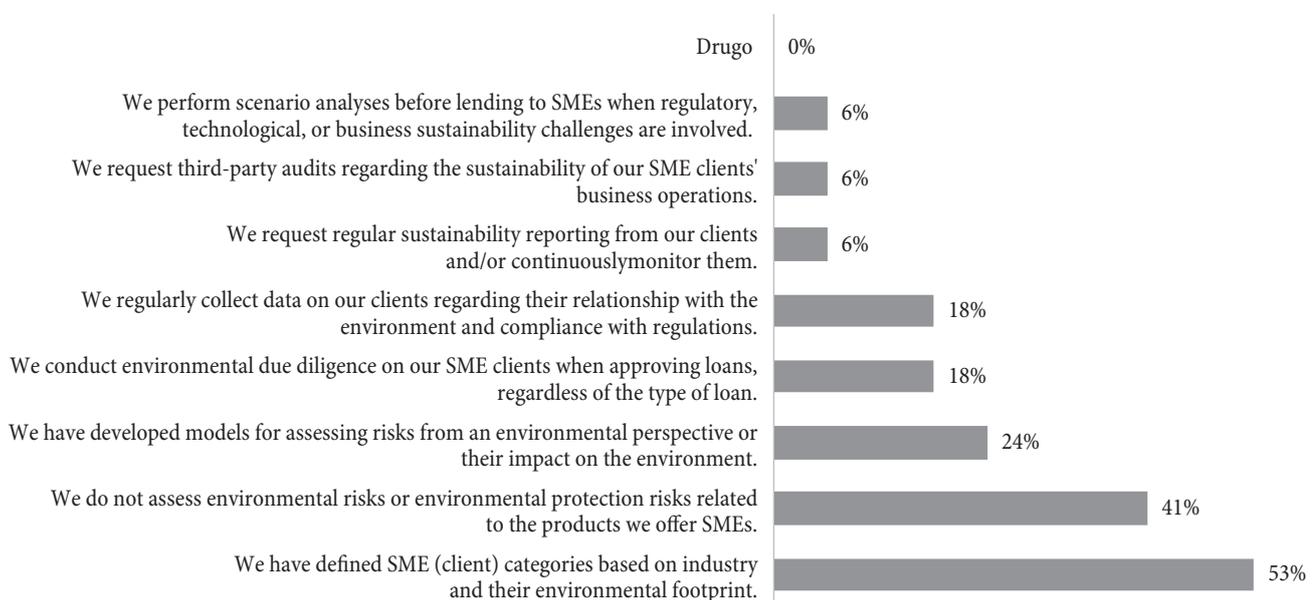
The graph on Figure 4. highlights how banks assess environmental and environmental protection

risks related to financing SMEs. A notable percentage of banks (around 40%) do not assess environmental risks or environmental protection risks associated with the products they offer to SMEs, indicating a significant gap in ESG implementation. However, many banks (around 50%) have categorized SMEs by industry and environmental footprint, suggesting that there is a focus on understanding the environmental impacts of different sectors. Additionally, some banks (around 20-25%) have developed models to assess environmental risks and conduct environmental due diligence for SMEs before approving loans, reflecting the need for more structured approaches to integrating environmental considerations into financing decisions. Regular data collection and reporting from clients, while present, remains limited, indicating room for improvement in how banks monitor environmental compliance and

**Figure 3. How banks apply specific policies/criteria to assess the environmental impact of SMEs they finance**



**Figure 4. Ways banks assess environmental and environmental protection risks related to financing SMEs**



sustainability practices over time. This suggests a growing but still inconsistent application of environmental risk assessment in SME financing.

**Social (S) Practices:  
Gaps in Inclusivity and Community Engagement**

In terms of social responsibility, the findings reveal even greater disparities. A large proportion (59%) of banks do not have a defined policy for promoting social responsibility when financing SMEs. Even among systemic banks, many lack clear social inclusion policies or measures to ensure compliance with labor laws and social protections. Most banks (94%) do not have policies to ensure inclusive working environments for SMEs they finance, and 59% do not check for compliance with national or international labor laws.

Moreover, the banks rarely assess the social risks within their SME clients’ supply chains, with 88% reporting no measures in place for this type of evaluation. Additionally, 82% of banks do not engage with local communities to understand their needs before making financing decisions. These findings highlight a substantial gap in the social dimension of ESG integration, particularly in terms of ensuring socially responsible banking practices and fostering community development.

**Governance (G) Practices: Focus on Transparency but Gaps in Data Protection**

Governance practices within banks appear stronger compared to environmental and social dimensions. Approximately 53% of banks have policies in place to assess

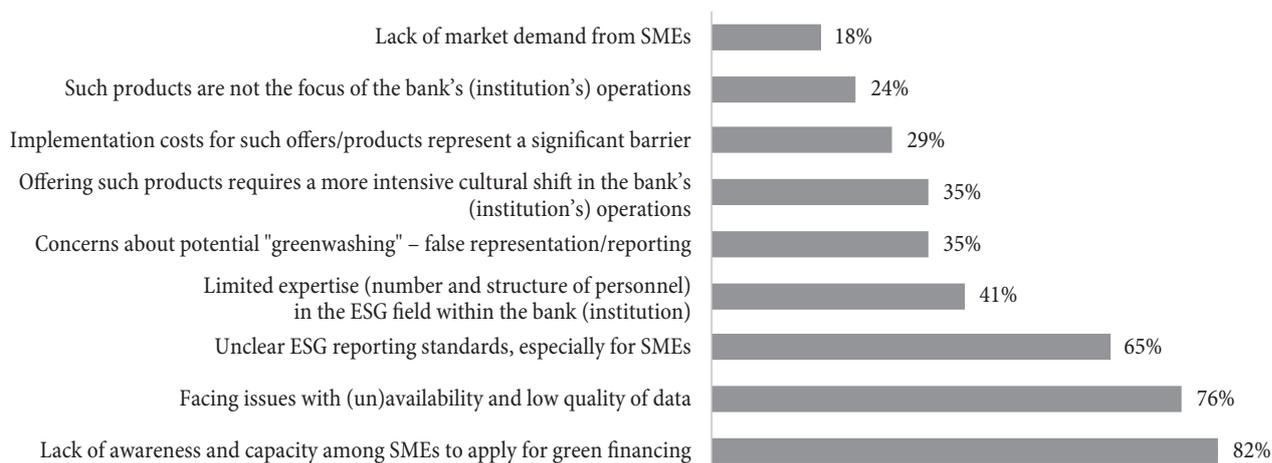
the governance structures of SMEs during the financing process, and 59% monitor transparency in their clients’ operations. These practices are particularly prevalent among systemic banks, which tend to have more rigorous governance standards.

However, only 35% of banks ensure that SMEs implement personal data protection procedures, a critical component of governance in the digital age. Furthermore, 76% of banks do not have clear guidelines for ongoing monitoring of governance risks among their SME clients, revealing another area for improvement in governance practices. On a positive note, 71% of banks have measures in place to prevent corruption and unethical practices in SME financing.

**Business practices and innovations**

As per business practices the graph on Figure 5. highlights the challenges banks face in implementing ESG practices in financing SMEs. The most prominent issue (around 80%) is the lack of awareness and capacity among SMEs to apply for green financing, suggesting that SMEs are not fully prepared or informed about the opportunities that ESG products offer. Another significant challenge (around 70%) is the availability and quality of data, which hinders banks’ ability to assess and track ESG criteria effectively. Many banks also face unclear ESG reporting standards, particularly for SMEs (about 60%), and the lack of internal expertise within the banks (around 50%) further complicates the implementation of ESG practices. Concerns about “greenwashing” and cultural resistance

**Figure 5. Challenges banks face in implementing ESG practices in financing SMEs**



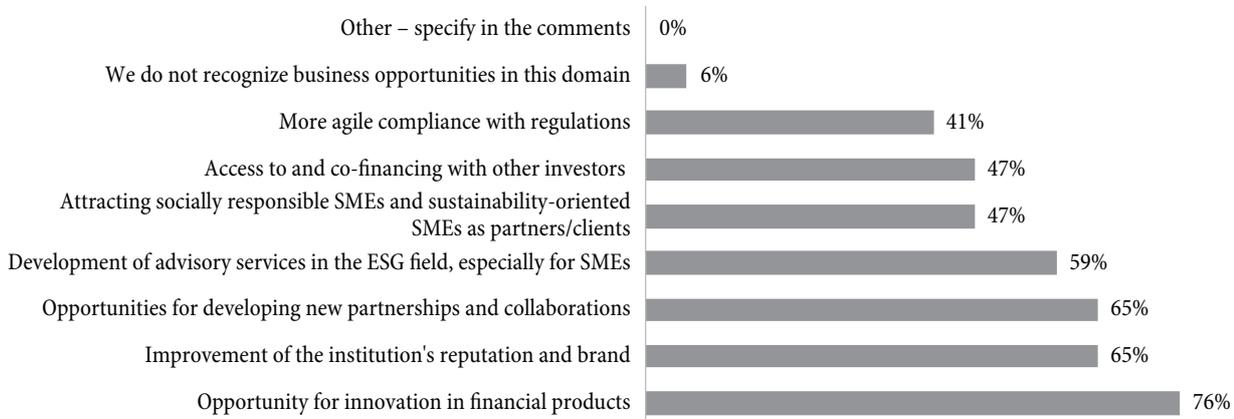
within institutions also pose barriers to offering these products, underscoring the need for clearer frameworks and better capacity building, both within banks and among SMEs. Overall, these challenges reflect a combination of internal capacity issues and external market readiness.

Graph on Figure 6. highlights the business opportunities for growth and innovation in banks’ operations as a result of their commitment to sustainability and the introduction of ESG criteria. The most significant opportunity (around 80%) lies in innovation within financial products, showing that banks see substantial potential in creating new ESG-focused offerings. Improving the institution’s reputation and brand is another key opportunity (around 70%), underscoring how sustainability can enhance a bank’s image. Additionally, developing new partnerships and collaborations, as well as advisory services in ESG for SMEs, are seen as valuable (around 60%). Access to

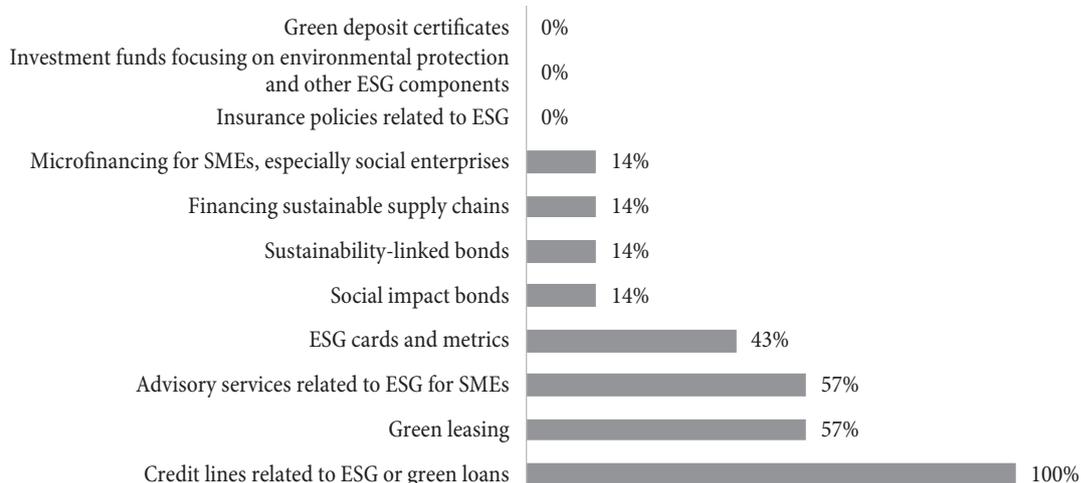
co-financing with other investors and compliance with regulations also present strong opportunities (around 50%). A smaller proportion of banks (less than 10%) do not recognize any business opportunities in this domain, indicating that most institutions see ESG as a strategic area for growth and development.

Next graph on Figure 7. illustrates the development and innovation of new financial products focused on ESG in the SME segment. The most significant product banks are focusing on is credit lines related to ESG or green projects, with around 100% of respondents indicating this as a priority. Green leasing and advisory services related to ESG for SMEs follow with moderate interest (about 40% each), reflecting a growing emphasis on tailored financial products and support services for sustainability. ESG cards and metrics also show a moderate level of development (around 30%). On the other hand, products such as

**Figure 6. Business opportunities for growth and innovation in bank’s operations as a result of commitment to sustainability and the introduction of ESG criteria concerning products and/or services**



**Figure 7. Development and innovation of new financial products focused on ESG in the SME segment**



sustainability-related bonds, social impact bonds, and microfinancing for SMEs (especially for green projects) have less attention from banks, indicating that these more niche products have not yet become mainstream. This distribution reflects the broader trend of focusing on established products like credit lines, while emerging products still require further development.

### Industries differentiation

This questionnaire is primarily focused on SMEs; however, due to the complexity and variety within industries, some of the responses may be influenced by the broader context and may also apply to non-SME companies. As such, interpretations should consider the potential for bias in certain answers related to larger enterprises.

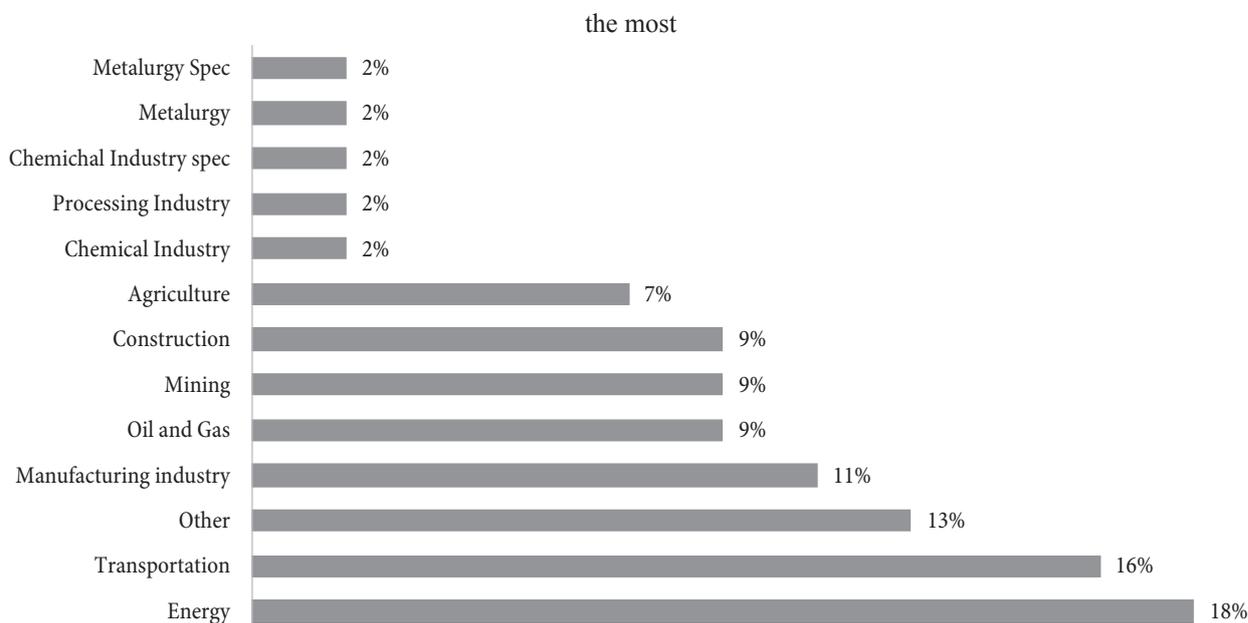
In the context of ESG (Environmental, Social, and Governance) financing, different industries face varying levels of exposure to environmental and social risks, which influences the way banks allocate funding. Industries such as energy, construction, manufacturing, and agriculture are often at the forefront of ESG-related financial considerations due to their significant environmental impact and high carbon emissions. As a result, banks are increasingly offering green loans and energy efficiency financing targeted at these sectors, which helps mitigate environmental risks while supporting the transition to more sustainable practices. For instance,

energy efficiency financing (offered by 47% of banks) and grants for sustainability projects (41%) are common products directed at industries that are responsible for substantial resource consumption and emissions, such as the energy and manufacturing sectors.

Conversely, industries with lower direct environmental impacts, like financial services and information technology, may not have as many specific ESG financing products available but still face governance and social challenges, such as ethical labor practices or data privacy issues. The differentiation in ESG financing across industries reflects the distinct risks and opportunities each sector presents. High-risk industries like mining or heavy manufacturing are likely to see stricter ESG-related credit assessments and more targeted financing solutions aimed at reducing their negative environmental impacts. As ESG principles become further embedded into financial decision-making, banks will need to tailor their financing strategies to address the unique sustainability challenges of each industry, balancing both risk mitigation and opportunities for green growth.

The graph on Figure 8. shows that banks are currently financing SMEs the most in the manufacturing and processing industry, which represents the highest proportion, followed by commerce and agriculture. Other significant sectors include hospitality and tourism, transport, and energy, which all receive considerable financial support from banks. On the lower end of the spectrum, telecommunications,

**Figure 8. Industries and segments that banks are currently financing SMEs**



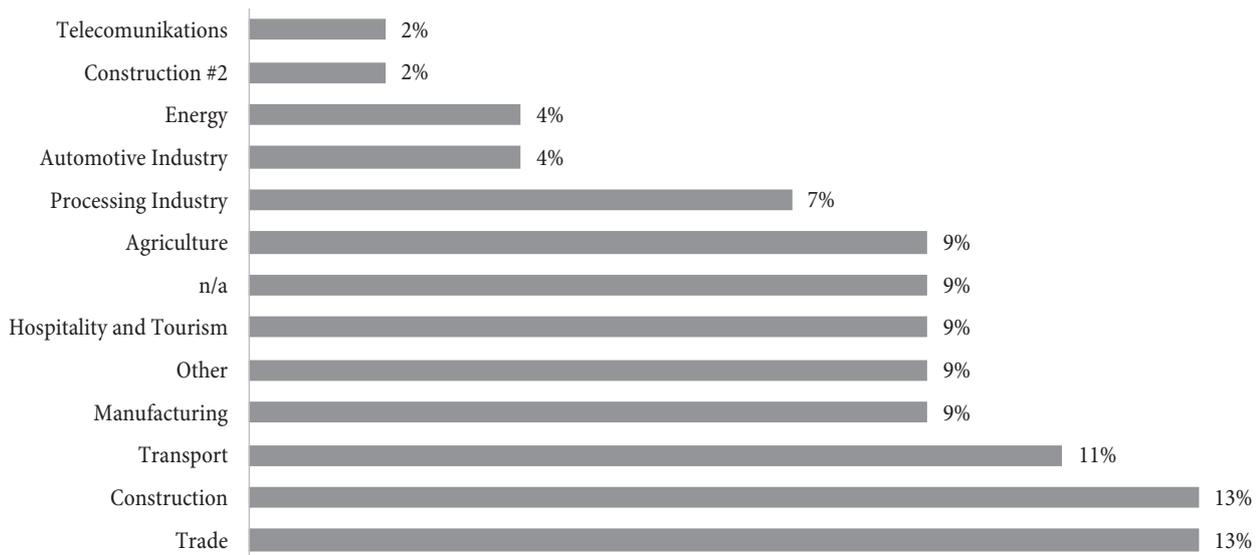
construction, and the automotive industry receive less financing, indicating that banks may prioritize industries more directly connected with essential goods and services or those with strong growth potential.

When the bank’s perception of the industry is in question, the graph on Figure 9. indicates that energy, transport and oil and gas are the industries most likely to have significant problems with greenhouse gas emissions, with energy being the highest at nearly 18%. Other sectors, including manufacturing and processing, mining, and construction, also exhibit substantial emission concerns, indicating their impact on the environment. On the lower end, industries like metallurgy and the chemical industry show lesser but still notable risks, reflecting the overall

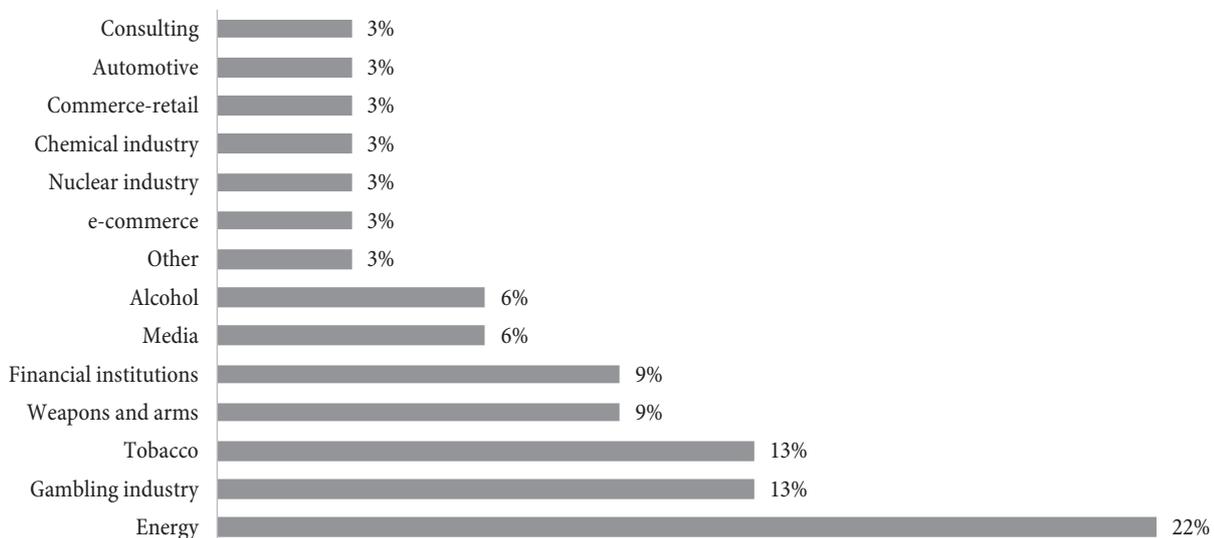
trend of emissions-heavy industries being under scrutiny for their environmental footprint.

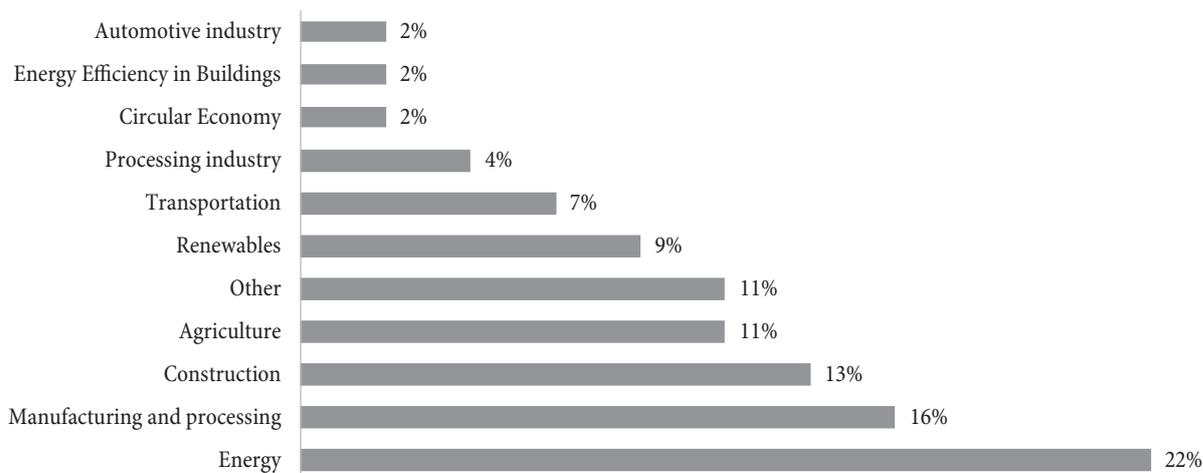
The graph on Figure 10. illustrates industries that banks are reluctant to finance, regardless of ESG considerations. Energy tops the list, with banks showing the highest reluctance to finance this sector, likely due to its environmental impact. Other highly avoided industries include gambling, tobacco, and the arms industry, reflecting ethical and social concerns. Financial industries, media, and alcohol are also sectors where banks exhibit hesitation, although to a lesser extent. Lower down the scale, industries like consulting, automotive, and commerce face relatively fewer restrictions but are still under consideration when it comes to financing decisions.

**Figure 9. Industries that may have significant problems with greenhouse gas emissions**



**Figure 10. Industries that banks are reluctant to finance (regardless of ESG)**



**Figure 11. Industries where banks would invest more in the future for providing ESG products**

The graph on Figure 11. highlights the industries and segments that banks are currently financing the most for SMEs. Manufacturing and processing lead as the most financed sector, reflecting a significant focus on this industry. Other important sectors receiving substantial financial support include commerce, agriculture, hospitality and tourism, and transport. These industries represent core areas where banks see potential for growth or stable returns in their SME lending portfolios. Meanwhile, sectors like energy, construction, and the automotive industry receive comparatively less attention, indicating that banks might prioritize more traditional or higher-demand industries in their current SME financing strategies.

#### Focus Group Discussion: Validating the Findings and Expanding Perspectives

A moderated focus group, involving over 20 participants from banking, SMEs, academia, the public sector, and civil society, was conducted to validate and expand on the questionnaire findings. This session provided deeper insights into the challenges and opportunities associated with ESG integration in the Serbian banking sector. The focus group broadly confirmed the results of the questionnaire. Participants from the banking sector acknowledged the uneven integration of ESG practices, particularly in the environmental and social dimensions. Systemic banks were recognized for being more advanced in adopting ESG policies, though these efforts were often limited to internal procedures without broader external accountability or transparency.

The participants also emphasized the need for more substantial support for SMEs, particularly in terms of access to green finance and advisory services. The lack of awareness and capacity among SMEs to apply for ESG-related products was highlighted as a critical barrier, reflecting the banks' own assessment from the questionnaire.

#### Challenges in ESG Implementation

Several key challenges were discussed during the focus group, aligning with the questionnaire's findings as follows:

- *Lack of SME Capacity* - SMEs in Serbia often lack the knowledge and resources to engage with ESG financing options. This issue was identified as a major barrier to expanding green finance and improving environmental performance in the sector.
- *Data and Reporting Gaps* - The availability and quality of data on ESG performance, particularly in the SME segment, remain significant challenges. Banks noted that without clear reporting standards, it is difficult to assess and monitor ESG risks effectively.
- *Regulatory Uncertainty* - While there is growing recognition of the importance of ESG, the lack of clear regulatory frameworks, especially regarding ESG reporting for SMEs, was seen as a barrier to progress.

#### Opportunities for Growth and Innovation

Despite the challenges, the focus group identified several opportunities for banks to innovate and expand their ESG offerings:

- *Green and Social Finance Products* - Participants highlighted the potential for banks to develop new financial products that address both environmental and social challenges, such as loans for renewable energy projects or social impact bonds.
- *Partnerships and Collaborations* - The focus group also emphasized the importance of collaboration between banks, the public sector, and civil society to create a supportive ecosystem for ESG finance. Partnerships with international institutions were seen as particularly valuable for expanding access to green finance.
- *Reputation and Brand Development* - Improving ESG performance was seen as a way for banks to enhance their reputation and brand value, particularly in a market that is increasingly conscious of sustainability issues.

### Recommendations for Enhancing ESG Integration

The discussion generated several recommendations for improving ESG practices within the Serbian banking sector, particularly in relation to SME financing:

- *Expand Green Finance Offerings* - Banks should develop more targeted financial products that support energy efficiency, renewable energy, and other environmentally sustainable practices among SMEs.
- *Strengthen Social Responsibility Policies* - Banks need to enhance their social responsibility frameworks, ensuring that they promote inclusive and equitable financing practices that align with labor laws and social protections.
- *Improve ESG Data Collection and Reporting* - There is a need for standardized ESG reporting practices, particularly for SMEs, to ensure that banks can accurately assess and manage ESG risks.
- *Foster SME Education and Capacity Building* - Banks should play a more active role in educating SMEs about ESG principles and providing advisory services to help them improve their sustainability practices.

### Conclusions and recommendations

The integration of ESG principles across industries and in banking practices is increasingly seen as essential

for achieving sustainable economic growth. Small open economies, which are vulnerable to external shocks, have a unique opportunity to leverage ESG to build resilience and attract foreign investment. For SMEs, ESG integration can be challenging due to resource constraints, but the long-term benefits, including better access to finance and improved competitiveness, are significant. Banks are central to driving this transition, with the ability to offer financing solutions tailored to the ESG risks and opportunities of different industries. However, the adoption of ESG principles varies widely across regions and sectors, and there remains significant work to be done in developing standardized frameworks and products to meet the growing demand for sustainable finance.

Thus, in this paper, utilizing a combination of methodologies, authors aimed to address the research question: “*How are Serbian banks integrating ESG principles into their financing of SMEs, and what are the key challenges and opportunities in advancing sustainable finance within the Serbian banking sector?*”. Through a structured approach, we have explored the current level of ESG integration in bank-SME relations, identified barriers to the adoption of sustainable finance practices, and highlighted the opportunities for enhancing ESG-driven financial products. The analysis provides valuable insights into how Serbian banks are navigating the complexities of sustainable finance and the critical role SMEs play in this evolving financial landscape.

The integration of ESG practices in the Serbian banking sector remains at an early stage, particularly in relation to SME financing. While systemic banks have made progress in developing internal ESG policies, there are significant gaps in transparency, product offerings, and the social and environmental dimensions of sustainability. The results of the questionnaire and the focus group discussion suggest that there is substantial room for improvement, particularly in supporting SMEs to engage with ESG finance. Through the development of innovative products, stronger social responsibility frameworks, and enhanced data collection and reporting, banks can play a critical role in advancing sustainable finance in Serbia.

The integration of Environmental, Social, and Governance (ESG) principles into the banking sector is

becoming increasingly essential, particularly as financial institutions face rising pressure to contribute to sustainable development. This study focused on examining the current state of ESG practices within the Serbian banking sector, with a specific emphasis on banks' interactions with SMEs. By utilizing both a structured questionnaire and a moderated focus group, the research aimed to uncover the depth of ESG policy implementation, the availability of sustainable financial products, and the challenges faced by both banks and SMEs in adopting these practices.

The findings from this study demonstrate that while there has been some progress in the adoption of ESG principles, particularly among systemic banks, significant gaps remain in both the breadth and depth of ESG integration. Of the 17 banks surveyed, 71% reported having ESG policies, yet many of these policies are internal and not publicly accessible, suggesting a lack of transparency in how banks are addressing sustainability challenges. Furthermore, the environmental component of ESG is weakly represented, with only 47% of banks offering financial products such as green loans or energy efficiency financing to SMEs. This is compounded by the fact that 35% of banks offer no environmentally oriented products at all, highlighting a considerable gap in market offerings for SMEs striving to adopt sustainable practices.

The social dimension of ESG presents even greater challenges. A notable majority of banks (59%) do not have policies in place to promote social responsibility in their financing of SMEs. Issues such as labor rights, compliance with employment laws, and social risk management are often overlooked, with many banks not evaluating these factors when making lending decisions. Similarly, community engagement is limited, with 82% of banks not consulting local communities before making financing decisions that could impact them. These findings highlight the need for a stronger focus on social inclusivity and responsibility within the banking sector.

Governance practices, while somewhat stronger, still reveal areas for improvement. While 59% of banks reported assessing the transparency of their SME clients' operations, only 35% ensure that SMEs implement necessary data protection procedures. This gap in governance poses risks, particularly as regulatory demands around data privacy

and security continue to increase globally. The study also found that 76% of banks do not have clear guidelines for ongoing risk management of SMEs, underscoring the need for more robust governance frameworks.

The focus group discussion provided additional validation of these findings and brought to light several key challenges. A lack of SME capacity and awareness regarding ESG principles emerged as a critical barrier, alongside data quality and reporting challenges that complicate the banks' ability to assess and manage ESG risks effectively. Furthermore, regulatory uncertainty, particularly around ESG reporting for SMEs, continues to hinder progress.

Despite these challenges, the study identified several opportunities for growth and innovation in ESG finance. Banks, particularly systemic institutions, have the potential to lead by example through the development of new green and social financial products. Partnerships between banks, the public sector, and civil society were highlighted as key drivers of future progress. Moreover, enhancing ESG reporting, improving transparency, and offering capacity-building initiatives for SMEs could significantly improve the overall impact of ESG integration within the banking sector.

In wrapping it all, while the Serbian banking sector has made strides in incorporating ESG principles, particularly in the governance dimension, the environmental and social aspects remain underdeveloped. The study underscores the need for banks to expand their offerings of green financial products, enhance their social responsibility policies, and adopt more transparent and accountable ESG practices. By addressing these gaps and leveraging the opportunities identified, Serbian banks can not only improve their own sustainability performance but also support the broader economy in transitioning to a more sustainable and responsible future.

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# THE PATH OF THE REPUBLIC OF SERBIA INTO THE GLOBAL RASPBERRY MARKETING CHANNEL

Put Republike Srbije u globalni kanal marketinga  
maline

## Abstract

The aim of this study is to propose an efficient structure of raspberry marketing channels in both domestic and international markets, considering the modern agribusiness system of the French company Roger Descours Group, which has a subsidiary, Frucom food doo, in Serbia. Concurrently, it highlights the changes that have occurred in the marketing channel structure, significant for future traffic operations and new opportunities arising from market conditions. Through an analysis of the specifics of raspberry production and marketing channels and utilizing multiple linear regression of raspberry production and exports from the Republic of Serbia, as well as raspberry exports from Frucom Food doo, the possible means of creating a competitive advantage in the global market will be demonstrated. The primary objective of this study is to identify key directions for the future development of international raspberry placement from the Republic of Serbia, assess potential constraints in this domain, and propose basic measures and activities to enhance the competitiveness of agricultural and food exports in foreign markets.

Only a capable food industry with secure agribusiness systems as market entities can guarantee production security on farmers' estates. The level of development of raspberry distribution channels can be identified by applying the quantitative method of linear regression to assess the dependent variable (quantity of raspberries exported from the Republic of Serbia) using independent variables (total quantity of raspberries produced in the Republic of Serbia, raspberry exports from the Frucom food doo cold storage).

**Keywords:** *agribusiness system, raspberry, export, strategy, sales channels, competitiveness*

## Sažetak

Cilj rada je predlog efikasne strukture kanala marketinga maline na domaćem i međunarodnom tržištu posmatrajući moderan agrobiznis sistem francuske kompanije Roger Descours Group koja ima filijalu Frucom food doo u Srbiji. Uporedo sa tim, ukazuje se na promene koje su se dogodile u strukturi kanala marketinga koje su značajne za funkcionisanje prometa u budućnosti i za nove mogućnosti koje se otvaraju primenom tržišnih uslova. Kroz analizu specifičnosti maline njene strukture kanala marketinga, a uz pomoću višestruke linearne regresije proizvodnje i izvoza maline Republike Srbije, kao i izvoza maline iz firme Frucom Food doo, pokazaće se mogući način stvaranja konkurentne prednosti na svetskom tržištu.

Osnovni cilj ovog rada je da se utvrde ključni pravci budućeg razvoja međunarodnog plasmana maline iz Republike Srbije, sagledaju moguća ograničenja u tom domenu, kao i da se predlože osnovne mere i aktivnosti za poboljšanje konkurentnosti izvoza naših poljoprivredno-prehrambenih proizvoda na stranim tržištima.

Samo sposobna prehrambena industrija sa sigurnim agrobiznis sistemima kao tržišnim subjektima može da garantuje sigurnost proizvodnje na imanjima zemljoradnika. Stepen razvijenosti kanala distribucije maline može se identifikovati primenom kvantitativne metode linearne regresije za procenu zavisne varijable (količina maline izvežene iz Republike Srbije) korišćenjem nezavisnih varijabli (ukupno proizvedena količina maline u Republici Srbiji, izvoz maline hladnjače Frucom food doo).

**Ključne reči:** *agrobiznis sistem, malina, izvoz, strategija, kanali prodaje, konkurentnost*

## Introduction

Alternative marketing channels for agricultural products are expanding, but there is no unified stance on how marketing channel entities should position agricultural products to maximize profit. [5] One factor that has contributed to the growth of the fresh berry market is the recognition of berries as antioxidants, which preserve human health and protect against diseases. [1] Raspberry is the most renowned antioxidant, and the Republic of Serbia possesses comparative advantages in raspberry production due to its geographical location. The profitability and competitiveness of raspberry production depend on various economic and climatic factors, as well as individual decisions made by producers. [3]

It is a fact that the conditions for primary product production vary across different countries, considering that the geographical distribution of resources is irregular and climatic conditions depend on the specific geographical location of each country. Due to these differences in production conditions, the relative costs of primary product production vary among different countries. Additionally, countries differ in their demand for primary products: industrialized countries generally have a greater need for primary products than developing countries due to the use of these products as inputs in their industries.

Previous research represents specific case studies of individual African countries where agriculture plays a significant role in the overall economy and is conducted for the needs of policy makers in those countries. Such results suggest that in the case of small and medium enterprises, foreign ownership may contribute to the initial initiation of export activities, but their extent depends more on other characteristics of the enterprises, such as productivity and technology. Chen, Sheng, and Findlay assessed the impact of foreign ownership on export decisions and export volume using the largest sample to date of over 134,130 firms in China's manufacturing sector. They found that the share of foreign capital positively affects both the initiation of exports and the intensity and overall value of firms' exports. [2] Based on the Shmic and Helmberger model, it can be concluded that foreign direct investment and trade can be substitutes

or complements, depending on the initial assumptions. Kodzima emphasizes that only foreign direct investment in sectors where the country of origin of the investment has a comparative disadvantage leads to a complementary relationship between foreign direct investment and trade. [6, p. 7] Empirical research on the impact of foreign direct investment in the agricultural sector thus far does not provide general conclusions. [17, p. 2]

Foreign direct investment can directly impact the export growth of the host country, especially if the subsidiaries of multinational companies export their entire production or part of it abroad. This impact is described by the theoretical model of vertically integrated multinational companies by Helpman, where companies fragment their production process and locate its different stages depending on the relative costs of production factors in different locations. [4, p. 103]

Export strategies are the most common form of entry into international markets because they require minimal resources, have a lower level of risk, and are strategically highly flexible. [16] The study primarily addresses organizational issues in the domain of modern agribusiness, aiming to emphasize the need for transforming the role that contemporary trade plays in connecting various participants in the modern food supply chain. In contrast to family farming, the model of agro-industrial business focuses on specialization in production and the market. Management is based on professional management. Through vertical integration with the French company Roger Descours Group and horizontal integration with the Serbian firm Yugent doo, a new agribusiness system, Frucom food doo, is formed. The research provides empirical evidence for understanding the dimensions of raspberry sales channel analysis, particularly in creating competitive advantages. Factors contributing to horizontal and vertical movement and linking of companies and cooperatives have been identified, thereby motivating the development of the local industry.

Although progress in the agri-sector has been comprehensive and visible in most countries, its degree and speed vary drastically. Therefore, it can be said that agriculture, like other sectors, reflects the overall state and level of economic and societal development. In developed

countries, the concept of modern agribusiness functions, with the agribusiness complex as its backbone.

## Literature overview

Like any other area of economic interest, especially when examining elements of an economic system, the essence of agriculture can be approached from both micro and macro perspectives. At the micro level, the task of economics is to explore the fundamental laws of behavior of individual producers and consumers and the repercussions of their actions on the market system (price formation system). On the other hand, the macroeconomic issues of the agricultural sector encompass the integration of all individual producers and consumers into the agro-food system of the national economy, and more broadly, involve the participation of the domestic agricultural sector in international trade, as well as its position and influence in the international and global markets. [10]

When considering the drivers of modern international trade flows, it can be noted that in the field of agriculture (as well as in all other areas of foreign trade), the economically strongest actors are transnational companies, while small and medium-sized enterprises find their place in fulfilling certain smaller segments of demand known as “market niches.”

Considering that there are many participants in the agri-food product chain (agricultural input producers, primary producers, processors, distributors, wholesale and retail traders), the situation is even more pronounced, in the sense that in some segments of this chain, the top ten companies, in terms of revenue, dominate almost the entire market. Additionally, it should be noted that the most developed countries in the world, such as the USA, Germany, France, the UK, the Netherlands, and Switzerland, lead in scientific research in the development of genetic material of plant and animal species, their cultivation for commercial purposes, as well as in the development of biotechnology related to the production of fertilizers, animal feed, and medicines. A strategy, which would create a competitive position for Serbia, should include changes in the field of production and technological innovation, branding promotion policies

that would facilitate the performance in both domestic and foreign markets, improving the quality of business operations, and business and market orientation of all the stakeholders in the food supply chain. [13, p. 181]

In recent years, we have noticed that large companies strive to not only promote bioeconomy and enhance the diversity and productivity of plant and animal life but also emphasize the importance of using biomass for commercial purposes. Their aim is not only to master the natural resources capable of sustainable production and food security in the future but also to control natural processes on Earth. Specifically, these companies seek to quantify and commodify the reproductive capacities of the planet through market mechanisms, with the assistance of other interest groups such as government entities, investors, and certain non-governmental organizations, by deploying capital and forming partnerships with domestic or foreign companies. [8]

The consumption of berries has gained significance due to the utilization of niche consumer markets with medium and high incomes who are willing to pay for products in line with their lifestyle. [9] [15] The neglect of agribusiness marketing concepts has led to supply shortages. As a result, prices have risen, and quality has declined. Only integrated marketing concepts can increase quality, yields, profitability, and competitiveness. [11, p. 104] [7]

## Methodology of research

The research was conducted using standard methods in the field of economics, which include the utilization of statistical instruments. The entire study is based on the application of a range of contemporary quantitative and qualitative analysis methods. In analyzing the obtained data, descriptive and comparative methods were applied on one hand, and testing and observation methods on the other hand. The research is based on available information from secondary sources, as well as specifically collected data from the French company Roger Descours Group, which has a subsidiary, Frucom food doo, in Serbia.

Certain phenomena in the research were commented on based on secondary sources, namely, by reviewing and systematizing previous research covering the relevant area.

By processing data on raspberry production and exports in SPSS, the trend of raspberry exports for the period 2014. – 2022. is analyzed. The impact of raspberry production in Serbia and raspberry exports from the Frucom food doo company (independent variables) on raspberry exports from Serbia (dependent variable) is examined using a multiple linear regression model.

The obtained results provide an overview of the model. The R values represent the correlation coefficient. R can be considered as a measure of the quality of predicting the dependent variable; in this case, exports. Unstandardized coefficients indicate how the dependent variable varies depending on the chosen independent variable when all other independent variables are held constant. The study also utilized a statistical comparison method of raspberry exports between Serbia and the French company Roger Descours Group, whose subsidiary is Frucom food doo, through a multiple linear regression model.

International comparisons are extremely important as they show not only differences in the level of development and productivity but also the competitive ability of Serbia's agribusiness. The latest literature from renowned international journals was also used.

## Results and discussion

Frucom Food is a subsidiary of the Roger Descours Group in Serbia, so the company faces no difficulties in placing goods on international markets, as evidenced by the fact that Frucom Food exports 99% of its goods. An advantage

for the Frucom Food subsidiary is that the Roger Descours Group operates in countries that produce raspberries. Since the acquisition of Yugent Food doo and Frucom Food doo, Roger Descours Group has shortened the marketing channel for both firms, as business is conducted without intermediaries, and the margin that Yugent Food doo and Frucom Food doo once earned is now the margin of Roger Descours Group. With this acquisition, both companies are more competitive in the market because they have reduced costs. Frucom Food's predecessor companies, Yugent and Frucom, were suppliers to the Roger Descours Group, and their cooperation was conducted through the broker firm Viva fruit. Due to the security of placement and procurement, all three companies decided to merge. The raspberry processing process in the cold storage facility begins with reception. The raspberries are frozen, causing the fruits to stick together. Stuck fruits are only suitable for the final product of lower quality and price. To preserve quality, Frucom Food has multiple purchasing points, specifically 52 along the Arilje-Perućac stretch.

Increasing the number of purchasing points reduces the number of cooperatives per purchasing point, as well as the quantity of purchased raspberries per purchasing point, resulting in faster loading, transportation, better quality control of raspberries, and shorter reception times at the purchasing point. Problems that arise with producers include constant dissatisfaction with the purchase price, slow acceptance of hygiene conditions, harvesting methods, and pesticide application. During raspberry procurement, Frucom Food grades the raspberries for cooperatives.

**Table 1. Raspberry exports by country from Frucom Food doo for the period 2014-2023, in %**

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Belgium		0.871			3.345	0.575		0.805	10.407	5.094
Bulgaria		1.015						0		
France	94.832	91.934	4.56	79.325	76.587	72.769	65.246	69.901	77.526	78.168
Netherlands			0.00	0.965						
Croatia				0.019						
Italy		1.017								
Japan				0.481	0.434		0.303			
Canada	5.168		0.00	14.051	10.585	23.253	27.947	28.491	9.344	15.247
Germany		3.133					0.558		1.892	
Poland				1.925	4.672					
USA			0.00	3.234	4.376	3.403	5.946		0.831	1.491
Turkey		2.030						0.803		

Source: Author's processing based on [14]

In this way, it encourages producers to intensify the application of agronomic measures to produce quality fruit. As a positive effect, besides quality raspberries, we also achieve increased yields from 7t/h to 13t/h. [12, p. 492]. Table 1 indicates the markets for Serbian raspberries exported from the company Frucom Food doo, during the period from 2014 to 2023. The French market dominates as the importer, with an average share of 76.3% for the specified research period. We conclude that the vertical integration of Frucom Food doo with the French company Roger Descours Group has secured the majority of Serbian raspberry placements in the French market.

The surge in raspberry prices in 2008 led to an increase in raspberry production from 280,000 tons in 2008 to 490,000 tons in 2018. Weather conditions in 2013 were not conducive to a full raspberry yield, which would have been approximately 435,000 tons under favorable conditions, excluding small raspberry producers. Global raspberry demand amounted to 350,000 tons. At that time, it could already be inferred that there was a possibility of an 85,000-ton surplus in raspberry production. Due to the potential trend, Serbia should have implemented quotas for additional raspberry plantations. Quotas were not introduced, and in 2018, we witnessed overproduction where raspberry stocks were carried over from 2015 to subsequent years. Producers and processors found themselves in an unfavorable situation due to overproduction in the global raspberry market. Raspberry prices are determined from June of the current harvest to the next harvest (not based on the calendar year). The product is frozen and

processed from harvest to harvest. Most contracts are annual and are signed towards the end of the harvest. Deliveries occur from harvest to harvest, and prices remain unchanged throughout the year. Very little uncontracted goods remain for sale, about 10% in a normal raspberry production year. When overproduction occurs, unsold raspberries can be much higher, leading to price declines if contracted later. There can also be a catastrophic drop in raspberry prices if there is overproduction in other countries, as was the case from 2015 to 2018. For example, the price of Rolenda raspberry dropped from 2.60 EUR/kg to 1.40 EUR/kg in January 2018 (harvest of 2017). Processors who had uncontracted goods at 2.60 EUR/kg faced significant losses.

In 2020, the purchase price of raspberries increased by approximately 37% compared to the previous year (Figure 1). The reason for the rise in raspberry prices lies in reduced global raspberry stocks. During the COVID-19 pandemic, there was an increased demand for raspberries worldwide, as well as other berries. They were consumed for their medicinal properties as antioxidants and as a preventive measure.

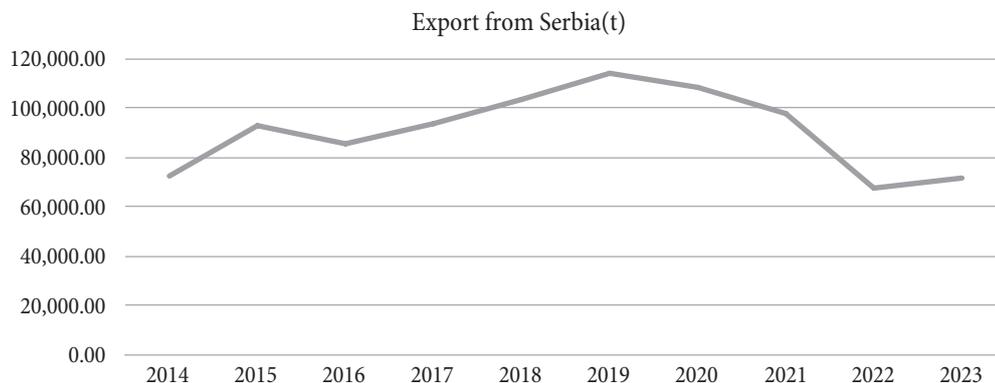
In recent years, areas where raspberries are predominantly grown have experienced early frosts, heavy rains accompanied by hailstorms, and in 2020, floods that struck western Serbia, causing significant damage and losses. These weather conditions have led to a decline in the exported quantity of raspberries (Figure 2) in the period from 2019 to 2022. Besides weather conditions, the reduced raspberry supply is also influenced by farmers abandoning raspberry

**Figure 1. Raspberry Exports from the Republic of Serbia from 2014 to 2023 in 000 EUR**



Source: Author's processing based on [14]

Figure 2. Raspberry exports from the Republic of Serbia in the period 2014-2023 in tons



Source: Author’s processing based on [14]

production due to its unprofitability, low raspberry prices in recent years, and a shortage of seasonal workers.

By processing data on raspberry exports and production in SPSS, the trend in raspberry exports for the period 2014-2022 is analyzed. The impact of raspberry production in the Republic of Serbia and raspberry exports from Frucom food doo (independent variables) on raspberry exports from the Republic of Serbia (dependent variable) is examined.

The first table of interest is the model overview table. This table provides values for the coefficients R, R<sup>2</sup>, adjusted R<sup>2</sup>, and the standard error of estimate, which can be used to determine how well the regression model fits the data: The “R” column represents the value of R, the correlation coefficient. R can be considered as a measure of the prediction quality of the dependent variable; in this case, raspberry exports. The value of 0.892 in this example indicates an absolute level of prediction accuracy. The “R<sup>2</sup>” column represents the value of R<sup>2</sup> (also known as the coefficient of determination), which is the proportion of variance in the dependent variable that can

be explained by the independent variables (technically, this is the share of variance that the regression model calculates above and beyond the mean model). From our value of 0.796, it can be seen that the independent variables explain 79.6% of the variability in our dependent variable, raspberry exports.

By analyzing the relationship (Coefficients Table) between raspberry exports from the Republic of Serbia (dependent variable) with raspberry exports from Frucom Food company (predictor) and raspberry production in the Republic of Serbia (predictor), we obtain the equation of the model:

$$\hat{y} = 76362.550 + 23.434x_1 - 0.366x_2$$

We can conclude that the independent variable of raspberry exports from Frucom Food company is statistically significant (p=0.006), while the quantity of raspberry production in Serbia (p=0.113) is not a statistically significant variable for raspberry exports from the Republic of Serbia for the observed period.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	Change Statistics		
							df1	df2	Sig. F Change
1	.892 <sup>a</sup>	.796	.728	8171.52895	.796	11.694	2	6	.009

a. Predictors: (Constant), raspberry\_production\_in\_Serbia, raspberry\_export\_from\_Frucom\_food\_doo

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	76362.550	13389.779		5.703	.001
	raspberry_export_from_Frucom_food_doo	23.434	5.561	1.261	4.214	.006
	raspberry_production_in_Serbia	-.366	.197	-.556	-1.857	.113

a. Dependent Variable: raspberry\_production\_in\_Serbia

The unstandardized coefficients show how the dependent variable varies depending on the independent variable, when all other independent variables are held constant. Let's consider the effect of raspberry exports from Frucom Food company. The unstandardized coefficient for raspberry exports from Frucom Food company is 23.434 (see coefficients table). If raspberry production in Serbia is constant, an increase in raspberry exports from Frucom Food company by 1 ton results in an average increase in raspberry exports from the Republic of Serbia by 23.434 tons for the observed period. The result of increasing production by 1 ton leads to a decrease in raspberry exports from the Republic of Serbia by an average of 0.366 tons, due to raspberry production surplus in the observed period, when raspberry exports from Frucom Food company are constant.

One possible way for Serbian raspberries, which possess the best quality globally and serve as a strategic product of the Republic of Serbia, to remain competitive is through vertical integration with a foreign company. Ensuring a secure and consistent presence in the international market, regardless of fluctuations in raspberry production quantity, can establish a strong and stable agribusiness system. The onset of raspberry hyperproduction of 85,000 tons in 2013, the global raspberry production surplus from 2015 to 2018, led to uncertain raspberry exports from the Republic of Serbia. The Roger Descours Group monitors raspberry market trends globally, determines the required quantities of raspberries to be purchased and stored in the Frucom Food company's cold storage facilities, resulting in profitable agribusiness system operations and a positive unstandardized coefficient of exports. The absence of strategic decisions regarding the necessary raspberry production and export quantities from the Republic of Serbia has led to hyperproduction and uncertain exports.

## Conclusion

The revitalization of the agri-food system, stabilization of conditions within it, and the encouragement of competitiveness of domestic enterprises are of paramount importance for the Republic of Serbia, especially considering

its "natural" production capacities, adaptation to long-term market trends (food needs, automatic and global price movements), as well as the significance that the primary sector (especially agriculture) could have for overall economic development.

Modern agriculture is characterized by a range of vertically and horizontally connected sectors and subsectors, constituting an integrated system within the national economy. In addition to primary agricultural production, it encompasses processing, distribution of agricultural products and inputs, segments of industry for the production of equipment and inputs for primary agricultural production (input phase), and machinery and equipment necessary for servicing the food industry, as well as accompanying service activities of each part of this system. Agricultural producers can no longer be viewed in isolation. They are increasingly influenced by socio-economic processes (changes) and are more directed towards non-agricultural activities (primarily industry), both in pre-farm activities (input phase) and post-farm activities (output phase). In developed economies, the main drivers of agribusiness are agro-industrial businesses and family farms, although none of these business models can be viewed in isolation, nor do they exist in their pure forms. Labor remains an important factor in the production process, but modern agriculture is increasingly based on technologically and capital-intensive production factors.

Frucom Food company plans to improve business conditions through better cooperation with cooperatives. To increase their yields, the company will provide better technical support to cooperatives, all with the aim of improving the quality of raw materials and purchasing larger quantities. Maintaining existing standards and focusing on the safety of product quality are the goals of Frucom Food company in the upcoming period.

Horizontal and vertical cooperation and integration in the food supply chain play a crucial role in the efficiency of marketing channels in both domestic and international markets. Vertical integration of the marketing channel backward, with the Roger Descours Group and the Frucom Food company's cold storage facility, places the Frucom Food company among the most successful in Serbia, with a constant goal of being a reliable exporter of frozen

raspberries, meeting the requirements of customers and cooperatives, and supporting them in joint efforts to achieve success. Given that sales are created through inventory systems, the push strategy for raspberry products represents a relevant strategy. Horizontal integration of Frucom Food company with Yugent Food company represents a way to achieve successful results due to the decline in raspberry prices, as it leads to a reduction in the company's operating costs.

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# EXPLORING THE MIDDLE EAST AS A MARKET FOR SERBIA'S DEFENSE INDUSTRY<sup>1</sup>

Istraživanje Bliskog istoka kao tržišta vojne industrije  
Srbije

## Abstract

The purpose of this research is to explore the Middle East as a promising market for the Serbian industry of weapons and military equipment. The first step is building the empirical model by estimating the impact of relevant economic and political factors on Serbian military exports. The model utilized annual data over the period 2010-2021. The independent variables refer to military spending and military imports of all importing partners of Serbia in this industry, standard geographical factors, and, more importantly for the targeted Middle East region, the impact of traditional political and trade relations inherited from the former Yugoslavia. The coefficients obtained show a strong influence of traditional military export ties and the total military imports of partner countries. Although post-Yugoslav Serbia has acquired new export markets in the East, and even more so in the West, the most important markets are still the countries of the Middle East and North Africa. The application of the obtained coefficients on the countries of this region indicated four groups of markets in this region, regarding combinations between high and low realized and calculated potential exports. The results indicate the special importance of the markets of Saudi Arabia, Egypt, Iraq, the UAE, and Algeria.

**Keywords:** *Middle East, Serbia, defense industry, export of weapons and military equipment, military spending.*

## Sažetak

Cilj ovog rada je da se istraži Bliski istok kao perspektivno tržište za srpsku industriju naoružanja i vojne opreme. Prvi korak je izgradnja empirijskog modela procenom uticaja relevantnih ekonomskih i političkih faktora srpskog vojnog izvoza. Model je koristio godišnje podatke za period 2010-2021. Nezavisne varijable se odnose na vojnu potrošnju i vojni uvoz svih uvoznih partnera Srbije u ovoj industriji, standardne geografske faktore i ono što je važnije za ciljani bliskoistočni region – uticaj tradicionalnih političkih i trgovinskih odnosa nasleđenih iz bivše Jugoslavije. Dobijeni koeficijenti su pokazali snažan uticaj tradicionalnih vojnih izvoznih veza, kao i ukupnog vojnog uvoza partnerskih zemalja. Iako je post-jugoslovenska Srbija stekla nova izvozna tržišta na istoku, a još više na zapadu, tržišta zemlje Bliskog istoka i severne Afrike su ostala najvažnija. Primena dobijenih koeficijenata na zemlje ovog regiona ukazala je na četiri grupe tržišta u ovom regionu, u pogledu kombinacija između visokog i niskog ostvarenog i obračunatog potencijalnog izvoza. Rezultati su ukazali na poseban značaj tržišta Saudijske Arabije, Egipta, Iraka, UAE i Alžira.

**Ključne reči:** *Bliski istok, Srbija, odbrambena industrija, izvoz naoružanja i vojne opreme, vojna potrošnja.*

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## Introduction

The industrial sector has historically been regarded as a cornerstone of sustained development and progress [10, p. 289]. Following the difficult transition of the 1990s and the dissolution of Yugoslavia, Serbia witnessed a decline in its competitive standing across various manufacturing sectors. Sectors such as electronics and machinery regressed to technological levels reminiscent of decades past. Serbian industry has a “large number of problems (low-tech, unequal regional development, low export competitiveness, unfavorable structure of industrial production...)” [3, p. 184]. As innovation remains a “critical factor for global market competitiveness” [5, p. 203], the persistently low sophistication of export products has emerged as a significant barrier to overall economic growth in the Western Balkans, formerly Yugoslavia [16]. Moreover, the proportion of high-tech exports within Serbia’s total exports declined during the second decade of the 21st century [5, p. 203]. Amidst these challenges, the military industry stands out as the sole manufacturing sector maintaining its technological level and continuing to advance. Although Serbia’s arms and ammunition production suffered transitional shocks and the loss of many plants located in other Yugoslav republics, it has remained a key pillar of the Serbian economy. Despite not being the largest export sector statistically, the military industry holds substantial importance and contributes significantly to the national economy. Unlike other major export products, such as semiconductors and automobiles, which are produced by foreign companies with minimal local revenue due to their role in long international production chains, the military industry is entirely state-owned. Furthermore, all subcontractors involved in this sector—ranging from machinery and metals to rubber, textiles, and electronics—are domestic companies, ensuring that the economic benefits remain within the country.

The primary focus of this research is to assess the potential for increasing Serbia’s military industry exports. This study builds upon one of the three models of Serbian arms exports developed in 2020 [19], with a particular emphasis on applying this model to the Middle East and

North Africa (MENA) countries, which are crucial markets for any arms manufacturer.

Given the region’s numerous economic, political, and geographical characteristics, MENA is identified as a promising market for expanding Serbia’s military exports. Although the advantages of the MENA region as an export market extend beyond just weapons, trade and political relations with these countries were largely neglected from 1990 to 2014. This prolonged period of weak economic and diplomatic ties resulted in a significant reduction in both total trade volume and military exports. However, in recent years, relations with several MENA countries have been revitalized, with some, such as the UAE and Qatar, experiencing substantial improvements. Nevertheless, compared to the former Socialist Federal Republic of Yugoslavia (SFRY), Serbia’s trade volume and overall economic cooperation with Arab countries have diminished. The scale of arms exports and military cooperation with this region has yet to reach its former levels.

The fundamental assumption of this research is that Serbia has significant untapped potential to increase arms and ammunition exports to MENA markets. An additional hypothesis is that political factors play a crucial role in enhancing Serbian arms exports. In this context, “political factors” refer to the traditional ties that Serbia has maintained since the SFRY era. These ties are not solely based on inherited markets or the passage of time but also on friendly and politically neutral relations, characterized by non-interference in internal affairs—an approach rooted in the Non-Aligned Movement (NAM), which Serbia inherited from that earlier period. The resilience of Serbian military exports to MENA markets, despite the collapse of the Eastern Bloc and the end of the Cold War—during which key export partners such as the UAE and Egypt fell under U.S. influence, and others like Algeria established defense ties with Russia—underscores the importance of these traditional relations.

The first chapter provides an overview of the literature relevant to both the military industry and the methodological framework for constructing an empirical model of Serbian arms exports.

The second chapter addresses the background of the research problem, consisting of two sections. The first

section offers an overview of militarism, military spending, and arms imports in the MENA region, highlighting the significance of this market for arms and ammunition exports. The second section reviews the key features of Serbia's arms and military equipment industry, presenting data on the most important export destinations and the volume of Serbian arms exports, with a particular focus on MENA markets.

The methodological approach is detailed in the third chapter, where the selected variables are explained and classified into economic, geopolitical, and geographical groups. An empirical model is also developed in this chapter to validate the assumption of significant export potential. The variables tested differ somewhat from the usual ones, as they reflect factors specific to this type of trade. Instead of the typical market size indicators (GDP, GDP per capita), this model tests military spending and arms imports. Additionally, the political factor, particularly traditional relations, is quantitatively assessed. Standard geographical factors, such as population size and geographical distance, are also included in the model. The resulting coefficients will be used to construct a model of Serbian military exports.

In the fourth chapter, the developed model (equation) is applied to individual markets in the MENA region to determine their export potential. By comparing potential exports with realized exports, this research will offer concrete recommendations for intensifying efforts by the government, diplomatic corps, and producers to increase exports to countries that show significant "free space" for additional imports of Serbian military industry products.

## Literature review

Despite its large share in world trade and great importance for many economies, scientific papers on the economic aspects of this sector are very rare. Most of them refer to the impact of military spending on the domestic economy, such as Ram, Dunne et al., Yakovlev, while the arms trade as an economic topic is completely in the shadow of moral and peace approaches [15], [6], [21].

The first step in exploring this topic was made by Anderton (1995) who applied international trade models to arms trade [1]. An important contribution to this area was also made by the research of Zubair and Wizarat on the effects of arms exports on economic growth [22]. Like any other type of export, it provides amounts of foreign currency necessary for the import or repayment of international loans, provides additional funds that can be used to increase domestic production or create conditions for economic development. Besides, defense industry production usually encourages the development of other manufacturing sectors such as the electronic industry, metal processing, rubber production, and additional engagement of the workforce of all profiles [19]. Also, there is a full range of services, which are also subject to trade: assistance in handling deliverables, "technical assistance" in maintaining those assets, including overhaul and delivery of spare parts, construction of military infrastructure facilities (airports, base facilities, launch ramps), as well as resource production facilities. These rare articles deal with the effects of arms exports on the domestic economy, but, to our knowledge, there are no studies that evaluate the factors of military exports themselves.

There are no statistical databases available on the characteristics and exports of the former Yugoslav defense industry, but in this general assessment we rely on scientific papers and monographs of high-ranking officers of the Yugoslav Army. Radić provides data about military production, demand and export; Matović, and Kovačev *et al.* about distribution of military plants across the republics of former Yugoslavia, and its capacities [14], [11], [9].

To the best of our knowledge, the only study that employed quantitative methods to assess the export potential of Serbia's defence industry is Stanojević's 2020 research [19]. Given the significant shifts in the global security and economic landscape since this analysis, it is crucial to revisit the parameters of Serbia's defence exports. In particular, there is a pressing need to evaluate the export potential to the Middle East, a region historically significant to Serbia's defence industry but now marked by heightened security turbulence.

## Background

### Militarism, Military Spending, and Arms Imports in the Middle East

The Middle East is one of the most unstable regions in the world security-wise. Since the Second World War, there has been no period without conflicts within states, between states in the region, or international conflicts with the participation of great powers. One of the consequences of armed conflicts and tensions is the extremely extensive militarization of the region. Accelerated armament has been going on for several decades, with different occasions and sources of supply. First, as part of the Cold War, the United States helped organize and arm extreme mujahedeen in some countries to destabilize the Soviet Union, which occupied Afghanistan. Then, weapons worth millions of dollars reached the region, first as Western support for puppet regimes and later for opposition forces, revolutionary or terrorist, to overthrow “unsuitable” regimes. The high level of militarization further encouraged militant and terrorist organizations within the region, which became significant buyers of weapons and ammunition, and then the authorities who were forced to fight these organizations. Thus, extremely high military spending and import is not an exclusive consequence of the participation of some Arab states in various regional conflicts but indicates a widespread sense of insecurity of governments in the region.

In absolute terms, arms purchase of Saudi Arabia in 2022 were \$75 billion, Egypt \$4.6 billion, Algeria \$9 billion, Iraq \$5.6 billion etc. [8]. The scale of military spending in the region is best explained by the fact that as many as five of the top ten arms importers globally are MENA countries (measured by their share of world imports), which is completely disproportionate to their size, population, and the overall economy. The MENA region is the largest arms importer globally, with more than 30% of the world’s arms imports and only 6% of the world’s population. The share of conventional arms imports in the world import in period 2016–2020, was 11% in Saudi Arabia, 5.8% in Egypt, 4.3. in Algeria, more than 3% in UAE, Qatar and Iraq [20].

The armament of the countries in MENA can be analyzed both as a security and as an economic phenomenon.

From a security point of view, a certain level of military spending is necessary to preserve internal and external security. Intra- and inter-regional security crises, which often escalate into serious armed conflicts, are a common stimulus to armaments. In addition to imports, military spending includes the production of weapons, spending on training and accommodation of the army, and more. However, in MENA countries, arms expenditures are at a level that is a burden for most economies, limiting the funds intended for the development of the economy. Military spending in the countries of the region averages more than 7% of their GDP (Table 1). For the sake of comparison, the global average is 2.4%, the Western European average is 1.3%, the same as sub-Saharan Africa, while the US has a share of 3.4% [17].

The share of military spending in the government spending of Saudi Arabia and Oman is a record 22%, but the other governments in the region also have a double-digit share of this indicator (Table 1). This is significantly higher than in other parts of the world. The share of military spending in total government spending is lower than 6% in Africa and South America and around 3% in Central America and Europe [17].

**Table 1. Military spending in the MENA countries (2020)**

Country	Share of military spending in GDP (%)	Share of military spending in government spending (%)
Saudi Arabia	8%	22%
Algeria	7%	17%
Libya	7%	11%
Morocco	4%	12%
Tunisia	3%	9%
Bahrain	4%	12%
Egypt	2%	5%
Iran	2%	12%
Iraq	4%	8%
Israel	6%	12%
Jordan	5%	15%
Kuwait	7%	10%
Lebanon	3%	11%
Oman	11%	22%
Qatar	1.5%	5%
Syria	4%	14%
UAE	6%	17%
Yemen	4%	14%

\*The latest data for Libya, Yemen, Syria, Qatar, and the UAE are for 2014.

Source: authors according to SIPRI Arms Transfers Database: Importer/Exporter TIV tables

The large consumption and import of arms and ammunition to the MENA have been the main basis of trade between these countries and Serbia for several decades, i.e., Yugoslavia in the previous period. Some of the countries in the region are the largest importers of defense industry products from Serbia.

### Serbia's defense industry and MENA as its suitable market

Defense industry is frequently described as “the driver of the Serbian economy” [4]. A strong and wide industrial base for the production of machines, electrical equipment, metal processing, rubber, and others was developed within the Socialist Federal Republic of Yugoslavia (SFRY), which enabled the development of a wide range of weapons and military equipment. The Cold War environment and the commitment to a policy of non-alignment gave a strong impetus to the continuous increase in production to ensure relative independence and increase the quality and development of new models of weapons.

Radić provides data that the domestic defense industry met about 80% of military demand, including product development at domestic institutes [14]. Over time, production increased so much that about a third was intended for export [14]. Within SFRY, most of the weapon factories were located in Serbia, as many were actually established before Yugoslavia – within the Kingdom of Serbia [8]. For example, the first cannon barrels in this area were cast in 1853 in the Serbian city of Kragujevac in *Zastava* factory, which became the largest weapons factory not only in the former Yugoslavia but in the Balkans, and today is one of the twenty largest companies in the small arms and light weapons category (SALW) [26], [12]. During the time of SFRY, part of the defense industry was moved to other federal units for political and economic balance. As these were mainly parts production plants, the breakdown of SFRY led to a sharp decline in production. These factories were mostly shut down in other federal units because they did not have the technology to produce any of the products independently [11]. The Serbian arms industry suffered significant damage but survived, and with more than 550 factories, it remained one of the most successful manufacturing sectors in the country. In 2024,

56 companies that have a production license and employ about 10,000 workers were registered in the Register of Arms and Military Equipment Manufacturers [12]. The largest production and export are achieved by 17 of them, which are under the control of the government group Defense Industry of Serbia (DIS).

The most important products of the Serbian defense industry are small arms, as the most recognizable product (M70, as the most exported domestic versions of the Soviet Kalashnikov; a pistol in caliber 9 mm – CZ 99), then ammunition, rockets, and rocket launchers, grenades, explosives, tanks, and armored vehicles [18]. All these products have a certain place in the export of Serbia, but only the production of light arms and ammunition far exceeds the needs of the Serbian Armed Forces, which is why these products have the largest share in military exports. At the same time, this is one of the few product groups which has a significant surplus in foreign trade. As a result, the export of weapons and military equipment is one of the biggest comparative advantages of Serbia on the world market, and exports make up 2–2.5% of the total exports of Serbia.

The value of exports fluctuated between \$400 and \$450 million in 2016–2019 [13]. With minor oscillations, it increased from 2005 to 2017. Large oscillations are common in the export of weapons because importers sporadically replenish or increase stocks, and only a small part of their imports are regular purchases.

Serbia exports arms and ammunition to more than 40 different countries each year, while the total number of export markets is more than 60 countries, looking at all export markets in the past decade. The largest importers of weapons from Serbia are the United Arab Emirates, Saudi Arabia, and the United States.

Among the most important export markets, there are several other MENA countries, such as Egypt, Iraq, Algeria, and Israel, with variable import volumes per year. MENA region has many advantages as an export market for Serbian goods in general, while some specifics are of particular importance only for the export of the defense industry.

- Trade compatibility in arms and military equipment is extremely pronounced. The assumption is based

mainly on the emphasized import-export compatibility. Weapons and ammunition are one of Serbia's most important export sectors, while the Middle East is most often the region with the highest military spending in the world. Oil monarchies of the GCC make up the core of the Middle East defense market [7]. Most countries in the MENA region do not have a developed industry, thus no basis for producing a significant quantity of weapons for their own needs or the needs of their neighbors;

- An additional argument in favor of the hypothesis of significant export potential is that the products of the Serbian defense industry have been present in many markets of the MENA region for several decades since the time of the former Yugoslavia, whose defense industry was mostly stationed in Serbia. Existing exports indicate no legal or political barriers to these exports, at least to most countries, with trade mechanisms that are already in place;
- The geographical distance is relatively small and allows for lower transport costs compared to other countries in Africa and Asia;
- Another argument is the current intensification of the overall economic relations between Serbia and certain countries in the region. Trade and foreign direct investment with the UAE, Saudi Arabia, and Qatar have been growing strongly for several years, indicating significant economic and political convergence.

The export of weapons and ammunition to the MENA dates back to the Cold War. Former SFRY was the main supplier of weapons to NAM countries. SFRY was the most industrially developed country within the Movement and the only one with significant arms production, supplying arms to buyers among which the most important were the countries of the MENA. As the rest of the world was divided into blocs, which excluded the purchase and sale of weapons on the free market, the conflict areas of the MENA region were crucial for developing the defense industry in Serbia. Along with the United States, these are still the most important export markets today.

Although most of the advantages of the MENA region as an export market apply to all products, not just weapons,

these trade and political relations have been neglected for a long period of 1990–2014. During the 1990s, due to the conflict and the collapse of the former SFRY, there was a general decline in production and exports to Serbia, major changes in the structure of emerging economies, and trade partners and products. Moreover, after the political shift in 2000, Serbia distanced itself further from the Arab countries, as the then new, transitional authorities perceived the “turn to the West” as abandoning previous partnerships. Thus, as early as 2001, thirteen embassies in the Middle East, Asia, Africa, and Latin America were closed. For example, the embassy in Lebanon, where many Serbian companies had always operated, was abolished, which directly resulted in exports to this country being 20 times lower the following year [21].

The long neglect of Serbia's economic and diplomatic ties with the countries of the Middle East resulted in multiple reductions in both the volume of total trade and military exports. After 2014, relations with the MENA countries came back into the focus of Serbian governments, which resulted in increased trade with former partners in a short time. Despite significant trade improvements, earlier export of Serbia has not yet been reached with most countries. Compared to the former SFRY, which had excellent relations and large exports with Arab countries, Serbia has a significantly lower trade volume and overall economic cooperation with these countries. On average, trade cooperation is 40 times lower than in the 1980s [21]. The sector that was the first and strongest to restore Serbia's trade position in the MENA region and that has the greatest prospects for additional placement is arms and ammunition.

## Methodological approach

### Method

The Multiple Regression procedure is designed to construct a statistical model describing the impact of a two or more quantitative factors  $X$  on a dependent variable  $Y$ . The basic equation for multiple regression can be written as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \varepsilon \quad (1)$$

Where:

- Y is the dependent variable (the variable we want to predict or explain).
- $X_1, X_2, \dots, X_k$  are the independent variables (also called predictor variables or regressors).
- $\beta_0$  is the intercept term, representing the value of Y when all independent variables are zero.
- $\beta_1, \beta_2, \dots, \beta_k$  are the coefficients (also known as regression coefficients or parameters), which represent the change in Y for a one-unit change in the corresponding independent variable, holding all other variables constant.
- $\varepsilon$  is the error term.

The goal of multiple regression analysis is to estimate the coefficients  $\beta_0, \beta_1, \beta_2, \dots, \beta_k$  that best fit the data, minimizing the difference between the observed values of Y and the values predicted by the model. The procedure includes an option to perform a stepwise regression, in which a subset of the X variables is selected. Once the coefficients are estimated, the multiple regression equation can be used to predict the value of the dependent variable for given values of the independent variables. The resulting model will be applied to arms exports to the countries of the Middle East.

## Variables

Assessment of export potential of specific sector instead overall exports, requires a special approach, consistent with the characteristics of the observed product group. As this study aims to estimate the export potentials of arms and ammunition rather than total exports, the usual variables need to be significantly modified. In addition to (or instead of) the usual variables of economic market size, military spending, and arms imports are tested, but some of standard trade variables, such as population, geographical distance and bilateral relation, are also included. In this model, we test the following variables:

- Import of arms and ammunition, although expressed in millions of dollars, does not refer to the value of imports at a price paid for procurement but is expressed by trend-indicator value (TIV), as a universal unit of arms value, which is specially constructed by Stockholm International Peace Research Institute [17]. TIV is “based on the known unit production costs of a core set of weapons and is intended to represent the transfer of military resources rather than the financial value of the transfer” [16];
- Military spending (MS), as a second variable, refers to the governments’ spending on armed forces, including the physical capacity, financing, training, and human resources. Although it can be expressed as a share in GDP, military spending is expressed in US dollars in this research. SIPRI Military Spending Database also gives the data on this variable [18]. This variable is not expected to have a large impact on arms imports, as it covers much broader categories, but is a good indicator of the degree of militarization of a particular country;
- GDP is tested as a variable of potential importance because it shows the capacity of countries to import in general [23].
- Political variable cannot be evaluated numerically, but they can be quantitatively measured as categorical variables, which get the value 0 or 1. In this research, the impact of *traditional relations* in the arms trade on Serbia’s export is assessed, as a separate variable (T), which refers to advantages in the export markets which Serbia inherited from the former Yugoslavia. Namely, most of the military-industrial capacities of the former Yugoslavia were located on the territory of Serbia, which means that the new state took over the established trade channels. In addition, Serbia is a legal successor to the former Yugoslavia, which means that it has inherited arms delivery obligations arising from previous agreements. The Serbian defense industry, during the time has not lost these markets and the traditional ties are of key importance.
- The distance (Dis) between the import and export market (usually between capitals) is actually a representative of transport costs and is expressed in kilometers (km);
- Population (Pop) is commonly used as an indicator of the size of the export market. The link between population and arms imports cannot be as direct as in the case of imports of consumer goods. However, as the largest part of Serbian arms exports refers to small arms and ammunition, this variable may have

some significance because the number of soldiers in the armed forces is in line with the number of inhabitants.

Model specification

Having in mind described factors, arms exports can generally be viewed as a function of these factors:

$$EXP = f(TIV, MS, GDP, T, Dis, Pop) \quad (2)$$

The model was made based on panel data for 64 countries, that is a whole set of export destinations of the Serbian arms and military equipment industry. The time frame is twelve years, 2010–2021. As the volume of arms procurement is very uneven in nature, there were no exports to some countries each year, so the variables were estimated based on 752 instead of 768 observations. The model was estimated using panel technique, assuming that the error is constant across countries.

The regression results, with all variables included, are shown in Table 2, where the coefficients indicate the intensity and direction of the influence of individual variables.

Testing the statistical significance of the variables showed that *Distance* and *GDP* variables did not show

Table 2. Coefficients of Serbian military export

Variable	Coefficients	Standard Error	t Stat
Intercept	1404***	941.85	1.49
Military import (000 \$ - TIV)	5.79***	1.25	4.64
Military spending (000 \$)	0.12***	0.01	11.98
GDP (000 \$)	0.11	0.08	5.12
Population	-24.08***	4.22	-5.70
Distance	-0.30	0.19	-1.57
Traditional markets	8640***	1732	4.99
R2(Coefficient of determination)	0.67		
Standard error	8432		
Mean absolute error	3980		
F (Force)	62.74		
Durbin-Watson statistic	0.9047***		

Source: authors' calculation

statistical significance (p-value > 0.10), so they will not be included in the model. Since the weapons have a high price per unit and are determined by various factors, the absence of the significance of this variable is not unexpected.

The model that meets the highest criteria of statistical significance (p-value < 0.01) consists of 4 variables:

$$EXP_{sjt} = \beta_0 + \beta_1 TIV_{jt} + \beta_2 MS_{jt} + \beta_3 POP_{jt} + \beta_4 T_j + e_i \quad (3)$$

$EXP_{sjt}$  means the export of Serbian weapons to the country  $j$  in the year  $t$ ,  $TIV_{jt}$  is the value of the country  $j$  military imports in the year  $t$ , calculated according to the SIPRI TIV methodology,  $MS_{jt}$  is the military spending of the country  $j$  in the year  $t$ ,  $POP_{jt}$  means the country  $j$  population in the year  $t$ ,  $T$  is a *dummy* variable (0 or 1). The sign  $s$  in subscription denotes Serbia,  $j$  Serbia's trade partner, and  $t$  the year to which the export refers.  $\beta_0$  is intercept;  $\beta_1, \beta_2, \beta_3$  and  $\beta_4$  are the coefficients of the variables,  $e_i$  is a model error. Since the P-value is less than 0,05, there is a statistically significant relationship between the variables at the 95.0% confidence level.

Another test must be done is the test of multicollinearity, and it showed no significant correlation between the independent variables (table 3).

The estimate of potential military exports of Serbia to the target markets is calculated by applying the obtained coefficients, which gives the equation the following form:

$$EXP_{sjt} = 1404 + 5.79TIV_{jt} + 0.12MS_{jt} - 24.08POP_{jt} + 8640T_j + e_i \quad (4)$$

The values of arms imports and traditional trade relations in this sector most strongly determine Serbian exports of arms and ammunition. As the all tested values are expressed in thousands (not in logarithmic form), the obtained results can be easily interpreted. For example, an increase in the partner country's arms imports by \$ 1 million (estimated based on the TIV) results in an increase

Table 3. Test of multicollinearity

	Military spending	Military import	Population	Distance	T
Military spending		0.1494	0.4541	0.1358	0.0962
Military import	0.1494		0.2997	0.1010	0.2674
Population	0.4541	0.2997		0.1643	-0.0503
Distance	0.1358	0.1010	0.1643		0.1625
T	0.0962	0.2674	-0.0503	0.1625	

Source: authors calculation

in Serbian arms exports by \$ 5790, while an increase in military spending of \$1m leads to an increase in Serbian military exports of only \$120. Military spending, as expected, has a significantly lower impact than arms imports. However, this variable is statistically significant and contributes to the overall coefficient of determination ( $R^2$ ), so it is included in the model regardless of the symbolic impact.

Population as a variable in the model indicates that the potential volume of arms procurement is inversely proportional to population growth. Thus, with each additional 1 million inhabitants of the potential market, arms exports from Serbia decrease by \$24,008. The inverse proportion can be explained by the fact that Serbia, as a small country, cannot meet the needs of big armies, which is why large countries either produce small arms themselves or import from the world's largest manufacturers such as the US, China, and Russia.

The  $T$  variable has a high value, which indicates a strong positive impact of traditional ties and relations on the export of arms and ammunition. As these are unlikely to be inherited close political relations between NAM countries (because this Movement was inactive for decades), the explanation for the permanence of arms trade probably lies in its very nature. Decisions on the type, price, and models of weapons imply long-term strategies, security of regular supply (especially appropriate ammunition for a particular type of weapon), and thus stable political relations. With some reservations, the coefficients for the  $T$  variable could also be applied to "new traditional" markets, such as Romania, Belgium, Bulgaria, and the Czech Republic, when it would be the focus of research.

Finally, with these four variables, the obtained model as a whole explains as much as 67% of Serbian arms exports ( $R^2$ ), which is a high coefficient of determination, especially for specific products such as weapons.

## The result of applying the model to MENA markets

By applying the obtained model to the export of Serbia to each country of the Middle East and North Africa, the

potential export is determined, i.e., the relatively precise value of Serbian weapons and ammunition that the markets of these countries can receive. Furthermore, by comparing the obtained potential with the realized export, the export routes that are the most open are revealed.

In theory, this ratio is an index that is classified as favorable for additional exports when it is less than 1 because a lower value means more unrealized potential. On the other hand, if the trade potential index is greater than 1, the export potential with a given partner is fully exploited, and the chances for the further increase are slight, at least until significant changes occur in some variables. In arms exports, these changes occur if security conditions are destabilized, or a war breaks out, giving countries an incentive to increase military spending and imports.

In practice, however, the largest importers generally increase imports much more than others, even when there are no extraordinary circumstances, most often because the continued growth of armaments is part of their long-term policy. In contrast, low realized exports relative to potential exports, although showing more opportunity for export, may mean that there are some specific limitations not covered by empirical models. These could be sanctions and bans imposed on a particular country against arms imports, as in the case of Iran, or the dominance of another more competitive exporter (Chinese or Russian military exports) or political influence (US exports). These are not common factors included in the model as variables, as they cannot be generalized, but in specific bilateral trade, it is an almost insurmountable obstacle to increasing exports, despite statistically "great" potentials.

For each MENA country (except Yemen and Libya which have a ban of UN on arms trade), potential exports are calculated, as well as the ratio between realized and potential exports. Due to large annual oscillations and a clear relationship to potential exports, realized exports to the countries of the region are presented as a five-year average (last available 2017-2021).

According to the obtained results, the countries of the MENA region, as export markets for the Serbian defense industry, can be classified into four groups with different export opportunities and specifics.

**Table 4. Realized and potential military export of Serbia to MENA countries (average 2017-2021)**

Country	Realized export (million \$)	Potential export (million \$)	Share of realized in potential export (%)
Egypt	18.26	26.99	67.65
Algeria	29.66	27.52	107.78
Israel	2.87	14.87	19.30
Bahrain	1.38	18.50	7.46
S. Arabia	31.66	46.28	68.41
Iraq	10.69	26.18	40.83
Turkey	1.98	11.99	16.51
Oman	1.51	13.88	10.88
UAE	67.45	25.04	269.37
Jordan	3.10	19.89	15.59
Kuwait	0.29	20.13	1.4
Iran	0.00	9.93	-
Qatar	0.00	13.80	-

Source: authors' calculation

### Absence of exports and high export potentials

Iran, Qatar, did not import weapons and ammunition from Serbia in the tested five-year period. The main reason for the absence of arms exports to Iran is that it was under UN sanctions until recently and is still under US sanctions. According to the Joint Comprehensive Plan of Action (JCPOA) and UN Security Council Resolution 2231 of 2015, Iran has been banned from transferring all types of conventional weapons listed in the UN Register of Conventional Arms for five years [22]. These are all types of battle tanks, armored vehicles, large-caliber artillery systems, fighter planes, warships, missiles, or missile systems. In October 2020, the arms embargo was lifted, which means that Iran can import and export weapons and military equipment as far as the UN is concerned. The US, however, withdrew from the JCPOA in 2018, and President Donald Trump announced that no country doing business with Iran would be able to do business with the US. Given that trade ties between Serbia and Iran in the arms sector were not particularly developed even before the embargo and potential exports are not large enough for Serbia to ignore the US warning, no penetration into Iran's otherwise large and important market should be expected soon.

As for Qatar, the prospects are far more favorable. Although there are no direct exports, according to the permits issued by the Serbian Ministry of Trade, these

countries actually receive deliveries of weapons and ammunition from Serbia worth several million dollars, but through intermediaries, most often through Cyprus and the United States [13]. The exact amounts are usually unknown because intermediaries report several final destinations without the obligation to inform the exporter (Serbia) about the distribution of types and quantities of weapons in the countries listed as final buyers. In the earlier period, more precisely in 2013 and 2014, Kuwait realized significant purchases of weapons from Serbia for 2.2 million and 6.5 million USD, which is much more than in the case of some countries in the region that have regular but small purchases (Bahrain, Oman, Israel, and Turkey) (Table 4). After 2014, there were no more direct exports to Kuwait, but only through the United States as an intermediary.

For the three countries that did not import weapons from Serbia in the analyzed period, the realized and potential exports ratio cannot be calculated. However, more important information is potential exports, and it is obtained by applying all parameters, as in the case of other countries. Available data on Iran's total imports and military spending are unreliable, but it is roughly a potential export of \$ 9.9 million. The potential annual export to Qatar is 13.8 million USD. Given the large export potential and the relatively high values of previous exports Qatar could be more important export market for Serbia, with some initiatives by producers or state development institutions. On the other hand, direct exports are not a priority, as long as the products of the Serbian defense industry reach these markets.

### Small Realization of high Potential Exports

The export potentials of the Serbian arms and ammunition industry are least used in the case of the markets of Bahrain, Oman, Turkey, and Kuwait and Jordan, and relatively unrealized in the case of Israel. These countries have small imports of weapons from Serbia, and given the values of their military spending, imports, and other variables, potential exports are far higher. The ratio between realized and potential exports shows that these countries have the most unrealized potential. Only 1%–19% of potential exports are realized (Table 4).

However, as it has been said, large potential exports do not necessarily mean large export opportunities but more frequent disadvantages, specific to each export market. These types of barriers are usually much harder to overcome than to increase exports to countries where potential exports are not much higher than realized. This group of countries is not about the complete absence of exports as in the previous ones, but about much greater potentials. In the case of Israel, its annual imports weapons from Serbia are worth \$7 million in 2021, \$3 million in 2017, but in the intervening years, exports were symbolic or non-existent. Israel appears here mainly only as an intermediary, which places these goods in less developed countries in Asia and Africa [10]. Besides, Israel and Jordan have close trade, security, and political ties with the United States, where almost all arms imports come from.

Turkey, Bahrain, Kuwait, and Oman are the markets to which Serbia should pay more attention and try to achieve higher exports. All these countries are large importers, so the export potentials in the model are of great value. There are no special obstacles in these countries, special relations and ties with the great powers, which would reduce Serbia's export opportunities. In recent years, all three countries have been importing more and more weapons from France and Spain, whose products are not more competitive than Serbian ones in terms of price or quality. With the additional involvement of economic diplomacy and manufacturers, these markets could be far more important to the Serbian arms industry than they are now.

### High realization of high potential exports

The largest potential export obtained by applying the model is to Saudi Arabia, \$46 million, followed by Egypt and Iraq, with about \$26 million. These countries also have high realized imports, which means that the ratio between them is not as large as in the previous group. Statistical unused potential is almost 60% in Iraq and just over 30% in Egypt and Saudi Arabia. Nevertheless, the combination of high potential and realized exports indicates that relatively permanent trade links have been established in this sector, and the chances for increasing exports are realistic.

### Larger realized than potential exports

In contrast to the unfulfilled and partially fulfilled export potentials in previous groups, Algeria and the United Arab Emirates have higher arms imports from Serbia than the potential obtained by applying the obtained model. Algeria imports \$29 million out of a potential \$27 million, while in the case of the UAE, the gap between realized \$67 million and potential exports of \$25 million is very high.

There is a common limitation of statistical models in these two countries – the inability to include important specifics of each export market. In this particular case, “specificity” is the large-scale re-export of Algeria and the UAE. Namely, the UAE imports large quantities of weapons from Serbia, but only partially for its own needs, while most are resold to third countries. The UAE, along with Algeria, the United States, and Singapore, are the most common and largest intermediaries in the arms trade from Serbia. For example, according to MTTTS reports in 2017, the final export destinations were Saudi Arabia and Indonesia; in 2018, the UAE listed its own country as the final import destination, but also Saudi Arabia and Burkina Faso [13]. The model shows that these countries do not have “space” for additional imports from Serbia because they are based on variables of their military consumption and distance from Serbia, which do not include re-export, while only the variable of arms imports has a connection with re-export. In general, intermediaries could be introduced into the model as a separate categorical variable, but even then, the assessment would not be much more precise, as most partner countries sometimes appear as an intermediary for smaller arms deliveries to their neighbors. So, although the UAE and Algeria are already importing more than calculated potential import from Serbia, the results do not mean that Serbia cannot further increase exports to these markets. On the contrary, the increase in exports to these two countries is just as certain as in the case of other large importers, Egypt, Saudi Arabia, and Iraq, due to their increased import.

### Conclusions and policy recommendations

The arms, ammunition, and military equipment industry is one of the few growing sectors of the Serbian economy.

Additional exports of these products could significantly contribute to increased production activities in many supporting industries and stimulate overall economic growth. The Middle East and North Africa have been explored as a market for additional exports. The research showed the potential of each individual MENA market as an export destination. The results can be summarized in several specific recommendations.

The largest military export potentials of the Serbian defense industry were identified in Saudi Arabia, Egypt, and Iraq, as the countries that are already large importers. Significant future markets are also the UAE and Algeria, to which exports were significantly higher than potential. However, this limitation is only theoretical. The statistical model results for these two countries do not show the real situation because most of the realized exports do not end up in their markets but are resold to third countries.

Export potentials to Bahrain, Israel, Oman, Turkey, and Jordan are the least used, i.e., in these countries, there is the largest disproportion between realized and potential exports. With the strong involvement of Serbian manufacturers, exports could increase, but not significantly, due to the pronounced dominance of the United States as its main supplier of weapons. Another obstacle is that Serbia does not have developed economic or significant political relations with these countries (except Turkey), while the arms trade implies relatively developed overall relations.

The markets of Kuwait and Qatar provide moderate chances for increasing the exports of the Serbian arms industry. These countries have large arms imports in general, high potential imports from Serbia, but have not had any military imports from Serbia in the past decade. These two markets have a relatively high demand for weapons and ammunition from Serbian manufacturers, but they procure it through intermediaries, such as the UAE, USA, and Cyprus. Therefore, Qatar and Kuwait could be more important markets for the export of weapons and ammunition from Serbia, with strategically coordinated initiatives of producers and state institutions.

Hypothetically, the source of additional income for the defense industry would be direct exports, without intermediaries, because it can be assumed that end buyers buy weapons and ammunition from intermediaries at

higher prices. However, this is not a recommendation of this study. Each individual case should be considered separately from the angle of direct benefits and long-term or wider benefits. In the case of the UAE, which is the largest intermediary, it is more important to keep this country as a partner in arms exports than to conquer final destinations. There are several reasons for this. The UAE is the largest importer of Serbian weapons and ammunition, not only from the MENA region but in general, except for certain years when the United States has large purchases. Furthermore, the UAE is an increasingly important partner of Serbia in other economic sectors due to large investments and joint projects in agriculture, energy, tourism, and many others. Disruption of these relations and future cooperation is not strategically justified by a possible increase in exports of any individual sector, not even weapons.

In the coming years, a notable increase in Serbian arms exports to the UAE and Saudi Arabia can be expected, given that the EU has recommended to its members to reduce arms exports to these countries and that some of the countries have turned the temporary suspension into a permanent one. At the same time, the administration of US President Biden also stopped the sale of weapons to these countries. When it comes to exports to the UAE, deliveries relate not only to the consumption of this country itself but also several countries in the MENA region and also countries outside it, with which trade is conducted through the UAE.

In addition to these specific recommendations, one of the more important and general conclusions is that Serbia should devote more attention and activities to preserving and promoting lasting trade ties in this sector. This is primarily indicated by the data on very uneven procurement and *ad hoc* deals in the placement of arms and ammunition. Secondly, by the very nature of weapons as commodities, trading partners must have stable, preferably friendly political relations. Third, the assessment of the variables of the empirical model showed a very high value of inherited arms export markets from the former Yugoslavia. Although post-Yugoslav Serbia has acquired new export markets in the East, and even more so in the West, the most important markets are still the

countries of the Middle East and North Africa, to which governments of Serbia have contributed little or nothing.

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# OPTIMIZING GASTRONOMY SERVICES FOR ENHANCED GUEST EXPERIENCE AND SATISFACTION: A QUALITY MANAGEMENT ANALYSIS IN SERBIAN HOTELS USING THE APUCI MODEL

Optimizacija gastronomskih usluga za bolje iskustvo i zadovoljstvo gostiju - Analiza upravljanja kvalitetom u hotelima u Srbiji korišćenjem APUCI modela

## Abstract

This study investigates the quality of gastronomy services in hotels with higher category in Serbia, focusing on factors that influence guest experience satisfaction. Conducted from May to June 2024, the study utilized a systematic approach based on the APUCI model, which encompasses Ambience, Product, Unique Service, Cost of Product, and Innovation. A total of 521 surveys were distributed to various hotels, with 417 completed responses included in the final dataset. Data analysis was performed using Excel 365 to derive meaningful insights. Key findings revealed that 43.63% of respondents identified multiple factors contributing to their quality experience, with a significant emphasis on the quality of food and drinks, ambience, and service professionalism. The mean rating for food quality was notably high at 4.683, indicating strong guest satisfaction. This research provides valuable insights for the hospitality industry, highlighting the importance of enhancing gastronomic offerings and overall guest experience to meet and exceed expectations. By understanding the critical elements that contribute to guest satisfaction, hotel operators can implement targeted improvements, ultimately leading to increased customer loyalty and competitive advantage in the market.

**Keywords:** *Quality management, gastronomy services, APUCI model, guest experience and satisfaction, hotels, Serbia.*

## Sažetak

Ova studija istražuje kvalitet gastronomskih usluga u hotelima više kategorije u Srbiji, fokusirajući se na faktore koji utiču na zadovoljstvo gostiju. Sprovedena od maja do juna 2024. godine, studija je koristila sistematski pristup zasnovan na APUCI modelu, koji obuhvata ambijent, proizvod, jedinstvenu uslugu, cenu proizvoda i inovaciju. Ukupno 521 anketa je distribuirana različitim hotelima, sa 417 potpunih odgovora uključenih u konačni skup podataka. Analiza podataka je izvršena korišćenjem programa Excel 365 da bi se izvukli smisleni uvidi. Ključni nalazi su otkrili da je 43,63% ispitanika identifikovalo više faktora koji doprinose njihovom kvalitetnom iskustvu, sa značajnim naglaskom na kvalitetu hrane i pića, ambijentu i profesionalnosti usluge. Prosečna ocena kvaliteta hrane bila je izrazito visoka i iznosi 4.683, što ukazuje na veliko zadovoljstvo gostiju. Ovo istraživanje pruža dragocene uvide za ugostiteljsku industriju, naglašavajući važnost poboljšanja gastronomske ponude i ukupnog iskustva gostiju kako bi se ispunila i nadmašila očekivanja. Razumevanjem kritičnih elemenata koji doprinose zadovoljstvu gostiju, hotelski operateri mogu primeniti ciljana poboljšanja, koja na kraju dovode do povećane lojalnosti kupaca i konkurentske prednosti na tržištu.

**Ključne reči:** *Menadžment kvaliteta, gastronomske usluge, APUCI model, iskustvo gostiju i zadovoljstvo, hoteli, Srbija.*

## Introduction

Over the years, the evolving societal landscape and advancements in knowledge and information technologies have contributed to a shifting concept of quality [16]. Derived from the Latin term “qualitas,” quality encompasses notions of value, significance, and potential [18]. Its multifaceted nature allows for diverse interpretations, including excellence, perfection, fitness for purpose, value for money, and transformative aspects [23] [36] [6] [25]. Some studies underscore the significance of small details often overlooked in assessing quality [36] [42] [4]. Numerous authors highlight the intrinsic link between quality and user satisfaction, emphasizing the adaptation to user requirements [2] [46]. Authors [28] emphasize quality as surpassing user expectations and recognize its role in economic, social, managerial, and educational spheres. Establishing and preserving product and service quality, particularly in organizational infrastructure, is a challenging endeavor, with [9] advocating quality work, learning, and exceeding guest expectations for optimal service value. In essence, quality is synonymous with meeting guest wishes and expectations. Hospitality establishments aiming to surpass guest expectations must comprehend all service attributes contributing to guest values, fostering satisfaction and loyalty [10]. The International Organization for Standardization (ISO) initially defined quality in 2000 as the totality of product or service characteristics meeting predetermined user needs and expectations. In subsequent years, ISO refined this definition, presenting quality as the level to which inherent characteristics meet guest requirements [17]. The global significance of quality is evident in ISO’s extensive standards covering diverse industries, providing a foundation for innovation and progress, including within the tourism sector. Quality remains an inexhaustible field of research, with producers emphasizing the relationship between quality, guest satisfaction, and the monitoring of production processes to meet client expectations. From the guest’s perspective, quality involves the perception of product/service value and often centers on the price/quality ratio. While absolute quality may be elusive, continuous and revolutionary improvement stand as pivotal concepts

in quality assurance. Authors Mmutle and Shonhe [26] categorized service quality factors into two primary dimensions: human and mechanical aspects. The human factor, as defined by these authors, encompasses attributes such as professionalism, kindness, care, efficiency, and enthusiasm exhibited by service providers [5]. On the other hand, mechanical aspects pertain to environmental factors like facility design, equipment, display furniture, colors, textures, sounds, and lighting [13]. Likewise, Bekele [5] suggests that the quality of employee service has a positive impact on guests’ perceptions of service quality and influences their intentions to revisit the restaurant. Additionally, Alhelalat et al. [1] identified service quality as one of the three key components in restaurant selection criteria. Furthermore, the friendliness exhibited by all staff emerges as the foremost indicator of guest satisfaction and repeat visits [41]. Evaluating restaurant service quality becomes challenging for guests before experiencing the restaurant, leading to some indecision when deciding on a restaurant and hotel.

Quality within the realms of tourism, hospitality, and gastronomy assumes the responsibility of ensuring guest experiences, satisfaction, adherence to defined price value for services and products, and alignment with the preferences of end users, i.e., guests. Moreover, quality serves as the cornerstone of tourist services in achieving guest satisfaction [35].

## Literature review

Andaleeb and Conway (2006) [3] highlight the insufficient research on food quality in the food service industry, as no prior studies were identified in this domain. Quality food is succinctly described as well-presented, fresh, and tasty [33]. Recognizing food as a vital element for a quality life, the quality of food and beverages serves as primary indicators of guest loyalty and is pivotal in determining the overall quality of a catering facility [21]. Namkung and Yang (2008) [32] identified presentation and taste as the most influential factors of food quality in their study, while [30] recognized food variety as the most significant contributor to meal quality. In contrast, Namkung and Jang [31] assert that food quality is the paramount element

in the consumer experience. Blanchard and Matthews [7] define quality food as meals with consistent taste and standardization. Food quality consistently emerges as a primary consideration for guests when selecting a restaurant [24].

Furthermore, Andaleeb & Conway (2006) [3] emphasize that food quality significantly enhances guest satisfaction in restaurants [44]. Ryu [40] outlines the various elements covered by food quality, including the method and place of food preparation, traceability of raw materials, security, nutrition, sensual attributes, and functional and biological elements. According to Namkung and Yang [31], although food forms a fundamental component of the service experience, research on food quality itself is relatively limited, and most studies dealing with food service quality often focus solely on atmosphere and general service quality. Hart and Casserli [15] identified a lack of quality training as a key factor leading to uneven food quality. For a successful and profitable food and beverage sector, management must pay more attention to guests, identify their needs and expectations regarding food quality. The first step in ensuring quality in hotel production is food procurement [19]. According to the same authors, it is crucial to buy the right products from the right suppliers at the right time and at the right prices [43]. Debata et al. [11] point out that choosing the right supplier is a key condition for maintaining consistent food quality, and special attention must be paid to the accuracy and timeliness of delivery.

Grimm et al. [14] emphasizes four critical considerations for management when sourcing food. These include aligning with the financial goals of the hotel company, determining the appropriate amount of food needed to prevent both surpluses and shortages, ensuring effective food preparation and presentation, and meeting guest expectations regarding food service processes [22]. When purchasing food products, it is crucial to use standard specifications to detail the key characteristics of each food type. These purchase specifications should correspond to the items listed on the menu. Riley [38] outlines several fundamental purposes and benefits of these specifications. They serve as quality and cost control standards, help prevent misunderstandings between

suppliers, customers, and users, act as valuable training tools, and are essential for identifying all relevant aspects of the product or service. To maintain a consistent level of food quality, uphold guest satisfaction, and manage food costs, it is crucial to adhere to portion size standards. These standards involve specifying the amount of each menu item served for a given price, quantified by number or weight, and should be aligned with standard recipes. In essence, management must clearly define quality standards. Utilizing portioning tools, scales, and utensils becomes imperative to ensure precise ingredient measurements, thereby ensuring consistency in the quality of food and beverages. Additionally, the proper utilization of food testing and measuring equipment is essential to meet required specifications and regulate critical processes in food preparation. As asserted by Ruffin [39], the control of all equipment used for measuring and checking the quality of food, such as temperature probes and timers, is necessary. Guests are inclined to favor establishments with good food quality, emphasizing the concept of “value for money”. Regardless of how quickly food is delivered, its quality is paramount in attracting guests. In the hotel industry, food and beverage quality stands as a key determinant of guest satisfaction. Namkung and Yang [31] identify factors constituting food quality, including presentation, health options, taste, freshness, variety, and temperature. They emphasize that food presentation influences guests’ appetite and perception of food and beverage quality. Similarly, Zrnić, Brdar & Kilibarda [47] underscore the importance of food and beverage quality in the restaurant industry, categorizing five dimensions or attributes: food freshness, taste, nutritional value, menu variety, and aroma. Providing quality food proves instrumental in enhancing guest loyalty and retention and maximizing restaurant revenue, as repeat guests tend to spend more on food than new guests on various hotel services, products, and beverages. Generally, food quality encompasses six key components: (1) presentation, (2) variety, (3) healthy options, (4) taste, (5) freshness and (6) temperature, as outlined by Namkung and Yang (2007). The control and monitoring of food quality align with the overarching goal of enhancing guest satisfaction. Nam et al. [30] introduced two distinct dimensions in food and

beverage service activities. The first dimension, technical standards, focuses on product quality, which includes aspects such as the quality of food products, portion size, cooking method, presentation, aroma, and taste. The second dimension, service standards, emphasizes the quality of service, covering service delivery procedures such as greeting, order taking, payment, and the execution of these procedures, with attention to aspects like body language and tone of voice. In contrast, Hart and Casserly [15] identified several factors contributing to a lack of quality in the hospitality sector. These factors include insufficient commitment to quality from management, limited direct communication between management and employees, inadequate involvement of all employees in the quality management strategy, a high percentage of part-time employees leading to inconsistent quality, and a lack of training related to the quality of services and products.

Mmutle & Shonhe [26] express a similar viewpoint, highlighting that inconsistency poses a significant challenge to quality in organizations providing food and beverage services. Consequently, the cost of poor quality becomes a critical concern as it can surpass the expenses of developing gastronomic quality. In this context, it is imperative for catering companies to ensure and balance the quality of their gastronomic offerings to achieve guest satisfaction. Creating a high-quality gastronomic product involves procuring good ingredients, proper storage, adherence to standard recipes, and cost control. Ryu et al. [40] explain that establishing clear standards for all activities and processes in food production is necessary to achieve a consistent level of food quality, and these standards should be easily accessible to all staff [37]. Mohammad [27] asserts that well-prepared quality food in a hotel and restaurant, irrespective of size, leads to profit and an overall increase in the establishment's income. The same author dispels the misconception that hiring a good chef and leaving operations solely to them ensures quality food, emphasizing the importance of a team approach in hotel service operations for maintaining consistent food quality. Edoun et al. [12] stress the short operating cycle of food preparation, leaving little time for error correction, making it crucial to achieve quality food on the initial attempt. Munoz et al. [29] share a similar perspective,

advocating for producing a quality product the first time to save time and costs, avoiding the need for corrections and repairs. Poor quality costs approximately 20% of gross profit in the manufacturing industry and around 30% in the service industry. The cost of attracting new guests is three to five times higher than retaining existing guests, underscoring the imperative of impeccable gastronomic quality. Parsa et al., [34] investigated reasons for hotel/restaurant failure, identifying issues such as a lack of a documented strategy, absence of a written mission and vision, and failure to establish, document, and maintain operating standards. They also highlighted frequent changes in management and staff, lack of integration of mission and vision in work, lack of management commitment and employee involvement, and poor-quality products. A recent study suggests that the introduction of a quality management system and hotel certification has no direct relationship with business performance but shows a significant correlation with operational performance. In a study on luxury hotels in New York and California, Majid et al. [24] found that food quality and service quality significantly impact guest loyalty. Another study in the Republic of Serbia by Borovčanin and Kilibarda [8] highlights the dependence of food and beverage quality on employee satisfaction. Empirical research indicates that the quality and safety of food in the hospitality sector primarily hinge on management's will. The same authors emphasize the responsibility of food producers (hotels, motels, restaurants, etc.) to provide high-quality, safe, hygienically prepared meals and drinks, meeting guests' expectations, and ensuring the health of those who consume the prepared food. Previous studies have identified food quality, service quality, and ambiance as the main factors determining restaurant service quality. Kondo (2000) [20] underscores the importance of consistent product quality by documenting workflow and issuing certificates as evidence of compliance with standards. A gastronomic product must consistently deliver quality at an appropriate price to meet guest expectations. Empirical findings from a study show that by carefully evaluating, preventing, and reducing errors in the food and beverage sector, a hotel can significantly improve its financial performance. All entities involved in food production are obligated to establish a food

safety system in accordance with the principles of good hygiene practice, good production practice, and HACCP, ensuring food safety and the enjoyment of quality food and drinks. In this research, in addition to the research questions, two hypotheses were set:

- **Hypothesis 1:** Guest satisfaction is influenced by the quality of food and beverages offered in hotel catering establishments such as restaurants, cafe bars, and lounge bars. This influence is contingent upon factors like the ambiance, taste, and presentation of the food and beverages, the quality of services provided, the pricing of gastronomic products, and the integration of innovative culinary elements.
- **Hypothesis 2:** The contentment of guests with the culinary offerings in 4\* and 5\* establishments is intricately linked to their prior experiences in hospitality facilities of the same caliber, encompassing restaurants, cafe bars, and lounge bars. This connection significantly shapes the overall gastronomic experience.

## Methodology

The research was conducted from May to June 2024, focusing on the hospitality industry in Serbia. Surveys were distributed via email to hotels across the country. Out of 521 responses received, 417 were correctly completed and included in the final dataset. Data analysis was performed using Excel 365 to derive the results. Due to its ease of use and familiarity with researchers, Excel 365 was selected for the study's data analysis and manipulation. Because of its adaptability, it may be used for a variety of studies without the requirement for specialized tools, such as pivot tables and descriptive statistics. Since sophisticated statistical methods were not required for the study's analysis requirements, Excel was adequate for obtaining insightful information.

The aim of the research relates to the development of a food and beverage quality management model, in order to achieve the gastronomic experience and satisfaction of food and beverage services. The research includes a systematic approach, using the APUCI model (Ambience, Product, Unique service, Cost of product and Innovation). The APUCI model was developed specifically for the

purposes of this research to comprehensively examine all above mentioned elements. During the research process, the author observed that existing research models often focus on one or a few aspects of quality, service, and guest satisfaction. Accordingly, a comprehensive model was created to investigate multiple dimensions of quality and guest satisfaction. This approach provides a broader perspective, leading to more robust research findings and, consequently, better practical solutions and recommendations for improving service quality.

Guest satisfaction pertains to the degree of contentment experienced by guests at 4\* and 5\* hotel facilities, across various individual aspects that are the focus of this research. Ambience refers to the overall atmosphere and environment of the hotel, including factors such as music, color, furniture, pictures, interior design, lighting. Guests expect to be in a clean, well-maintained and visually pleasing environment. Products and unique services refer to the benefits and offers that the hotel provides to guests. This includes elements such as food and beverage quality and options and guest services such as restaurant service and more. Guests expect to have access to high-quality products and services that meet their needs and exceed their expectations. Cost refers to the amount of money for hotel products and services.

Guests expect to get value for their money and to be charged fair prices that are in line with the market and the quality of products and services provided. Innovation refers to a hotel's ability to think outside the box and come up with new and unique ideas to improve the guest experience. This can include things like incorporating new technologies, offering unique amenities, or implementing sustainable practices [43]. Guests appreciate hotels that are always looking for ways to improve and stay ahead of the competition. Total guest satisfaction means satisfaction with all aspects of the user experience that are the subject of this research (ambience, product, service, price and innovation), that is, it includes all factors that contribute to guest satisfaction as a whole.

Table provides a revised distribution of the demographic and socio-economic characteristics of the 417 respondents. Regarding gender, there are 245 males, constituting 58.45% of the sample, and 172 females, making up 41.02%. For age

distribution, the largest group is aged 27-41, comprising 180 respondents or 43.14% of the sample. This is followed by the 42-55 age group with 120 respondents (28.77%). The 18-26 age group includes 40 respondents (9.60%), while those aged 56-64 account for 50 respondents (11.98%). The over 65 age group comprises 27 respondents, which is 6.46% of the sample. In terms of education, 80 respondents (19.18%) have completed high school, 140 (33.57%) hold a college degree, 120 (28.77%) have a faculty degree, 70 (16.77%) have a master's degree, and 7 (1.68%) hold a PhD. Employment status reveals that 267 respondents (64.05%) are employed, 80 (19.18%) are entrepreneurs or business

owners, 35 (8.39%) are out of work, 30 (7.19%) are retired, and 5 (1.20%) are students. Regarding salary range, 70 respondents (16.77%) earn between 0 and 50,000 RSD, 145 (34.77%) earn between 50,000 and 100,000 RSD, 157 (37.71%) earn between 100,000 and 200,000 RSD, and 45 (10.81%) earn more than 200,000 RSD.

The frequencies and percentages for each category have been recalculated to maintain the accuracy and representativeness of the data. For the variable “*Previous stay in hotel with higher category*,” the number of respondents who have not previously stayed in such hotels is now 24, constituting 5.75% of the total sample. Conversely, those who have stayed in 4\* or 5\* hotels now number 393, accounting for 94.25% of the respondents. Regarding “*Personal experience of quality*,” the recalculated percentages for each category are as follows: 9.83% of respondents (41 individuals) reported that the price was in line with their expectations. An innovative gastronomic offer, such as gluten-free options, was highlighted by 7.19% of the respondents (30 individuals). The category of experiences that exceeded guest expectations was reported by 9.83% of respondents (41 individuals). A pleasant atmosphere, encompassing design, ambience, and lighting, was noted by 8.87% of respondents (37 individuals). Delicious food, characterized by taste, smell, and freshness, was highlighted by 12.47% of respondents (52 individuals). The expertise and education of employees were emphasized by 8.15% of respondents (34 individuals). Lastly, 43.63% of respondents (182 individuals) reported that all the mentioned factors contributed to their personal experience of quality.

For the “*Quality of food and drinks*,” the mean rating is 4.683 with a standard deviation of 0.275, indicating

**Table 1. Socio-demographic characteristics of respondents**

Variable	Category	f	%
Gender	Male	245	58.45
	Female	172	41.02
Age	18-26	40	9.60
	27-41	180	43.14
	42-55	120	28.77
	56-64	50	11.98
	Over 65	27	6.46
Education	High school	80	19.18
	College	140	33.57
	Faculty	120	28.77
	Master	70	16.77
	PhD	7	1.68
Employment Status	Out of work	35	8.39
	Student	5	1.20
	Retired	30	7.19
	Entrepreneur (business owner)	80	19.18
	Employed	267	64.05
Salary Range	50.000 RSD	70	16.77
	50.000-100.000 RSD	145	34.77
	100.000-200.000 RSD	157	37.71
	More than 200.000 RSD	45	10.81

\*f – frequency; % - percentage The total number of respondents 417.  
Source: Authors research

**Table 2. Results of descriptive statistical analysis are given**

Variable	Category	N	%
Previous stay in hotel with higher category	No	24	5.75
	Yes	393	94.25
Personal experience of quality	Price in line with expectations	41	9.83
	Innovative gastronomic offer (e.g. gluten-free)	30	7.19
	Exceeded guest expectations	41	9.83
	Pleasant atmosphere (design, ambience, lighting)	37	8.87
	Delicious food (taste, smell, freshness)	52	12.47
	Employees (expertise, education)	34	8.15
	All the above mentioned	182	43.63

\*N – number; % - percentage  
Source: Authors research

that respondents generally perceive the quality of food and drinks to be high with minimal variability. The ratings for this category range from a minimum of 1.000 to a maximum of 4.000. The “Ambience” category has a mean rating of 3.905 and a standard deviation of 0.678, showing a moderate level of satisfaction with the hotel ambience. The ratings range from a minimum of 1.000 to a maximum of 5.000, reflecting diverse opinions among the respondents. “Innovations,” which includes offerings such as gluten-free options, received a mean rating of 3.128 with a standard deviation of 0.918. This category also had a rating range from a minimum of 1.000 to a maximum of 5.000, indicating varied responses regarding the innovative aspects of the hotel services. “Guest satisfaction” has a mean rating of 4.065 with a standard deviation of 0.768. The ratings for this category range from a minimum of 1.000 to a maximum of 5.000, suggesting that most respondents are generally satisfied with their overall experience. The “Service” category was rated with a mean of 4.051 and a standard deviation of 0.579. The minimum rating for this category is 1.857, while the maximum is 5.000, indicating a high level of service quality with some variability. “Food and drink satisfaction” received a mean rating of 4.265 and a standard deviation of 0.518, with ratings ranging from a minimum of 2.167 to a maximum of 5.000. This suggests a high level of satisfaction with the food and drink offerings. The “Quality of service” category has a mean rating of 2.838 and a standard deviation of 0.579, with ratings ranging from a minimum of 0.667 to a maximum of 3.667. This indicates more moderate satisfaction with the quality of service. For “Standards,” the mean rating is 2.653 with a standard deviation of 0.362, and the ratings range from a minimum of 3.000 to a maximum of 5.000.

This reflects perceptions of the standards maintained by the hotels. Lastly, “Professionalism” has a mean rating of 2.279 and a standard deviation of 0.543, with ratings ranging from a minimum of 1.500 to a maximum of 3.000, suggesting that respondents perceive the professionalism of the staff as moderate.

## Results and discussion

Based on the research conducted in higher-category hotels (4\* and 5\*) in Serbia, and the results obtained through an online questionnaire, the following conclusions can be drawn regarding the quality of gastronomy in the management of gastronomic services: The quality of food and drinks is influenced by various factors including the ambience, taste, presentation, service, pricing of gastronomic products, and innovations. Although today’s guests believe that not all these factors significantly impact the overall experience, it is crucial not to overlook any of these aspects to ensure potential guest satisfaction. The research findings indicate that previous experience in staying at higher-category hotels has a partial effect on guests’ gastronomic satisfaction. It can be concluded from the research results that the level of knowledge, training, and specialization of hotel staff has a notable impact on guest satisfaction in hotels with higher category. The analysis of guest responses reveals that the portion size and presentation of meals and drinks, as handled by hotel staff (including cooks, waiters, and management), are influenced by the standards set by the hotel facility. These factors play a significant role in affecting guest satisfaction. The research results also show a positive guest attitude toward the expertise of the service staff in

**Table 3. Descriptive statistics of quality factors**

Category	Mean (m)	Standard Deviation (sd)	Minimum	Maximum
Quality of food and drinks	4.683	0.275	1.000	4.000
Ambience	3.905	0.678	1.000	5.000
Innovations	3.128	0.918	1.000	5.000
Guest satisfaction	4.065	0.768	1.000	5.000
Service	4.051	0.579	1.857	5.000
Food and drink satisfaction	4.265	0.518	2.167	5.000
Quality of service	2.838	0.579	0.667	3.667
Standards	2.653	0.362	3.000	5.000
Professionalism	2.279	0.543	1.500	3.000

Source: Authors research

terms of the gastronomic experience. Continuous training, master classes, and periodic education are recommended as effective strategies for maintaining and enhancing staff quality, which, in turn, leads to higher guest satisfaction. Furthermore, the processed responses from guests who stayed in higher-category hotels suggest that the perceived quality of food and beverages is influenced by the pricing, which in turn affects overall guest satisfaction.

Research hypotheses. Testing results

H1: The quality of food and beverages in a hotel's catering facility—whether it be a restaurant, cafe bar, lounge bar, or similar—significantly impacts the overall satisfaction of guests. This quality is influenced by several factors including the ambiance, taste, and presentation of the food and beverages, the services provided, the prices of the gastronomic products, and innovations. This hypothesis has been confirmed.

H2: Guest satisfaction with food and drinks in higher-category hotels is influenced by their previous experiences at similar facilities, such as those within the same category (restaurant, cafe bar, lounge bar, etc.). This prior experience impacts the overall gastronomic experience at the hotel. This hypothesis has also been confirmed.

In order for a hotel restaurant to be profitable and successful, management must focus more on its guests and identify their needs as well as what they expect from food quality. Guest satisfaction is a critical issue for the survival of hotel restaurants. Delivering consistent levels of quality gastronomic products has a significant impact on guest retention in hotel facilities. In order to achieve food quality, it is crucial to conduct regular internal and external quality audits in gastronomy. Based on the research, we can come to the conclusion that commitment, focus, constant improvement and maintenance of quality in the gastronomic offer of products and services and employees in the hospitality facility of the hotel can have a positive effect on the successful operation of the hospitality facilities and thus the ultimate satisfaction of the guests. Constant improvement, monitoring of set standards and adequate seminars are necessary so that hotel facilities can establish consistent quality in gastronomy. In accordance with the

above, it can be concluded that there are no universal quality standards in gastronomy in managing guest satisfaction. Standards and quality mean different things to different guests, and this is supported by the partial confirmation of the set hypotheses. When concluding the research questions, the global crisis epidemiological situation should also be taken into account, and perhaps some answers to the survey questionnaire would be different from those received.

## Conclusion

In accordance with the following recommendations were made for hotels in Serbia to improve quality in the gastronomic sector: Given the large number of hotels with higher category in Serbia, it is necessary to constantly monitor modern trends and innovations that contribute to business in contemporary tourist markets. By applying these trends and innovations, hotel companies can ensure their competitiveness [35]. Due to the competition in the tourist market, it is suggested that hotels form synergies with other hotel companies to strengthen their market presence. By collaborating within mutual interests, hotel companies can operate together, facilitating international business, accessing new markets, and attracting new users of gastronomic services. Considering the fast pace of life and the demand for instant solutions, it is essential for hotels to develop their own quality standards. These standards can help establish and maintain good business practices. Hotels that have a thorough understanding of their guests, including their needs and wishes, have a significant advantage over those that do not track guest demands. Therefore, it is crucial for hotels to understand their service users, along with their socio-demographic characteristics and economic motives. This understanding will enable hotels to better implement new and existing systems for improving gastronomic quality, adjusting gastronomic products (food and drinks) according to guest preferences, and ultimately impacting business profits positively. Communication with guests is also a vital step. It is recommended to utilize social platforms such as TripAdvisor and Booking.com to promote hotels, their services, and gastronomic products. This promotion can

increase visibility and potentially increase the number of users of gastronomic and hotel services. Moreover, constant monitoring of the satisfaction of users of gastronomic services is required. Given the willingness of guests to share their experiences, pictures, and videos with their loved ones and on the Internet, a good strategy is to follow relevant forums and platforms. By analyzing the information and new knowledge gained from these sources, hotels can identify and resolve problems, using the information to their advantage to create guest satisfaction, which is the primary goal of hotel companies.

Although this study uses the APUCI model to offer useful insights about the caliber of gastronomy services in Serbian hotels, it is crucial to recognize its limitations. A notable drawback is the dependence on respondents' self-reported data, which could introduce biases like recall or social desirability bias and compromise the accuracy of visitor satisfaction surveys. The findings may also not be as applicable to other areas or nations due to the concentration on hotels in Serbia, since cultural and contextual factors can greatly affect the expectations and experiences of visitors.

To evaluate the APUCI model's suitability and efficacy in various hospitality contexts, it would be advantageous for future study to test it in various geographical locations. A more thorough insight of customer satisfaction across the industry might also be obtained by broadening the study to include a wider variety of hospitality venues, such as cafes and restaurants. Additionally, using mixed-method techniques, such as qualitative interviews, could improve the data and provide more in-depth understanding of the elements affecting visitor experiences. Future studies can help develop a more sophisticated understanding of gastronomy service quality and client happiness in the hospitality industry by tackling these constraints and investigating these avenues.

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## CRITICAL OVERVIEW OF THE MEGA EVENTS LEGACY AND DIRECTIONS FOR UPCOMING WORLD EXHIBITIONS (EXPO)

Kritički pregled nasleđa mega događaja i budući  
pravci za naredne Svetske (EXPO) izložbe

### Abstract

Mega events are changing host destinations in various aspects since they became a strong business-oriented eco-system that creates a strong legacy impact on the host destination. The paper provides an extensive literature review of the legacy concept in the meetings and events industry, research if after organizing a mega event there is always a legacy that remains for the hosting destination, and research in what directions legacy should be managed. Unfortunately, due to an inconsistent approach to measuring and reporting, it is not possible to compare the success of previous EXPOs. That is the reason why host destination should develop their own approach based on the entire urban development strategy and destination management development strategy, where EXPO is only one important milestone to reach. Special focus has been given to the EXPO financial cost-benefit impacts analysis for the period 2010-2021. Based on the extensive literature review, in the process of understanding and implementing the EXPO legacy framework, there are three major legacy areas identified: destination marketing and branding, urban development and urbanization process, and monitoring and measuring economic impact. Available funds for destination marketing should be joined from the public and private sectors in order to reach a long-lasting and sustainable brand and image of a destination. A customized economic impact model needs to be based on the macro-economic data that has been monitored for at least 10 years, on the local, regional and national levels, while the destination should have a clear urban development strategy, in which EXPO is an important milestone to reach.

**Keywords:** EXPO, world exhibitions, legacy, mega-events, event, MICE

### Sažetak

Mega događaji menjaju destinacije kroz različite aspekte, jer su postali snažan poslovno orijentisan sistem koji ima snažan uticaj kroz nasleđe koje kreira na destinaciji. Rad sadrži opsežan pregled literature o konceptu nasleđa u industriji događaja, te da li organizovanje mega događaja uvek kreira nasleđe za destinaciju, i istražuje u kojim pravcima nasleđem mega događaja treba upravljati. Nažalost, zbog nekonzistentnost pristupa merenju i izveštavanju, nije moguće porediti uspeh prethodno organizovanih EKSP0 događaja. To je razlog zašto destinacija domaćin treba da razvije sopstveni pristup zasnovan na strategiji urbanog razvoja i upravljanja destinacijom, u kojima je EKSP0 samo jedna važna prekretnica do koje treba doći. Poseban fokus je stavljen na analizu uticaja finansijskih troškova i koristi EKSP0-a za period 2010-2021. Na osnovu obimnog pregleda literature, u procesu razumevanja i implementacije nasleđa EKSP0-a, identifikovane su tri glavne oblasti nasleđa: marketing i brendiranje destinacije, urbani razvoj i proces urbanizacije, i praćenje i merenje ekonomskog uticaja. Sredstva za marketing destinacije treba udružiti iz javnog i privatnog sektora kako bi se došlo do dugotrajnog i održivog brenda i imidža destinacije. Prilagođeni model ekonomskog uticaja treba da se zasniva na makroekonomskim podacima koji se prate najmanje 10 godina, na lokalnom, regionalnom i nacionalnom nivou, dok destinacija treba da ima jasnu strategiju urbanog razvoja, u kojoj EKSP0 predstavlja jednu od važnih prekretnica koje treba dostići.

**Ključne reči:** EXPO, svetska izložba, nasleđe, mega događaji, događaj, MICE

## Introduction

Olympic Games, FIFA World Cups, and World Exhibitions are a category of mega-events, events that are changing the host destination through various aspects, especially keeping in mind that they have become a strong business-oriented eco-system that are worth billions of euros emphasizing long-term legacy impact on the host destination (city, region, country). Event management as a practice requires strategic development and delivery of value creation spanning diverse stakeholder needs from governmental to organizational objectives [73]. While mega events have been organized in this fashion for over a century, we need to be aware that the global change of mankind influenced changes in the core values and concepts of these events, putting business-driven values more important in comparison to social-driven values such as soft power, peace, diplomacy and similar creates increasing complexity in delivering on the promises of legacy. With the bigger and more expansive organization of events, the business-driven legacies centered on global impacts including GDP and international economic development become more important for the organizing destination [43]. This is the same for all other categories of events, including corporate events and association events, as the main events format within the meetings and events industry.

Globalization, industrial revolutions, economic and health crises and wars are all external, non-controllable factors impacting the events' core values and goals. In 2020, COVID-19 heavily impacted the meetings and events sector, including both business and entertainment segments, leading to the fact that the entire industry almost died during the year, and only in Q4 2021 we could see the increase in business. An important lesson learned is that the meetings and events industry is not fulfilling basic, survival needs and wants. Therefore, in the years after COVID-19, the events industry has changed towards an increased need for destination resilience [15]. One of the key destination resilience factors is the creation of a long-lasting events legacy for a host destination [7], the legacy that will improve the destination in multidisciplinary and multifaced ways.

## Methodology and research questions

In this paper, we will provide an overview of the legacy concept in the meetings and events industry, and answer if after organizing a mega event, there is always a legacy that remains for the hosting destination, as well as in what directions legacy should lead. Focus is on the World Exhibitions (in further text: EXPO) events, due to increased interest in the topic from the side of professionals in the events industry, from the governments' side and the local citizens' side in the host destinations.

The legacy framework has been analyzed through an extensive literature review of the research papers on the topic of mega-events, and especially EXPOs. Research questions of the paper are: 1) to what extent the legacy of EXPOs has been part of the previous academic research, 2) if after organizing a mega event there is always a legacy that remains for the hosting destination and 3) what are the major legacy directions that future organizers need to implement within their organizational activities. In addition, a comparative analysis of the performances of EXPOs in the period 2010 - 2020 (2021) is being done for the paper, in order to understand the financial cost-benefit impacts for the host destination.

## Mega-events and EXPO legacy framework

Mega-events generate significantly high costs that host destinations are hoping to cover due to the created platforms of the long-term sustainable impacts and legacy, while on the other side owners of the mega-events, like BIE of EXPO, IOC for the Olympics and others, do generate high revenues from the organization of events [32]. The volume of investments that national and local governments are putting into the mega-events, mostly investing public money is always followed by public political discussions and increased examination by, both, the professional public and general audience. Government statements and media coverage often highlight the enduring legacies of hosting large-scale events as positive outcomes for host cities [82, p. 112].

Due to highly politicized aspects of legacy [33], policymakers, in order to justify the high investment

needed to run a mega event, are heavily promoting potential economic, social and urban legacy effects [76]. They are justifying significant capital investment with the positive legacy promise [30, p. 30], although some of the research demonstrated that in the short-term period, the positive outcomes that have been promoted, anticipated, and/or promised have not been fulfilled [76]. In addition, there are examples of urban infrastructure projects that have not entered commercial and public usage after the mega event, due to high operational maintenance costs [34, p. 45]. Many destinations remained in significant debt from urbanization projects and event operations [81, p. 116]. To decrease the infrastructure cost, some of the organizers decide on the temporary infrastructure approach like in the case of the Beijing Olympics [39] and Qatar FIFA [82]. Activities of re-zoning and change in the city zones legislation, increased land values and increased rental prices are negative effects from the social aspects and are common after the mega-events [77].

In order to reach long-term legacy goals, especially from the urbanization point of view, mega events requirements need to be embedded within long-term urban plans [41]. Properly planned, coordinated and implemented tourism leveraging strategy, can increase events legacy as well [16], in addition to proper place marketing strategies [31, p. 32].

To support potential and future host destinations, owners of the mega-events are introducing various guides and supporting initiatives that will legitimize the increasing public investments, and increase the visibility of the (potential) positive legacy for host destinations [33]. The challenge is that the concept and term legacy are considered different depending on the language, cultural environment and destination organizational setting [64]. In most research papers legacy is mostly framed with urban development and infrastructure improvements, while intangible aspects and governance transformation have not been seen as equally important [55], as well as with economic impact [36]. The multidimensional aspect of legacy [63] needs to be seen from the dimension of time and space, as well as from the proportion among planned/unplanned results, tangible/intangible impacts and positive/negative effects [71].

Legacy should be seen not as a structural change, but as a consequence of the change. In that sense, legacy affects various stakeholders and the environment, creating positive, negative or neutral outcomes [70], no matter if it is tangible legacy (i.e., new infrastructure) or intangible legacy (i.e., know-how transfer, improvement of international visibility) [31].

It is important to understand that there is a lack of mega events legacy research in a period of 5 or more years after the event. Also, there is a lack of appropriate key performance indicators and a lack of proper methods that will measure the intangible legacy effect [75]. Furthermore, there are clear opportunities and needs for cross-cultural and cross-destination research projects that can differentiate specific outcomes of events from mere generalizations [5]. Therefore, in measuring legacies, it is important to take into consideration the time span for the legacy measurement, stakeholders and space, structural changes and the consequences of a structural change for the stakeholder [70, p.114].

Certainly, EXPO is one of the most intriguing formats of the mega-event. The Bureau International des Expositions (BIE) recognizes several types of EXPO exhibitions [13]: World EXPO, Specialized EXPO, Horticultural EXPO, and Triennale de Milano EXPO. Each type of EXPO must adhere to specific criteria regarding the size of the EXPO grounds and the duration of the event. According to the BIE, a “Registered EXPO” or World EXPO, is held every five years for a maximum duration of six months. Participants have the option to design and construct their own pavilions or rent space from the organizers, with no limit on the size of the EXPO site. On the other hand, a “Recognized EXPO” or International EXPO occurs between two World EXPOs, lasting a maximum of three months. Participants are only allowed to rent space from the organizers, and the EXPO plot size is limited to 25 hectares. And, according to the BIE Paris Convention, a world exhibition needs to be seen as the public platform for education and increased visibility of tools and solutions that improve human development and social wellbeing [14].

The BIE Exhibition, commonly referred to as EXPO, has been a longstanding tradition since its inception in 1851. EXPO has positioned itself as the platform for

supporting processes of industrialization (1851-1938), culturalization (1939-1987) and national branding (since 1988) [61]. In addition, the interesting aspect of EXPO is to be a platform for reaching and proofing international reputation and global status [78], as well as promoting economic diversification and urban improvement [79]. By hosting an EXPO, as a mega-event, destinations are implementing changes to the urban landscape and urban functions [43], while upgrading the brand in order to reach better international recognition, tourist visitation and media coverage [87]. EXPO is seen by the destination policymakers as a platform to promote reconciliation, self-esteem, national pride, and patriotism [89; 28], and to provide a sense of social inclusion of local citizens.

However, host destination branding goals cannot be effectively achieved by a single high-profile mega-event, such as EXPO [86]. EXPO even might have a negative impact by undermining natural resources, changing land usage, increasing waste and pollution, and affecting microclimate [4]. Recent attention has been drawn to the growing environmental impact of EXPOs, influencing the actual perceptions of local residents and the inconsistency between the government's promotion of the benefits of hosting EXPO and citizens' lived experiences, which ultimately diminishes the true impact of these events [57], since actual perceptions of locals are beyond any officially defined strategies regarding mega events branding strategies [46]. EXPO can initiate conflict among locals and visitors due to different purchasing power [83] and may cause increased costs of living, traffic congestions, and restricted access to public facilities [57], therefore adversely affecting the life quality of local residents.

According to available data from BIE, an average of 3 competing destinations are participating in the bidding process for the EXPO. This demonstrates that the bidding to host EXPO, as the mega-event, is very competitive [47]. Literature review shows that there is a difference in how potential destinations promote their bids, due to differences in governance and public administration structure [3]. Bids initiated by the USA destination are led by the local growth coalition and bids reflect the interests of key players in urban regimes [79, p. 159] whose actions are not driven by the political officials [8, p. 194]. In bids

initiated by countries in Western Europe, local government structures form cooperation models and partnerships with private business sectors, in order to reach wider community and political consensus and pursue higher government investments [18]. In bids initiated by the World EXPO 2010 destination, local government and national governments are playing dominant roles [79, p. 159]. This dominant role of the government, both local and national, is also evident in the process of winning bids for World EXPO 2020, Specialized EXPO 2027 and World EXPO 2030. The case of World EXPO 2025 won for Osaka, Japan, demonstrates a more similar approach as to USA destinations.

EXPO events have been held regularly up to EXPO 2020 in Dubai, which took place from 2021 to 2022 [84, p. 130]. Furthermore, three upcoming destinations have been confirmed as hosts for future events: Osaka, Japan in 2025, Belgrade, Serbia in 2027, and Riyadh in Saudi Arabia in 2030 [11]. During the bidding process, bidding destinations need to show the process of how the theme of the EXPO will be successfully delivered to the visitors so they can accurately understand the purpose of the EXPO and the broader goal of the theme [38]. In defining themes EXPO organizers need to be driven by implementing experience economy pillars that include entertainment, education, escape and aesthetic experience [69]. In this way, organizers support visitors to fully recognize the objectives of the EXPO and experience the theme [6]. For the host to be successful in EXPO implementation it is advisable to possess advanced communication and brand strategy, convenient geopolitical and geographical location, and further improvement plans for the local urban and hospitality infrastructure [61, p. 908].

Although EXPOs take place on a regular basis, each EXPO needs to be considered a one-time event since, except for the general concept, all other event management aspects are different and host destinations have different approaches to the organization. In the process of creating a bid document, and later recognition dossier of the host destination, an important part is an estimation of visits and visitor numbers [54]. These estimates of mega-event attendance are based on the assumption that all visitors who have planned potential visits have actually attended

the event in 100% of cases [53, p.168]. Before the forecasting process, organizers need to understand that the high attendance figures and visitor satisfaction levels of prior EXPOs do not have any impact on the number of guests for the upcoming EXPO [38]. That is why visitor demand prediction is the critical step in defining the capacities of the venues and supporting infrastructure [53, p.169].

### Overview of EXPO costs, visitation and economic effects in the period 2010-2021

In the following section, an overview of the main performances of EXPO in the period 2010–2020 will be made, including different EXPO event formats (Table 1). The BIE reports that 79 million people attended EXPO 2010 in Shanghai overall. Previous research indicated that the anticipated number of visitors is projected to reach 70 million visits [27, p.11]. According to the available data, EXPO 2010, categorized as the World EXPO, was developed at a project cost of \$20 billion (RMB 121 billion) and has generated \$260 million in direct income, \$2.5 billion in tourism income, and \$420 million in increased business volume [56]. Other sources indicate that the total costs, including infrastructure and urban revitalization, have reached \$48 billion [56].

According to BIE data, 8.2 million visitors attended the specialized EXPO 2012. For the Yeosu EXPO 2010, a national survey has been implemented to determine intention to visit and predict visitor numbers, based on the 3,000 respondents in 16 statistically defined areas of the country [53]. Before the survey, additional forecasting was made by combining quantitative techniques with willingness-to-visit (WTV) obtained from survey data, according to which the total predicted number of visitors was 8.9 million, while a panel of experts through Delphi

method predicted 6.8 million visitors to the EXPO 2010 [54]. Although the final figures are different, a combination of field research and expert panel provides policymakers with proper insights that allow information to guide investment and planning direction for the EXPO [52]. According to the available data, EXPO 2010, categorized as the specialized EXPO, was developed at a project cost of \$2 billion, has generated an economic impact of \$5.3 billion and created 80,000 jobs, with 8.2 million visitors, including 400,000 foreign visitors [38, p. 1268]. Data on economic impact and generated revenue has not been identified.

According to BIE data, the total number of EXPO 2015 is 21.5 million visitors. According to the available data, EXPO 2015, categorized as the World EXPO, was developed at a project cost of \$5.5 billion and has generated economic income of \$6.6 billion, including increased export of \$3.6 billion and tourism income of \$1.7 billion [26]. However, another source indicates that when adding costs of metro lines and roads, the initial investment rises to \$14 billion [17].

The total number of again specialized EXPO 2017 visitors, according to BIE data, is 3.9 million visitors. Prior research showed that the expected number of visitors will be more than 5 million [61]. EXPO 2017 could be viewed as one of Kazakhstan's endeavors to showcase itself as a thriving nation, providing an attractive atmosphere for investments, securing a more prominent global standing, and as a great tourism destination [2]. According to the available data, EXPO 2017, categorized as the specialized EXPO, was developed at a project cost of \$1.2 billion. It has created 50,000 jobs and increased the number of hotels and restaurants by 16% and the total number of available rooms by 46% in the capital city [72]. The estimated number of visitors was 4 million, including 600,000 foreign visitors

Table 1: EXPO Comparison: 2010-2021

	EXPO 2010	EXPO 2012	EXPO 2015	EXPO 2017	EXPO 2020
Category	World	Specialized	World	Specialized	World
Destination	Shanghai	Yeosu	Milan	Astana	Dubai
Country	China	South Korea	Italy	Kazakhstan	UAE
When was bid won	December, 2003	November, 2007	March, 2008	November, 2012	November, 2013
Years to prepare	6.5	4.5	6.5	4.5	6.5
Project cost	\$48 billion	\$2 billion	\$14 billion	\$1.2 billion	\$7 billion
Number of visitors	79 million	8.2 million	21.5 million	3.9 million	24 million

**Table 2: Overview of EXPO frequency in relation to the format**

	2010	2012	2015	2016	2017	2019	2021	2022	2023	2024	2025	2027
World	X		X				X*	X*			X	
Horticultural		X		X		X		X*	X*			X
Specialized		X			X				X**			X

Notes: X\* - the EXPO duration expanded in two years; X\*\* - EXPO was cancelled

and total international coverage towards 2.6 billion people [a24]. Data on economic impact and generated revenue has not been identified.

According to BIE data, the total number of EXPO 2020 visitors was 24 million visitors. According to the available data, in the pre-show phase, a total of 25 million visitors were expected, with over 70% of international guests [24]. According to the available data, EXPO 2020, categorized as the World EXPO, was developed at a project cost of \$4.9 billion [25], while other resources indicate a cost of up to \$7 billion [23]. According to the official report [12] the economic impact of the EXPO is expected to contribute a total of \$43 billion of gross value added (GVA) to the economy of the UAE in the period from 2013 to 2042. Dubai's method for assessing feasibility and strategic planning has enabled it to set new records and leverage the diverse advantages available, particularly in Dubai, renowned for its global connectivity and innovative advancements [42]. The Dubai EXPO 2020 provided an opportunity for Dubai and the entire UAE to showcase their global image and brand through top-notch infrastructure, captivating attractions, exceptional hotels, and convenient global and local access [40].

What also needs to be taken into account, is the organization of the EXPO in the format of the "Horticultural EXPO". Horticulture Expos focus on healthy and sustainable living, green economies and education and are being organized as a platform that endorses partnership and the sharing of know-how regarding horticulture and agricultural fields [10]. Horticultural EXPO enables horticultural practice exchange, promotion of science education and research and protection of the eco-friendly environment [29, p. 1].

According to the BIE, this type of exhibition may last up to 6 months and takes place Between two World EXPOs, with a gap of at least two years between each Horticultural Expo. However, it can be concluded that

it does not take into the account organization of the Specialized EXPOs and that COVID-19 impacted the frequency of organization of all formats of EXPO, as can be seen in the Table 2.

Based on the available data [9], it is important to note the following:

- Horticultural EXPO 2012 took place in the Netherlands in the period April - October and covered the entire period of Special EXPO 2012 in Yeosu, Korea.
- Argentina Specialized EXPO 2023 has been cancelled due to the COVID-19 pandemic and the short interval between EXPO 2020, since EXPO 2020 was postponed to 2021, and lasted until March 31st, 2022.
- Horticultural EXPO 2022 took place in the Netherlands, with the opening day just 2 weeks after EXPO Dubai closed its doors, and ended in October 2022
- Horticultural EXPO 2023 took place in Qatar and started only 1 year after the Horticultural EXPO 2022.
- Horticultural EXPO 2027 in Japan will last six months in the period from March to September 2027, and it is happening at the same time as the Specialized EXPO 2027 that takes place from May to August.
- Horticultural EXPOs and Specialized EXPOs after 2027 are not yet announced, while the host of the World EXPO 2030 is Saudi Arabia.

### Key legacy directions for the future EXPO organizers

Based on the extensive literature review, in the process of understanding and implementing the EXPO legacy framework, there are three major legacy areas, that future organizers need to focus on in their organizational activities:

- Destination marketing and branding [86],[61], [78], [87], [60], [45], [35], [1], [56], [54], [20].
- Urban development and urbanization process [80], [43], [55], [40], [8], [37].

**Table 3: Overview of EXPO financial cost-benefit announced impacts in the period 2025-2030**

	EXPO 2025	EXPO 2027	EXPO 2027	EXPO 2030
Category	World	Specialized	Horticultural	World
Destination	Osaka	Belgrade	Yokohama	Riyadh
Country	Japan	Serbia	Japan	Saudi Arabia
When was bid won	November, 2018	June, 2023	June, 2022	November, 2023
Years to prepare	6.5	4	5	6.5
Project costs, as per available data	\$5.8 billion	\$2.5 billion	No data available	\$7.8 billion

Source: Data retrieved from the following websites on April 6th, 2027: [66], [68], [65]

- Monitoring and measuring economic impact [53], [54], [69], [36], [82], [26], [72], [85], [42].

These elements capture the complex legacy of the EXPO, highlighting the value of fostering tourism appeal, stimulating sustainable urban growth and carefully assessing the economic impact. Accepting these aspects ensures that an exhibition's legacy goes well beyond its immediate results, having a long-lasting influence on the host cities and surrounding areas.

The Table 3 shows future EXPO hosts.

Three listed areas of destination legacy development will be discussed in the next chapters.

### Discussion regarding destination marketing and branding legacy directions for EXPO organizers

Host countries often use EXPO as a platform to upgrade and transform their destination marketing and branding strategies and operational activities, under the leadership of properly organized destination management organizations (DMOs). In practice, various countries have different organizational forms for tourism promotion (i.e., "tourism office" in the case of Serbia). In most cases, those promotion entities can serve as self-sustaining entities, even without fully executing their responsibilities and tasks in the realm of destination management [58, p. 234]. We can categorize DMO activities into three groups [49, p. 262]: destination stakeholder coordination, destination marketing, and destination sales.

These aspects are critical, and the time lag from winning the EXPO bid until the EXPO starts, which is on average 4–6.5 years, creates an opportunity for the host destination to transform from a traditional tourism office promotion approach to a proper destination management system. The key pillar is the creation of close cooperation

among private and public stakeholders around unified goals, as well as a complex destination product portfolio based on experiences. Every planning process, particularly after the EXPO, should incorporate a continuous system of market research on both international and domestic visitors, allowing for the analysis of behavioral and perception changes. This measuring platform is the inevitable step for creating, upgrading, and changing destination brands and images on the local, regional, and international levels.

Promoting EXPO as a one-time event should be integrated into more complex destination and national marketing processes. When there is a lack of cooperation and the EXPO interests take precedence over wider tourism interests, the potential for a long-term tourism legacy from the EXPO is limited. Key considerations for future EXPO hosts:

- The host destination has at least a 4-year time frame to work on destination marketing activities, start creating the destination brand and image, and then use EXPO as an added value to the process and as a booster for future destination positioning.
- In the most general sense, international travelers do not see EXPO as the primary reason to travel. Therefore, since BIE is not putting in any effort, host destinations should educate international travelers on the purpose and vision of EXPO as an event.
- In the process of forecasting both international and domestic visitor numbers, the destination should develop a scenario based on the current availability of rooms and beds in both hotels, along with supporting accommodation forms. They should also diligently register all grey market accommodations to accurately determine the actual status of available rooms and beds. This applies not only to the host destination but also to the neighboring destinations within a

1-hour driving distance. It makes sense that the majority of international visitors would prefer to stay in the host destination, but the accessibility of the EXPO site can significantly influence their choice of specific destination. This pertains specifically to tourists who cite the EXPO as their primary reason for traveling. During the EXPO period, the city will host other tourists, and a seasonal analysis of previous periods indicates a trend in international arrivals during this period. For this category, the EXPO is just another experience in a destination, and they will choose accommodation that allows them to experience the entire destination and not just the EXPO.

- Following an EXPO, it is anticipated that the event will significantly improve destination marketing and brand recognition, attracting a continuous stream of international travelers to the host destination. Otherwise, if the trend of foreign arrivals from winning the EXPO bid until at least ten years after the event does not show growth, it means that destination management activities were not proper, leading to adverse legacies. A decrease in the average occupancy of accommodation units, a drop in average daily rates, a reduction in the average duration of stay, and an increase in seasonality will manifest these negative outcomes. In this scenario, indirect negative effects could manifest as a decline in employment, a drop in average salaries, and a rise in talent departing from the hospitality sector.

To conclude, a proper joint public-private tourism destination management initiative can lead to the creation of a long-lasting destination brand, in which EXPO acts as the advocate for stronger destination development and the critical milestone to measure successfulness of the tourism and hospitality politics.

### **Discussion regarding urban development and urbanization legacy directions for EXPO organizers**

When analyzing cost structures, it is critical to understand direct and indirect EXPO-related costs. EXPO direct

costs encompass the planning and construction of all EXPO infrastructure, along with EXPO operating costs, which are specific to the EXPO site. EXPO indirect costs primarily contribute to the urban development of the host destination, with a focus on the EXPO site. Those include all costs associated with the fields and locations outside of the EXPO site. This differentiation is not always clear, and the costs will overlap. Regardless of the cost, all planned project and operation costs must be integrated into the broader urban development process of the host destination. Not vice versa, i.e. EXPO should not be seen as a single investment project in one-time events, but rather as an amalgam of investment projects that allow the destination to fulfill urban development strategy regarding destination urbanization. In numerous cases, indirect EXPO costs are significantly higher than direct EXPO costs, taking into account the investment's structure. Simultaneously, it is crucial to consider the legacy of the EXPO site. The reason is that after the event, the EXPO site should add value to the destination's urban environment and economy.

It should be clear that EXPO as a one-time event should be part of the higher urban development destination strategy. Key considerations for future EXPO hosts:

- The destination should have a clear urban development strategy, with EXPO being an important milestone to reach.
- The public discussion of the EXPO as an urban development step should lead to a clear understanding and consensus among public, private, academic, and government stakeholders about the general vision, where and how the EXPO fits the vision, and what the long-term urban legacy of the entire process is.
- The legacy of the direct EXPO-related infrastructure (and consequently the project costs) should be planned well in advance to prevent: the construction of megastructures that don't meet market requirements; the construction of venues without a thorough understanding of the industry and a clear feasibility and market plan; and the formation of new public companies without a clear vision and mission.
- Planning for the EXPO site's legacy should take a much broader approach than urban development, taking into account the impact on the meetings and

events industry, the real estate sector, the creative industries, and the logistics sector.

### Discussion regarding economic impact studies using cross-sectoral analysis for EXPO organizers

In measuring the economic impact of the events, challenges revolve around determining the comprehensive direct and indirect impact of the event on various sectors individually, and insufficient official statistics make the process of determining optimal economic multiplier level very hard [51, p. 285]. Therefore, each host destination is used to develop its own research methods, combining secondary data with available primary quantity and quality data. The question is what sector has the key influence on the organization of EXPO impact and in what period? Having in mind the key themes of the upcoming EXPOs, it is obvious that important primary businesses involved in delivering EXPO and visitor experience are creative industries, that can significantly contribute to economic development [50]. Certainly, creative industries should be part of the stakeholder structure, like the construction industry, meetings and events industry, tourism industry, FMCG industries, and many others.

It should be clear that EXPO, although a one-time event, involves various industries, no matter if they have primary or supporting functions. Key considerations for future EXPO impact analysis would be:

- Developing planning – performance measurement system. The above literature review shows no unified approach to measuring and reporting on the economic impact of EXPO on the national economy, especially not in continuous reporting periods of at least 5-10 years after the EXPO was organized.
- Developing an EXPO value chain for the specific host destination. Each destination will have a majority of the same involved industries, but we need to have in mind the different levels of current urban development, tourism performances and similar on one side, and on the other desired effects in periods before, during and after the event.
- Understanding of the importance of each industry along the value chain (up-the stream and down-the

stream) and its relevance on the impact on macro-economic aggregates of a destination.

- Developing a customized model that can be replicated to various EXPO destinations (with certain contingencies due to destination specifics, that will be based on the continuous gathering of primary and secondary data on at least 3 levels: local, regional and national level.

### Conclusions

The following text provides commentary on the research questions defined by this study. First, to what extent has previous academic research incorporated the legacy of EXPOs? Richards [72] confirms that the majority of papers in social sciences and management disciplines focus on 1) destination marketing and brand, 2) tourism and general economic impact measurements, and 3) urban development. The author's conclusions in this paper also indicate that these three directions are the most important for the future host of EXPOs.

The majority of scientific literature has focused on the World EXPO and specialized EXPO formats, leaving the Horticultural EXPO as an intriguing research topic for further investigation. However, scientific literature has not explored the potential cannibalistic effects that may arise when two EXPO events, regardless of their format, occur in the same year or at the same time, such as in the cases of 2012 (Horticultural EXPO 2012 in the Netherlands vs. specialized EXPO 2012 in Korea) and 2022 (Horticultural EXPO 2022 in the Netherlands vs. World EXPO in the UAE). Since the parallel EXPO event is taking place or is close in time, cannibalistic effects may lead to a decrease in legacy impacts for the host destinations. Organizers of the 2027 EXPOs should be aware of this situation.

The second research question relates to the dilemma of whether, after organizing a mega event, there is always a legacy that remains for the hosting destination. Taking into account available data and previous research, it is possible to conclude that the average pre-event time for EXPO preparation is 6.5 years for the World EXPO and 4.5 years for the Specialized EXPO. This pre-event time can be defined as a period for the EXPO organizers to

plan and initialize the key legacy directions discussed in this paper.

Historical data on the EXPOs reveals that neither the BIE nor the host destination organizers officially gather and analyze projected costs using a unified methodology. Therefore, there is neither a fully understandable and transparent methodology for understanding total project costs nor a clear proportion between the direct costs of EXPO infrastructure and event operations and the supporting infrastructure and urbanization costs of the destination. Furthermore, the lack of a clear methodology for measuring the final impact and determining the appropriate measurement period may lead to the conclusion that there is no clear correlation between the investment in EXPO projects and the economic impact they leave behind.

EXPO, although a one-off event and time-limited event, provides a great platform for reaching long-term legacy aspects. This long-term aspect is seen throughout the activities pre-, during and post the EXPO. Having in mind that the average pre-event time is 5 years, as per available data, and that the literature review suggests that the time-frame of analyzing economic impacts should at least be 5 years if not more, the entire process of defining, monitoring and reporting on legacy, should be at least years (since the moment host destination has been confirmed).

Unfortunately, due to an inconsistent approach to measuring and reporting, it is not possible to compare the success of the EXPO as an event. That is the reason why host destinations should develop their own approach based on the entire urban development strategy and destination management development strategy, where EXPO is only one important milestone to reach. Implementation of destination marketing and branding needs to be part of the EXPO planning activities through the multi-year operationalization of destination marketing and branding strategies. Urban development and urbanization processes have been a part of numerous studies due to their obvious long-term impact on the host destination. Economic impact studies through various models, such as cross-sectoral analysis, are being done in most EXPOs, as per the literature review, to demonstrate a positive impact on the nation's economy through direct, indirect, and induced effects.

The final research question relates to what major legacy directions future organizers should implement in their operations. The analysis of this century's mega events suggests crucial factors for future EXPO hosts:

- The integration of public and private sector funds for destination marketing is necessary in order to boost visibility and create a sustainable brand image for a destination beyond the EXPO.
- Development of the distinctive economic impact model based on macroeconomic data collected over the last ten years at the local, regional, and national levels and incorporating the notion of primary and supporting sectors throughout the EXPO-identified value chain.
- Formulating a clear urban development strategy with EXPO as a key milestone. This implies that development incorporates the EXPO rather than solely implementing it for the event's benefit. A crucial question is how the EXPO site will be managed in the post-event period to reach long-term legacy plans and further impact various aspects of development.

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# SOCIAL MEDIA AS DETERMINANT OF GREEN PRODUCTS PURCHASE: THE MODERATING ROLE OF GREEN CONCERN

Društveni mediji kao determinanta kupovine zelenih proizvoda - Uloga ekološke svesti kao moderatora

## Abstract:

This study aims to elucidate the relationship between various dimensions of social media and consumer behavior in the context of purchasing green products. By extending knowledge in the fields of sustainability and social media marketing, this research proposes a comprehensive model that integrates variables such as social media customer experience, green word-of-mouth (WOM), and greenwashing. Specifically, the research seeks to differentiate this relationship within the framework of local versus global green products, providing novel insights to the existing literature. The empirical investigation was conducted through a survey methodology, with hypotheses defined and data analysis performed using confirmatory factor analysis (CFA), reliability analysis via Cronbach's alpha coefficient, and structural equation modeling (SEM) in IBM SPSS and AMOS software. The results indicate that consumer experience on social media and green WOM positively influence attitudes toward the purchase of both global and local green products, while greenwashing exerts a negative influence only on attitudes toward local green products. Additionally, the study found that green concern positively moderates the relationship between social media customer experience and green WOM with consumers' attitudes toward both local and global green products. Conversely, green concern negatively moderates the relationship between greenwashing and consumer attitudes toward the purchase of local products. The primary contribution of this research lies in its examination of the relationship between various social media dimensions and consumer behavior toward green products, analyzed from the perspective of both local and global companies in a developing country, specifically the Republic of Serbia.

**Keywords:** *green marketing, social media customer experience, greenwashing, green WOM, green concern, local green products, global green products, sustainability*

## Sažetak:

Ovaj rad ima za cilj da istraži odnos između različitih dimenzija društvenih medija i ponašanja potrošača u kontekstu kupovine zelenih proizvoda. Proširujući znanje u oblastima održivosti i marketinga na društvenim medijima, ovo istraživanje predlaže sveobuhvatan model koji integriše varijable kao što su iskustvo potrošača na društvenim medijima, zelena usmena propaganda (WOM) i greenwashing. Konkretno, istraživanje nastoji da diferencira ovaj odnos sa aspekta lokalnih i globalnih zelenih proizvoda, pružajući nova saznanja postojećoj literaturi. Empirijsko istraživanje sprovedeno je primenom metodologije ankete, sa definisanim hipotezama i analizom podataka korišćenjem konfirmativne faktorske analize (CFA), analize pouzdanosti pomoću Cronbach-ovog alfa koeficijenta i modeliranja strukturalnih jednačina (SEM) u softverima IBM SPSS i AMOS. Rezultati ukazuju na to da iskustvo potrošača na društvenim medijima i zelena usmena propaganda pozitivno utiču na stavove prema kupovini globalnih i lokalnih zelenih proizvoda, dok greenwashing ima negativan uticaj samo na stavove prema lokalnim zelenim proizvodima. Dodatno, studija je pokazala da ekološka svest ima pozitivan moderacijski odnos između iskustva potrošača na društvenim medijima i zelene usmene propagande i stavova potrošača prema lokalnim i globalnim zelenim proizvodima. Nasuprot tome, ekološka svest ima negativan moderacijski uticaj na odnos između greenwashing-a i stavova potrošača u vezi sa kupovinom lokalnih proizvoda. Glavni doprinos ovog istraživanja se ogleda u analizi odnosa između različitih dimenzija društvenih medija i ponašanja potrošača prema zelenim proizvodima, posmatrano iz perspektive lokalnih i globalnih kompanija u zemlji u razvoju, konkretno u Republici Srbiji.

**Cljučne reči:** *zeleni marketing, iskustvo korisnika na društvenim medijima, greenwashing, zelena usmena propaganda, ekološka svest potrošača, lokalni zeleni proizvodi, globalni zeleni proizvodi, održivost*

## Introduction

In the contemporary landscape, social media is fundamentally reshaping interpersonal interactions and corporate engagement, significantly influencing perceptions of branding and marketing. With approximately 5 billion users globally [46], social media has emerged as the preeminent mode of communication with consumers. Given the critical role of social media in marketing and its overarching implications for business, alongside the imperative for sustainability in modern business practices, this study aims to investigate the relationship between these pivotal concepts, specifically from the perspective of companies operating in Serbia.

Sustainability, as a concept, has been the focus of academic research and business operations for many years. In recent years, green marketing and green products have garnered significant attention in both marketing literature and corporate practices. Green products are defined as those that can be recycled, require fewer natural resources, and do not pollute the environment, often featuring environmentally friendly packaging [17]. Contemporary business and marketing trends underscore the necessity of exploring the relationship between sustainability and social media, given their critical role in consumer communication.

Moreover, interdisciplinary research indicates that online technologies, such as Web 2.0 and social media, possess substantial potential to promote environmental action. The Technologies for Proenvironmental Action Model (TPAM) provides a framework that elucidates how various functions of Web 2.0 and social media can be leveraged to generate and facilitate environmental action [7]. Specifically, this model outlines how informational, relational, and experiential functions of these technologies can foster personal, social, and contextual pathways toward environmentally responsible behaviors, such as purchasing hybrid vehicles, recycling, and utilizing sustainable energy sources.

The scientific literature includes several studies examining the impact of social media customer experience [52], greenwashing [1] and green WOM [53] on attitudes and acceptance of green products. Additionally, some

studies have investigated the influence of social media on consumer purchasing behavior concerning global luxury brands [20], [15]. However, there is a notable absence of research analyzing the impact of previously mentioned aspects of social media in relation to green products within the context of both global and local companies. This study aims to address this research gap by investigating the relationship between these variables. A unique contribution of this research is its focus on Serbia, a developing country, considering that sustainability as a concept is more prevalent in developed nations [13]. According to Đurićin et al. [12], achieving a sustainable development trajectory that aligns the Serbian economy with ecological principles necessitates a transition referred to as the “green transition,” which represents a pathway toward a sustainable economy and society, ultimately contributing to a more environmentally sustainable planet. However, the same authors emphasize that the green economy remains a relatively new concept for the majority of Serbian companies. On the path toward a green economy, Lončar [32] analyzes the landscape of investment opportunities in Serbia through the lens of the Sustainable Development Goals, identifying a potential investment volume of \$8.3 billion over the next five years. This highlights significant opportunities for companies willing to invest in sustainable initiatives and ideas. Ultimately, findings of the aforementioned papers underscore the importance of sustainable business practices for Serbian companies and emphasize the integration of sustainability into business practices and marketing functions, which is the central subject of this paper.

## Literature review

### Green marketing and social media

Social media serves as a significant factor in influencing consumer attitudes and behaviors toward sustainable and environmentally friendly products. Platforms such as Instagram, Facebook, and X (Twitter) facilitate the dissemination of information by companies and influencers, who highlight the features and benefits of green products. This process not only raises awareness of environmental

issues but also fosters the promotion of eco-conscious lifestyles. Additionally, social media enables consumers to conveniently access product reviews, endorsements, and sustainability-related campaigns, which subsequently affect their purchasing decisions [25]. In general, social media functions not only as a promotional tool for green products but also plays a crucial role in shaping a consumer culture that prioritizes sustainability. By fostering greater awareness and engagement with environmentally friendly practices, social media actively encourages more eco-conscious purchasing decisions among consumers.

### Customer experience on social media

Customer experience is defined as the cognitive recognition or perception that arises from the motivated engagement of a customer who observes or participates in an event. This recognition or perception subsequently enhances the perceived value of products and services [44]. Furthermore, customer experience can be conceptualized as a multidimensional construct that encompasses the cognitive, emotional, behavioral, sensory, and social responses of the consumer to the enterprise's products or services throughout the customer's buying journey [31]. In the realm of online platforms, customer experience is described as a holistic response to the stimuli within the website environment [35].

Schmitt [44] delineated five distinct categories of customer experiences that marketers can cultivate: sensory experiences, encompassing visual and auditory stimuli; affective experiences, which pertain to customers' internal sensations and emotions; creative cognitive experiences, facilitating innovative thinking; physical experiences, which involve behaviors, lifestyles, and physical activities; and social-identity experiences, which emerge from associations with a reference group or culture. These experiences are actualized through various "experience providers," including communications, visual and verbal identity, product presence, and electronic media.

In the analysis of customer experience within the context of social media, Hsu and Tsou [23] identified that information credibility is essential for consumer experience, which subsequently enhances purchase intention. Additionally, increased blog engagement

significantly amplifies the impact of customer experience on purchase intention. Chen and Lin [9] demonstrated that customer experience positively influences consumer satisfaction and perceived value. Furthermore, their research indicated that a sustainable social relationship is strongly and significantly affected by blog continuance intention and consumer satisfaction. A recent study by Wibowo et al. [52] established that customer experience significantly influences the quality of customer relationships, which in turn positively impacts customer behavioral outcomes, such as purchase intention, loyalty intention, and participation intention. Based on these findings, we propose the following hypothesis:

**H1:** Customer experience on social media has a positive and statistically significant effect on attitudes towards green products.

### Green WOM on social media

When deciding to buy a product, consumers gather information about products and services, very often from other consumers. Recommendations and opinions of other people can have a great influence on the formation of attitudes and preferences of consumers, particularly in an online environment [29]. This concept, known as word of mouth (WOM) in marketing literature, is called green word of mouth (green WOM) in green marketing, and refers to the influence that the consumer has on his acquaintances, friends or family, through the dissemination of positive environmental information about the product or service [10]. This influence often results in the purchase of a green product, since it can have more credibility than other types of companies' promotional activities [16].

Green WOM has been researched from different perspectives in the green product literature, and the results of the studies so far are diverse. In their research on green products, Gupta and Syed [17] found that electronic WOM has a very strong influence on consumer attitudes towards these products. Zhang et al. [53] found that green WOM positively affects consumer purchase intentions regarding green products, in China. Lee et al. [30] found a similar impact of green WOM on consumer intentions when it comes to behaviour of professional sports teams fans on TikTok. Conversely, Román-Augusto and others

[42] did not find a statistically significant influence of electronic WOM on consumers' green purchase intention, since only green satisfaction and green trust have been found as antecedents of this variable. Bearing in mind that spreading positive green WOM can often lead to the purchase of products or services by other consumers, we propose the following hypothesis:

**H2:** Green WOM on social media has a positive and statistically significant effect on attitudes towards green products.

### Greenwashing on social media

The concept of greenwashing can be examined within the broader framework of environmental psychology, which explores the interactions between individuals and their environment [1]. Greenwashing refers to the practice by brands of withholding, deceiving, or providing false information regarding their environmental commitments, product orientations, or process orientations [5], [53]. More specifically, Oppong-Tawiah and Webster [38] classify firms' greenwashing activities into two primary categories: those related to their products or services and those pertaining to their organizational policies and practices. Product/service greenwashing typically involves misleading or deceptive communications (e.g., advertising) about the sustainability of a specific product or service offered by a firm. In contrast, greenwashing related to organizational policies and practices is primarily characterized by incomplete or selective disclosure of information intended to mislead the firm's stakeholders [48], [33]. These actions are often undertaken to placate customers or enhance company profitability [19].

In the realm of social media, greenwashing has been the subject of several previous studies. Parguel et al. [40] analyzed the impact of greenwashing on consumer behavior, elucidating the psychological mechanisms involved. This study underscored the importance of understanding consumer perceptions and reactions to environmentally deceptive marketing practices. Oppong-Tawiah and Webster [38] investigated deceptive communication on Twitter (now X) under the guise of corporate social responsibility, finding that greenwashing is directly correlated with lower financial market performance. In a recent study,

Adil et al. [1] demonstrated a direct negative impact of greenwashing on consumers' purchase intentions and a positive impact on green skepticism. Similar results were obtained by Zhang et al. [53]. Based on these findings, we propose the following hypothesis:

**H3:** Greenwashing on social media has a negative and statistically significant effect on attitudes towards green products.

### Green products purchase behaviour

The purchase decision-making process posits that attitudes precede the intention to purchase certain products, as articulated by the Theory of Reasoned Action (TRA) [3] and the Theory of Planned Behavior (TPB) [2]. These theories further propose that intentions lead to actual behavior, thereby serving as predictors of human behavior. This theoretical framework has been employed in previous studies aimed at predicting consumer behavior within the context of social media marketing [26] and the purchase of green products [41], [47]. In light of these theoretical considerations, the following hypothesis has been formulated:

**H4:** Green products attitudes have a positive and statistically significant effect on the intention to purchase these products.

### The moderating effect of green concern

The level at which individuals are concerned about the environment and its problems is referred to in the literature as green or environmental concern [21]. In other words, green concern refers to the awareness that individuals have regarding environmental problems and their willingness to contribute to solutions to such issues [4]. This concern further causes individuals to feel a sense of personal responsibility towards the environment and to practice behaviors such as recycling, conscientious consumption of energy and buying green products [53].

Certain authors investigated green concern as a direct predictor of attitudes and intentions to purchase green products [36], [24]. However, the concept of green concern has not been extensively researched in the context of the influence of social media on the purchase of green products. Chi [11] found that consumers' green

concern moderates the relationship between social media and green consumption intention. In a more recent study, Ummar et al. [50] found that green concern has a positive moderating effect on the relationships between informativeness, persuasiveness and perceived usefulness of social media campaigns, and attitudes towards green tourism. Furthermore, Zhang et al. [53] determined a moderating effect of green concern in the relationship between greenwashing and purchase intentions towards green products. Based on previous theoretical claims and research, the following hypotheses can be defined:

**H5a:** Green concern has a moderating effect on the relationship between social media customer experience and consumer attitudes towards green products.

**H5b:** Green concern has a moderating effect on the relationship between E-WOM and consumer attitudes towards green products.

**H5c:** Green concern has a moderating effect on the relationship between greenwashing and consumer attitudes towards green products.

The research model and the relationships among the variables are illustrated in Figure 1.

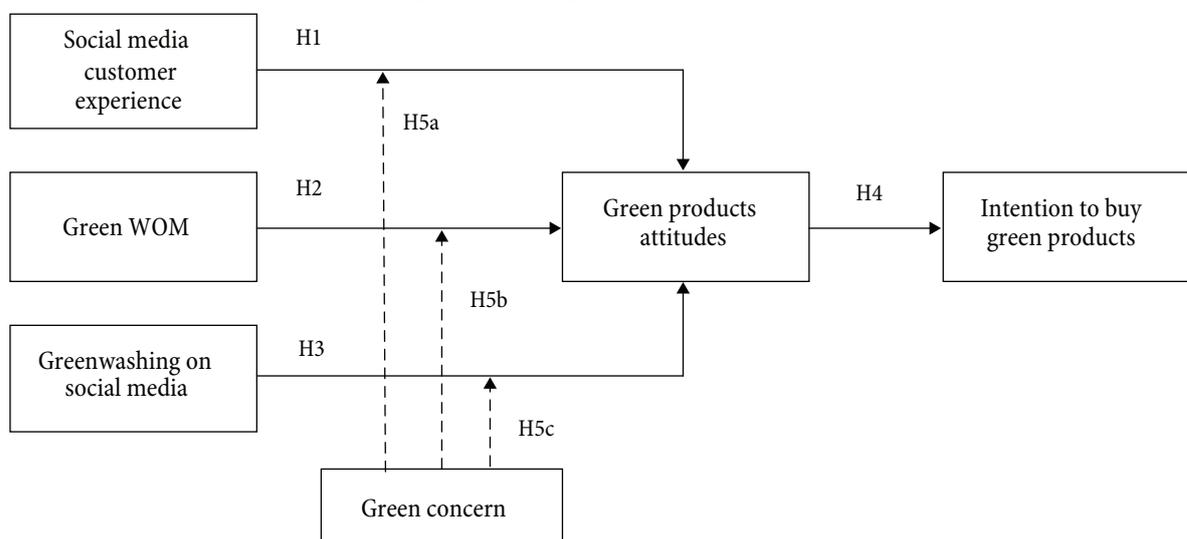
### Methodology

The questionnaire was developed through a thorough review of pertinent literature and tailored to address the

specific requirements of green product research. Items pertaining to customer experience on social media were derived from the works of Chen and Lin [9], Homburg et al. [22], and Schmitt [44]. The items associated with the green WOM construct were adapted from the research of Molinari et al. [34], while the measurement scale for greenwashing was adapted from Singh et al. [45]. The construct measuring consumers' green concerns was developed based on the studies by Lee [28] and Paladino and Ng [39]. Variable concerning attitudes toward green products was compiled based on studies of Gupta and Syed [17] and Kim and Hyun [27], while the construct related to purchase intentions for green products was sourced from the research of Kim and Ko [26]. Furthermore, all questionnaire items, with the exception of those addressing green concern, were specifically modified to reflect the context of local and global green products offered by companies operating in the Republic of Serbia.

At the outset of the questionnaire, participants were informed about the nature of the research and asked to indicate whether they had previously purchased green products from either local or global companies. Additionally, respondents were queried about their use of social media as a source of information regarding companies and their green products. Only the responses from individuals who confirmed their experience with purchasing such products and their engagement with social media were included in the subsequent analysis.

Figure 1. Conceptual research model



Source: Authors' research

The survey was administered between November 2023 and January 2024. Questionnaires were collected in person within the city of Kragujevac and other major cities in Central Serbia. The final sample comprised 327 valid responses. Descriptive statistics were employed to determine the sample structure, as illustrated in Table 1.

**Table 1. Descriptive statistics for respondents' characteristics**

Demographic characteristic		% respondents
Sex	Male	48.3
	Female	51.7
Age	18-24	28.2
	25-34	19.6
	35-44	19.8
	45-54	23.5
	55 and older	8.9
Education	High school	48.7
	Undergraduate study	14.1
	Graduate and postgraduate study	37.2
Occupation	Manager, entrepreneur	14.6
	Professor, doctor, engineer	15.2
	Clerk, worker	35.4
	The student	24.9
	Other occupations	9.9

Source: Authors' research

Respondents evaluated all statements on a five-point Likert scale. Statistical data processing was carried out in IBM SPSS and AMOS programs. Descriptive statistics, confirmatory factor analysis, and SEM analysis were used to test the relationships in the research models, as well as the analysis of the moderating effect of the green concern on the selected relationships in the models.

## Research results

As an initial step in the analysis, research models were constructed, followed by an assessment of their validity. Given the focus of this research on green products from both global and local companies operating in Serbia, two distinct models were developed. Table 2 outlines the validity indicators associated with these models. Specifically, the  $\chi^2/df$  ratio should be less than 3, as recommended by Bagozzi and Yi [6]. Additionally, the Goodness of Fit Index (GFI), Incremental Fit Index (IFI), Tucker-Lewis Index (TLI), and Comparative Fit Index (CFI) should each exceed 0.9, in

accordance with Byrne [8]. The Root Mean Square Error of Approximation (RMSEA) value is required to be below 0.08, as stated by Hair et al. [18]. The observed values for these indicators confirm that all validity criteria have been met for both models.

**Table 2. Model validity analysis**

Indicators of model validity	Research model – Local green products	Research model – Global green products	Recommended value
$\chi^2/df$	1.769	1.854	<3
GFI	0.914	0.903	>0.9
IFI	0.928	0.907	>0.9
TLI	0.910	0.904	>0.9
CFI	0.926	0.915	>0.9
RMSEA	0.049	0.058	<0.08

Source: Authors' research

The results of the confirmatory factor analysis are presented in Table 3. In line with the guidelines established by Fornell and Larcker [14], the Average Variance Extracted (AVE) should surpass the threshold of 0.50. In both models, all variables satisfy this requirement, thereby supporting the convergent validity of the constructs. Additionally, Fornell and Larcker [14] recommend that the Composite Reliability (CR) exceeds 0.70, and the analysis demonstrates that all variables conform to this criterion. Similarly, Nunnally [37] advocates for a minimum Cronbach's alpha coefficient of 0.70. The results indicate that all examined variables achieve sufficient levels of reliability.

The results of the hypothesis testing are presented in Table 4. For local green products, all variables exhibit a statistically significant influence on attitudes towards green products, thereby confirming hypotheses H1, H2, and H3. Consumer experience on social media exerts a very strong and positive influence on attitudes towards green products ( $\beta=0.412$ ,  $p<0.001$ ). Besides, green WOM has a positive significant influence on consumer attitudes ( $\beta=0.313$ ,  $p<0.001$ ), as anticipated. Conversely, greenwashing negatively influences attitudes towards local green products ( $\beta=-0.167$ ,  $p<0.001$ ).

Regarding global green products, the variables influencing attitudes towards these products are consumer experience on social media ( $\beta=0.602$ ,  $p<0.001$ ) and green WOM ( $\beta=0.215$ ,  $p<0.001$ ), whereas greenwashing does not exert a significant influence ( $\beta=0.015$ ,  $p$  - not significant). These results indicate that hypotheses H1 and H2 are

Table 3. Confirmatory factor analysis (CFA)

Variables	Local green products	Global green products
<b>Customer experience on social media</b>	AVE=0.669 CR=0.909 $\alpha$ =0.800	AVE=0.654 CR=0.904 $\alpha$ =0.787
The online social media posts of my preferred green products try to engage my senses.	0.864	0.791
The online social media of my preferred green products makes me respond emotionally.	0.882	0.878
The online social media of my preferred green products stimulates my curiosity.	0.789	0.754
The online social media of my preferred green products reminds me of activities I can do.	0.691	0.703
I can relate to other customers through the online social media of my preferred green products.	0.849	0.901
<b>Green WOM</b>	AVE=0.660 CR=0.886 $\alpha$ =0.713	AVE=0.653 CR=0.883 $\alpha$ =0.725
I would highly recommend my preferred green products to others because of their environmental image.	0.826	0.824
I would positively recommend my preferred green product to others because of its environmental functionality.	0.831	0.812
I would encourage others to purchase my preferred green products because they are environmentally-friendly.	0.809	0.798
I would say good things about my preferred green products to others because of their environmental performance.	0.784	0.799
<b>Greenwashing on social media</b>	AVE=0.629 CR=0.835 $\alpha$ =0.707	AVE=0.630 CR=0.836 $\alpha$ =0.713
The green products I frequently encounter tend to make exaggerated environmental claims on social media platforms.	0.796	0.840
It is my belief that many of green products engage in misleading eco-friendly marketing practices within social media.	0.811	0.772
I remain skeptical about the authenticity and sincerity of the environmental claims promoted by green products through their social media channels.	0.771	0.768
<b>Green concern</b>	AVE=0.657 CR=0.884 $\alpha$ =0.746	AVE=0.661 CR=0.886 $\alpha$ =0.763
I am worried about the worsening of the quality of environment.	0.801	0.822
The environment is a major concern for me.	0.823	0.807
I am passionate about environmental protection issues.	0.785	0.797
I often think about how the condition of the environment can be improved.	0.832	0.826
<b>Attitudes towards green products</b>	AVE=0.641 CR=0.842 $\alpha$ =0.766	AVE=0.621 CR=0.830 $\alpha$ =0.779
I am willing to make a special effort to buy preferred green products.	0.725	0.845
I prefer green products over other products, if they are of similar quality.	0.768	0.784
I prefer green products over other products, even when their price is slightly higher.	0.899	0.731
<b>Intention to buy a green product</b>	AVE=0.630 CR=0.773 $\alpha$ =0.773	AVE=0.739 CR=0.850 $\alpha$ =0.853
I would like to buy a preferred green product.	0.791	0.874
I would like to recommend my preferred green product to others.	0.797	0.845

Source: Authors' research

confirmed, while hypothesis H3 is not supported, in the case of global green products.

Hypothesis H4 is supported across both models, with the results indicating that attitudes toward green products exert a statistically significant influence on purchase intentions for both local ( $\beta = 0.868$ ,  $p < 0.001$ ) and global products ( $\beta = 0.852$ ,  $p < 0.001$ ). These findings provide empirical validation for the application of the Theory of Reasoned Action within the context of the research models.

To examine whether green concern acts as a moderating variable, several methodological steps are undertaken. First, to ensure that the variables contribute equally to the analysis, despite being measured on different scales, the independent variables and the moderator are standardized. An interaction terms are then created by multiplying the standardized independent variables and the moderator. Third, the interaction terms of the standardized independent variables and the moderator are included in the model, to estimate the interaction effects. This approach is applied

Table 4. SEM analysis

Hypotheses	Local green products	Hypothesis testing	Global green products	Hypothesis testing
H1: Social media customer experience → Attitudes toward green products	0.412***	Supported	0.602***	Supported
H2: Green WOM → Attitudes toward green products	0.313***	Supported	0.215***	Supported
H3: Greenwashing on social media → Attitudes toward green products	-0.167***	Supported	0.015ns	Not supported
H4: Attitudes towards green products → Intention to buy a green product	0.868***	Supported	0.852***	Supported

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<.001, ns- not significant

Source: Authors' research

Table 5. SEM analysis – Moderation effects

Hypotheses	Local green products	Hypothesis testing	Global green products	Hypothesis testing
H5a: Social media customer experience × Green concern	0.532***	Supported	0.712***	Supported
H5b: Green WOM × Green concern	0.421***	Supported	0.342***	Supported
H5c: Greenwashing on social media × Green concern	-0.297***	Supported	0.074ns	Not supported

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<.001, ns- not significant

Source: Authors' research

to address the issue of multicollinearity, which can arise when interaction effects are calculated.

In examining the moderating role of green concern on the relationships within the proposed model, the findings are presented in Table 5. The analysis reveals that green concern exerts a statistically significant moderating effect on the relationship between consumer experience on social media and consumer attitudes for both local and global brands. Consequently, Hypothesis H5a is supported, demonstrating that consumers' green concerns positively enhance the impact of their social media experiences related to green products on their attitudes regarding the purchase of such products.

Similarly, a comparable moderating effect was observed concerning the relationship between green WOM and consumer attitudes. Specifically, the results indicate that consumers' green concerns amplify the positive influence of green WOM on their attitudes, thereby confirming Hypothesis H5b for both local and global green products.

Lastly, green concern also moderates the relationship between greenwashing and consumer attitudes. This moderating effect is particularly notable in the case of local green products, where green concern strengthens the negative impact of greenwashing on consumer attitudes. However, for global green products, the moderating effect of green concern on the relationship between greenwashing and consumer attitudes is not statistically significant. Consequently, hypothesis H5c is confirmed only in the context of local green products.

## Discussion

The conducted analysis showed numerous conclusions regarding the predictors of green product purchases. Namely, customer experience on social media is a very good predictor of user attitudes about green products, in the case of both local and global products. However, that effect is stronger in the case of the global products. Similar results were obtained in previous studies [52], [9]. A recent study conducted in Serbia revealed that in the digital economy, internet users' purchasing decisions are significantly influenced by promotional content delivered through advanced digital marketing techniques, while their overall user experience is shaped by the quality and efficiency of online services provided [49]. It is clear that the way in which the company's activities on social media in the domain of green marketing affect the senses of users and their curiosity, their emotional reactions and how much the company's posts encourage them to certain activities, significantly affects the formation of their attitudes about green products. Therefore, companies should concentrate on creating green marketing campaigns focusing on the aforementioned aspects of the customer experience, such as evoking positive emotional reactions, encouraging customer interactions on social media, or encouraging green consumer activities. This should encourage consumers to positively evaluate green products and to want to buy them, as a result.

Green WOM exerts a positive and significant influence on purchase intentions for both local and global green

products, with the effect being more pronounced for local products. Similar findings have been observed in previous studies [17], [53]. Specifically, WOM communication regarding green products appears to be crucial for consumers, as it fosters trust and credibility, while also mitigating perceived risks associated with purchasing these products. Additionally, given that consumers may have limited familiarity with green products and their specific attributes, green WOM likely enhances their sense of security in product selection. This is facilitated through the exchange of opinions and experiences with other users of green products, such as friends or family members.

The finding that green WOM exerts a stronger influence on purchase intentions for local products, while user experience on social media has a more pronounced effect for global products, leads to several insights. It can be inferred that consumers tend to have a more positive experience engaging with the social media platforms of global companies, likely due to the greater marketing efforts these companies invest in reaching consumers and shaping their purchasing decisions. Conversely, when it comes to local green products, consumers appear to rely more heavily on recommendations and information from fellow consumers, which may stem from their greater familiarity and experience with the specific characteristics of local green products.

The most significant divergence in attitudes toward local and global green products was observed concerning greenwashing as a predictor. Specifically, while greenwashing exhibits a negative and statistically significant effect on consumer attitudes toward local green products, no such effect was detected for global products. In the case of local products, the negative influence of greenwashing corroborates the findings of previous studies [1], [53]. The absence of a similar impact on global green products suggests that consumers may place greater trust in global companies and their social media campaigns, potentially due to the companies' strong reputations, extensive resources, or experience. Local companies could leverage these factors in their marketing strategies to foster more positive consumer attitudes toward their green products.

Concerning the moderating effect of green concern on the relationships within the models, it is evident that

this consumer characteristic exerts a significant influence on relationship between social media customer experience and green WOM on one side, and consumer attitudes for both global and local green products. Similar effect was found in the studies by the authors Chi [11] and Ummer et al. [50]. This moderating effect suggests that consumers with heightened green concern are more susceptible to these influences from social media, in shaping their purchasing decisions regarding green products. Also, it indicates that consumers who express strong green concerns represent a key segment for the purchase of green products. Moreover, educating consumers on sustainability issues and the value of green products has the potential to substantially enhance the sales of these products.

The concern for environmental sustainability, however, accentuates the detrimental effects of greenwashing on consumer perceptions of locally produced green products. Similar effect was found in the study by Zhang et al. [53]. This implies that the greater the level of a consumer's environmental concern, the stronger their intention to refrain from purchasing products when they perceive greenwashing behaviors. Consumers with heightened environmental concern tend to be more discerning regarding the actual environmental impact of products and are more adept at differentiating between substantive and superficial green practices. This elevated concern also reflects their perceived sense of environmental responsibility, prompting them to engage in responsible consumption by refraining from purchasing from companies involved in greenwashing. In contrast, this impact is not observed with regard to global green products.

## Conclusion

The findings of this study provide valuable theoretical and practical contributions. Specifically, the research sought to investigate and analyze the effects of customer experience, green WOM, and greenwashing on social media, along with the moderating role of green concern in shaping consumers' attitudes toward green products from both local and global companies in Serbia. Considering that consumers have the option to choose between products from local and global brands when purchasing different

types of green products, understanding the underlying determinants of consumer behavior is of critical importance.

The findings of this study suggest that customer experience on social media and green WOM exert a strong, positive influence on consumer attitudes towards both local and global green products. Conversely, greenwashing negatively affects consumer attitudes only towards local green products. Furthermore, the study reveals that environmental concern positively moderates the relationships between social media customer experience and green WOM with consumer attitudes toward both local and global green products. In contrast, environmental concern negatively moderates the relationship between greenwashing and consumer attitudes toward the purchase of local products. Overall, social media not only functions as a promotional tool for green products but also cultivates a consumer culture that values sustainability, thereby encouraging more environmentally conscious purchasing decisions.

This research has several implications, particularly for the business activities of local and global companies. These implications primarily concern social media communication strategies and the selection of appropriate market segments for green products. In the era of the digital economy and new capitalism, companies engaged in brand development should place a strategic emphasis on sustainability by implementing measures to reduce their environmental footprint, such as adopting recycling and reuse practices. Additionally, it is crucial for these companies to maintain a strong presence on social media platforms and provide user-friendly websites that enhance the customer experience, particularly by facilitating seamless online purchasing options [43]. Companies should prioritize their social media strategies, as social media and networks have revolutionized the roles of both consumers and businesses in the contemporary business environment and have strong influence on consumers' decisions. Local companies should focus on building trust with consumers to mitigate the negative effects of greenwashing on attitudes towards their green products. Both local and global companies can focus on improving communication and consumer education regarding sustainability and environmentally friendly products. By doing so, they can foster greater environmental awareness

and concern among consumers. This, in turn, can lead to the development of more favorable attitudes toward green products, ultimately increasing their purchase frequency.

The research presented has several limitations. Firstly, the study was conducted within the region of Kragujevac and Central Serbia. Future research could extend the scope to a broader geographic area or include multiple countries to explore potential differences in consumer behavior. Additionally, a limitation exists in the selection of variables analyzed within the research model. Future studies could incorporate additional variables, such as social media marketing activities or green knowledge, to investigate their direct or moderating effects. A significant trend at the intersection of digital marketing and sustainability is the integration of artificial intelligence (AI), which possesses the transformative potential to fundamentally reshape interactions between companies and consumers, mediated by digital content or formats. By leveraging AI, these interactions can be rendered more personalized and efficient, thereby enhancing user experiences while addressing sustainability objectives [51].

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# VALJAONICA BAKRA COPPER MILL

Osnov uspeha Valjaonice bakra Sevojno su zadovoljni kupci što potvrđuje i višedecenijska saradnja sa najvećim partnerima.

Naša vizija je unapređenje proizvodnje i nove investicije kako bismo postali jedan od lidera na evropskom tržištu. U tom zahtevnom izazovu i poslu će nam pomoći 1.150 posvećenih radnika Valjaonice bakra Sevojno.

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1150

BROJ ZAPOSLENIH

250M

POSLOVNI PRIHOD

30.000MT

GODIŠNJA PROIZVODNJA

50M

INVESTICIONI PLAN

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Generalni direktor Valjaonice bakra Sevojno  
Dragan Subotić

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