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OF ECONOMICS AND BUSINESS IN SARAJEVO

UNIVERSITY OF SARAJEVO

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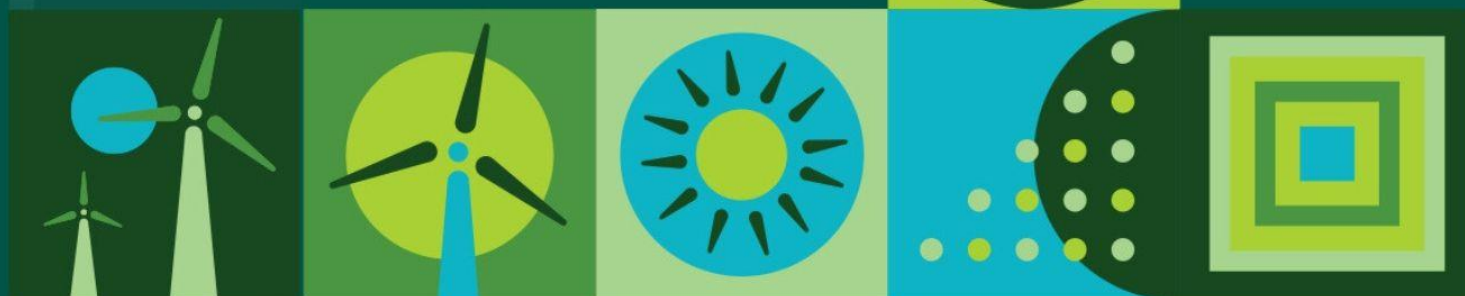
CONFERENCE PROCEEDINGS

Future Horizons:
NAVIGATING SUSTAINABILITY AND FUTURE ECONOMIC CHALLENGES

October 17 - 18, 2024

University of Sarajevo -
School of Economics and Business

11th International Conference of the School of Economics and Business

CONFERENCE PROCEEDINGS

17th – 18th October, 2024
Sarajevo, Bosnia and Herzegovina

FOREWORD

Following earlier conferences with participants from nearly all over the CEE region as well as from many other countries, the School of Economics and Business in Sarajevo is proud to host the 11th International Conference. This conference aims to bring together academics as well as practitioners to discuss diverse issues in the fields of economics and business with a focus on transition economies. The purpose of this conference is to disseminate high quality research and to promote scientific information interchange between researchers, developers, students, and practitioners.

This conference offers a variety of research perspectives from a number of Central and Eastern European countries. This wide-ranging research context forms the basis for studies in different fields: economic development, international economics, business administration, marketing, information technology, insurance and etc.

As was the case in earlier ICES conference it is our pleasure to inform conference participants that selected papers presented at this conference will be considered for publication in a special issue of the South East European Journal of Economics and Business published by the School of Economics and Business.

Also, we would like to invite you to submit your paper for publication in this journal in the future. We strongly believe that the discussions between prominent and experienced researchers at the conference will serve as a solid bases for improving your paper and enriching your further research focusing on transition countries.

We would like to thank all the authors who prepared and submitted their papers to ICES2018.

A special thank is addressed to keynote speaker, Professor Wim Vanhaverbeke, Antwerp Management School, Belgium, editor-in-chief og Technovation and Professor Slavo Radosevic, University College London, UK. We are certainly aware that it has taken time and effort to take part in this Conference, and this is much appreciated.

We would also like to express our gratitude to all participants for their expertise and for sharing their views and ideas which present the most important contribution to the sucess of this Conference.

It was with great pleasure that my colleagues and I had this opportunity to host such a conference.

Sarajevo, October 2024   Amila Pilav - Velic
                                                                          Editor

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ESG RISKS IN THE BIH BANKING INDUSTRY: NEW OPPORTUNITIES OR THREATS?

─ ABSTRACT ─

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The adoption of the Paris Agreement on climate change and the UN 2030 Agenda for Sustainable Development in 2015 have dramatically changed risk management in financial institutions, especially in banks. Governments are striving to transition towards a low-carbon, more resource efficient and sustainable economies on a global scale. The integration of Environmental, Social, and Governance (ESG) risks has emerged as a pivotal factor in the banking industry worldwide.

The main purpose of paper is to explore and analyze the state and perspectives of ESG risks in the banking industry, with a specific focus on how ESG factors are perceived, managed, and integrated into the risk management systems of banks in Bosnia and Herzegovina (BiH). In the paper, key drivers, values, challenges, and opportunities of managing ESG risks, as well as key application areas in the banking industry, were identified. The primary source of data for this research was collected through a structured questionnaire. The target population for the research consisted of all banks operating in the territory of BiH at the end of July 2024. Descriptive and inferential statistical analysis were carried out in the paper.

The scientific contribution of this paper is reflected in the fact that it represents one of the pioneering analyses of the state and perspective of ESG risks in BiH banks. By assessing the risks and opportunities associated with ESG in the BiH banking sector, this research aims to contribute to the broader discourse on sustainable finance in emerging markets and offer valuable insights for policymakers, regulators, banks, and their stakeholders. Finally, for further research, it will be useful to consider and analyze how the continued growth and subsequent adoption of ESG risk factors impact consumer satisfaction and overall perceptions of the green economy.

EVALUATING RESEARCH WORK THROUGH A SYSTEM OF IMPACT INDICATORS

─ ABSTRACT ─

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It is well recognized that research evaluation systems implemented at different levels – national, institutional, department, or by scientific branches – are expected to employ a complex approach to the assessment of research practices and outputs as well as the outcomes of research funding. The main challenge facing the research evaluation processes is the design and justification of a system of indicators for research impacts. The paper examines the key function of such indicators to provide feedback about the expected effects of scientific outcomes – actual or potential. The paper suggests an overview of the requirements for constituting such indicators, taking into account the strategic aspects of the realization of research outputs and the need to ensure appropriate information provision. It is argued that the construction of such a system of impact indicators should take into account not only the specific situation and circumstances of the field of research (often interdisciplinary) but also the conditions for flexible adaptation of such a system, taking into consideration the requirements of funding institutions in national, European, and international contexts.

EFFECTS OF THE VIRUS ON THE CULTURAL TOURISM SECTOR DURING THE COVID 19 PANDEMIC IN THE REPUBLIC OF KOSOVO

─ ABSTRACT ─

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As of March 13, 2020, the Government of Kosovo has taken the first measures at the country level to curb the spread of the COVID19 pandemic. The measures taken include the restriction of movement and meetings, the suspension of work in schools and universities, the suspension of the vast majority of cultural, sports and recreational activities, etc.

The COVID19 pandemic has deeply affected all sectors of society, but the Cultural Tourism Sector is one of the most sensitive and one of the most damaged. All planned festivals, exhibitions, theatrical and cultural events have been cancelled, and cinemas, museums, ballet, film screenings and other cultural events have been closed, so artists and cultural workers have found it extremely difficult to survive. Many countries have responded quickly to this very disturbing phenomenon by approving measures to preserve the jobs of those who make a living from work in the cultural sector, in order to help this sector from the consequences which may be irreparable. , for a long time!

Keywords: Cultural tourism, the effects of the pandemic, the development of cultural tourism.

SYSTEMATIC LITERATURE REVIEW ON ENVIRONMENTAL CONSCIOUSNESS IN MARKETING LITERATURE

- ABSTRACT –

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Environmental consciousness has become an increasingly significant factor in marketing strategies as businesses and consumers alike recognise the importance of sustainability. Most importantly, due to consumers' heightened interest in eco-friendly purchases, marketing practitioners are looking for the best ways to incorporate sustainable practices in marketing strategies and communicate these aspects to consumers. Environmental consciousness represents one of the measures for the level of consumer environmental concern. Representing one of the most powerful underlying drivers of consumer behaviour regarding sustainable products, the concept of environmental consciousness among consumers seems to be an evolving phenomenon. This systematic literature review aims to explore the integration of environmental consciousness within the marketing literature, identifying key themes, trends, and gaps. The study relies on co-citation and co-occurrence analysis, as well as subsequent categorisation of emerging themes and topics. By analysing peer-reviewed articles, conference papers, and relevant literature from the past few decades, this review synthesises findings on what determines consumer environmental consciousness and how it influences consumer behavior, branding, advertising, and overall marketing strategies. The review focuses on the evolution of the phenomenon and the investigation of its antecedents and consequences. Additionally, it identifies emerging research trends and potential literature gaps, recommending the direction of future research endeavours.

Keywords: environmental consciousness, green marketing, sustainability, green consumers
JEL classification: M31, Q50, Q56, D12

STRATEGY OF SUSTAINABILITY AS A TOOL FOR POSITIONING CAR MANUFACTURERS

― ABSTRACT ―

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The European Union has implemented increasingly stringent environmental regulations, requiring all new cars and vans to achieve zero emissions by 2035. This shift presents both challenges and opportunities for automakers worldwide. This study applies the three-dimensional (3D) strategic matrix developed in 2010 to assess how sustainability policies impact corporate positioning. The model evaluates three key factors: ecological sustainability (Z-axis), brand value (Y-axis), and financial performance (X-axis). The second goal of this research is to show how the financial results, brand positions, and environmental behaviors of more than 10 global car manufacturers: BMW, Mercedes, VW, Tesla, Toyota, Stellantis, BYD, and FORD, have behaved over a 10-year period and to conclude who has gained or lost the most as environmental regulations have become increasingly stringent.
Additionally, a survey conducted in Serbia, Bosnia and Herzegovina, and Montenegro highlights regional skepticism toward EV adoption due to infrastructure limitations. The findings emphasize the need for targeted policy interventions and infrastructure investment to support the EV transition. This study concludes that sustainability is not just an environmental obligation but a key factor in market positioning and long-term financial success.

Keywords: *strategic three-dimensional matrix, brand value, financial result, sustainability index, car electrification, Balkan and EV*

1. Introduction

For years, the European Union has been trying to reduce its dependence on oil and gas (successfully and unsuccessfully), which Graph 1 clearly indicates until 2020, and later the consumption of fossil fuels increased somewhat after the Coronavirus pandemic in 2019.

The European Union continues to pressure car manufacturers with the zero carbon emissions plan as a policy and goal for cars by 2035, as well as similar policies for buses and trucks. Specifically, the European Commission adopted the amended Regulation (EU) 2019/631 No. 2023/851, according to which all new cars and vans registered in Europe must have zero emissions by 2035. As a transitional step towards achieving zero emissions, the average emissions of new cars must be reduced by 55%, and new vans by 50% by 2030.

Figure 1. Gross available energy, EU, 1990-2022,
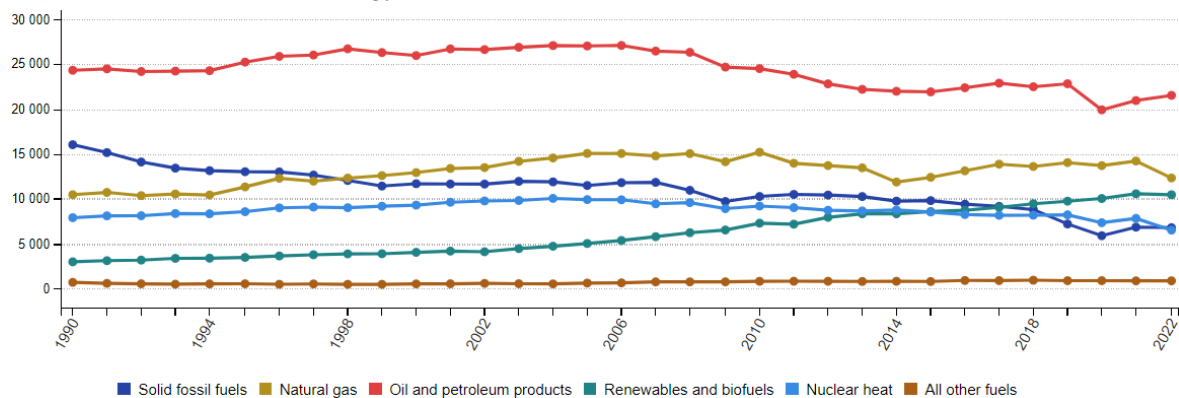
Source: Eurostat (2024) https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview

These regulations have not only environmental implications but also profound strategic consequences for automakers. Compliance with sustainability mandates has become a key factor in competitive differentiation, as brands that successfully integrate sustainability into their corporate strategy strengthen their market positioning. For example, Tesla and BYD have leveraged sustainability leadership to create strong brand equity and attract sustainability-conscious consumers. On the other hand, legacy automakers such as Toyota and Volkswagen must balance the transition to electrification with their existing hybrid and internal combustion portfolios, affecting their competitive agility. This study utilizes the 3D strategic matrix to systematically evaluate how sustainability-driven policies influence the financial and branding strategies of global automakers.

Figure 2. Price of oil, OPEC, 2012-2024,
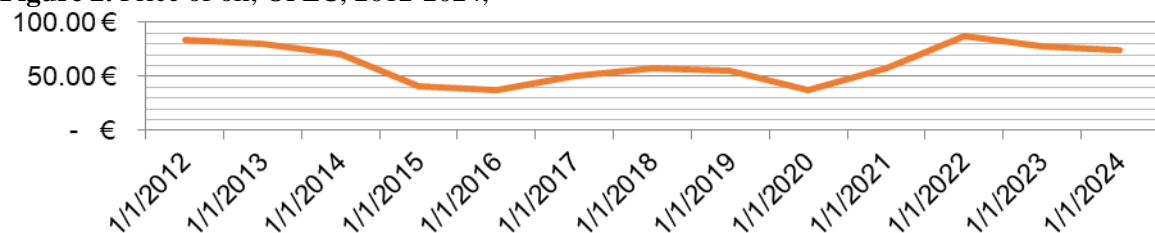
Source: Authors based on data OPEC (2024)

There is no doubt that the European Commission is trying to ensure the achievement of the goal of climate neutrality of the EU by 2050 by draconian measures and reduce the demand and dependence on imported fossil fuels while increasing the production of energy from renewable sources. Why? Because the prices of fossil fuels have risen dramatically as shown in Graphic 2. This implies that there should be as many electric family vehicles, buses, trucks, and delivery vehicles on European roads as possible.

The following table shows data on how the number of electric cars in the EU grew from 2010 to 2022.

Table 1. New registrations of electric cars, EU-27

Year	Battery electric cars	Plug-in electric cars	Total cars	Share of electric cars
2010	591		11128785	
2011	7179		10498868	0.10%
2012	13730	6225	9369664	0.10%
2013	21454	31079	9573937	0.50%
2014	31197	60370	10075476	0.90%
2015	46857	84115	11150601	1.20%
2016	54065	65011	12027051	1.00%
2017	83491	88334	12574590	1.40%
2018	132377	106502	12753440	1.90%
2019	242966	137632	12991283	2.90%
2020	536186	525311	9924123	10.70%
2021	876527	852440	9695706	17.80%
2022	1126682	873042	9252358	21.60%

Source: European Environment Agency (EEA) (2024)

2. Polarization of Europe as a union and continent with regard to EV

At first glance, it may seem that everything is wonderful within the EU and across the European continent, but this is not the case. There are significant differences between the regions and countries themselves, both within the EU as a union and across Europe as a continent. The data in Table 2 provides information on total car sales and electric car sales across various European countries for the years 2022 and 2023. It also includes percentages of electric car sales relative to total car sales, as well as GDP per capita in the same countries according to the IMF.

Table 2. Passenger cars, by type of motor energy and % of EV cars and GDP

Year / Country	2022 Total car	2022 Electric car	% electric in total car	2023 Total car	2023 Electric car	% electric in total car	% change of electric	GDP per capita, current prices Purchasing power parity; $ per capita (IMF)
European Union-27 country	252612228	3015595	1,2%	256538568	4479451	1,7%	149%	52180
Belgium	5955127	89811	1,5%	6047551	181447	3,0%	202%	68080
Bulgaria	2896777	6293	0,2%	3006215	11472	0,4%	182%	35960
Czechia	630593	14195	0,2%	6512774	22441	0,3%	158%	50470

							%	
	4							
Denmark	2801076	112674	4,0%	2827864	200109	7,1%	178%	77640
Germany	48763836	1013009	2,1%	49098685	1408681	2,9%	139%	67240
Estonia	849294	3461	0,4%	865773	5796	0,7%	167%	45120
Ireland	2335130	36970	1,6%	2418947	58633	2,4%	159%	133900
Greece	5726012	6306	0,1%	5877759	12315	0,2%	195%	41190
Spain	26605478	95617	0,4%	26778142	150282	0,6%	157%	52010
France	38856492	595797	1,5%	39511536	916082	2,3%	154%	60340
Croatia	*1840767*	*4801*	*0,3%*	*1910131*	*7058*	*0,4%*	*147%*	*45700*
Italy	40213061	158131	0,4%	40915229	219548	0,5%	139%	56910
Cyprus	601131	830	0,1%	621116	1253	0,2%	151%	58730
Latvia	769723	3832	0,5%	781696	6369	0,8%	166%	41730
Lithuania	1650384	7305	0,4%	1700524	11424	0,7%	156%	50600
Luxembourg	444818	13909	3,1%	453614	23267	5,1%	167%	143740
Hungary	4094129	29836	0,7%	4168651	41212	1,0%	138%	45690
Malta	317234	2883	0,9%	323852	4364	1,3%	151%	67680
Netherlands	8917107	330113	3,7%	8932846	442489	5,0%	134%	74160
Austria	5150890	110225	2,1%	5185806	155409	3,0%	141%	69460
Poland	21458101	38841	0,2%	21992881	51211	0,2%	132%	49060
Portugal	5778584	67347	1,2%	5931722	111002	1,9%	165%	47070
Romania	7865186	24691	0,3%	8106570	39271	0,5%	159%	43180
Slovenia	1207755	7977	0,7%	1230565	12743	1,0%	160%	53290
Slovakia	2555491	4528	0,2%	2644361	7896	0,3%	174%	44080
Finland	3673750	46584	1,3%	3718278	86011	2,3%	185%	60850
Sweden	4979761	197789	4,0%	4976366	291673	5,9%	147%	69180

Country	2022 total	2022 EV	2022 %	2023 total	2023 EV	2023 %	Growth	GDP
Iceland	287368	11160	3,9%	256000	28408	11,1%	255%	73780
Liechtenstein	30659	950	3,1%	38964	1387	3,6%	146%	no data
Norway	3018728	607516	20,1%	2886795	689169	23,9%	113%	82830
Switzerland	4812896	110788	2,3%	4861544	155556	3,2%	140%	91930
United Kingdom	32169932	620632	1,9%				0%	58880
Bosnia and Herzegovina	*1006142*	*138*	*0,0%*	*1044950*	*331*	*0,0%*	*240%*	*20620*
Montenegro	*227716*	_	*0,0%*	*242599*	_	*0,0%*	_	*29700*
Moldova	745970	1553	0,2%	788586	2554	0,3%	164%	17900
North Macedonia	*483482*	*190*	*0,0%*	_	_	_	*0%*	*25590*
Georgia	1333012	3147	0,2%	1438585	4893	0,3%	155%	25250
Albania	639379	7245	1,1%	699337	2891	0,4%	40%	20630
Serbia	*2337498*	_	*0,0%*	*2389185*	_	*0,0%*	_	*27980*
Türkiye	14269352	14552	0,1%	15221134	80043	0,5%	550%	43920
Kosovo*	*339131*	_	*0,0%*	*368818*	_	*0,0%*	_	*16780*

Source: Eurostat (2024) & IMF (2024)

The disparity in EV adoption rates, which we can analyze at the regional level (Table no. 3), between Northern, Southern, and Central Europe, as well as in the Balkans and Eastern Europe, reflects broader socioeconomic and policy differences. Northern Europe's success in EV adoption can serve as a model for other parts of Europe, which may need to accelerate policy initiatives and infrastructure development to foster electric vehicle sales.

Table 3. Europe region differences by using electric cars

Country/Year	2022 Y	2023 Y	Country/Year	2022 Y	2023 Y
Northern Europe:			**Southern Europe**		
Norway	20,12%	23,87%	Italy	0,39%	0,54%
Sweden	3,97%	5,86%	Greece	0,11%	0,21%
Denmark	4,02%	7,08%	Spain	0,36%	0,56%
Iceland	3,88%	11,10%	Portugal	1,17%	1,87%
Central Europe			Cyprus	0,14%	0,20%
Luxembourg	3,13%	5,13%	**Balkan not EU**		
Netherlands	3,70%	4,95%	BiH	0,01%	0,03%
France	1,53%	2,32%	Montenegro	no data	no data
Switzerland	2,30%	3,20%	North Macedonia	0,04%	no data
Germany	2,08%	2,87%	Albania	1,13%	0,41%
Eastern Europe			Türkiye	0,10%	0,53%

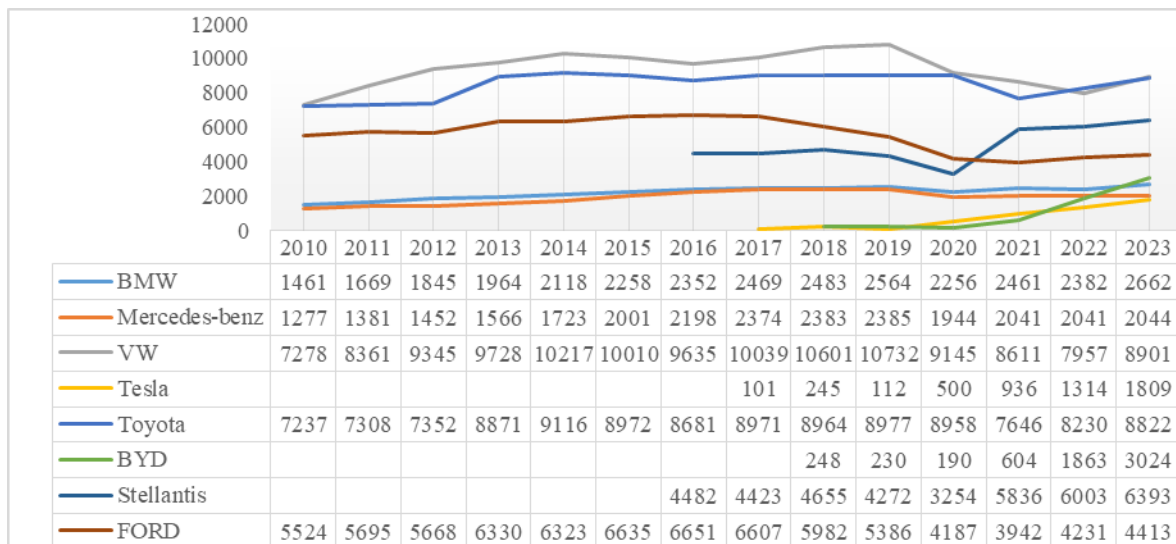| Estonia	0,41%	0,67%	Serbia	no data	no data
Latvia	0,50%	0,81%	**North-east Europe**		
Czechia	0,23%	0,34%	Finland	1,27%	2,31%
Lithuania	0,44%	0,67%	Latvia	0,50%	0,81%
Slovakia	0,18%	0,30%	Lithuania	0,44%	0,67%

Source: Authors on data: Eurostat (2024)

The comparison of electric vehicle (EV) adoption across different European regions further illustrates significant disparities. Northern Europe, leading in EV adoption, contrasts sharply with the Balkan regions where infrastructure and public acceptance lag behind. Several key factors contribute to this slower adoption: 1) Government incentives and policies – Unlike Norway and Germany, where substantial government subsidies and tax exemptions encourage EV purchases, many Balkan countries lack comprehensive incentive programs. In Serbia, for instance, subsidies exist but are limited in scale and do not fully offset the higher initial cost of EVs. In Montenegro and Bosnia and Herzegovina, no direct purchase incentives are available, making EV adoption financially challenging for consumers. 2) Charging infrastructure – A major barrier to EV expansion in the Balkans is the underdeveloped charging network. While Western European countries have thousands of fast-charging stations, cities like Novi Pazar, Kraljevo, and Tuzla face critical shortages, with only a handful of available chargers (figure 4). This lack of infrastructure discourages potential EV buyers who fear range anxiety. 3) Energy costs and GDP per capita – The financial feasibility of EV ownership is also influenced by electricity prices and overall economic conditions. Countries with lower GDP per capita, such as Bosnia and Herzegovina ($20,620), Serbia ($27,980), and Montenegro ($29,700), struggle with affordability when compared to wealthier European nations. Additionally, electricity price fluctuations and grid limitations pose further obstacles to widespread EV adoption. 4) Cultural and market preferences – The dominance of used German cars in the region plays a significant role in shaping consumer preferences. Many drivers in the Balkans opt for second-hand diesel and petrol vehicles due to their affordability, familiarity, and ease of maintenance. This entrenched car culture slows down the shift toward electrification.

Addressing these barriers requires a combination of government action, infrastructure investment, and financial incentives to make EVs a viable choice for a broader segment of the population. Without these efforts, the Balkans will continue to lag behind Western and Northern Europe in sustainable mobility adoption.

2.1. Financial, sale, ESG, and EV results of eight car producer

For these reasons, car manufacturers also have to analyze parameters such as habits, not just money, when it comes to their strategy towards the EV market. One of the most famous manufacturers of electric vehicles is certainly Tesla from the USA, which was founded by Elon Musk. The company was supposed to deliver the first electric trucks with an aerodynamic design in 2019, but it delivered them only in December 2022 to PepsiCo. There is no official data on how many electric trucks Tesla has produced since then. When it comes to cars, we analyzed the entire year 2023. Figure 2 shows us how the year 2023 ended.

Figure 2. Total sale of eight specific car producers in 1.000 cars

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BMW	1461	1669	1845	1964	2118	2258	2352	2469	2483	2564	2256	2461	2382	2662
Mercedes-benz	1277	1381	1452	1566	1723	2001	2198	2374	2383	2385	1944	2041	2041	2044
VW	7278	8361	9345	9728	10217	10010	9635	10039	10601	10732	9145	8611	7957	8901
Tesla								101	245	112	500	936	1314	1809
Toyota	7237	7308	7352	8871	9116	8972	8681	8971	8964	8977	8958	7646	8230	8822
BYD									248	230	190	604	1863	3024
Stellantis							4482	4423	4655	4272	3254	5836	6003	6393
FORD	5524	5695	5668	6330	6323	6635	6651	6607	5982	5386	4187	3942	4231	4413

Source: Authors on annual reports of these eight specific car producers

This graph presents data on the car sales of eight automotive manufacturers—BMW, Mercedes-Benz, VW, Tesla, Toyota, Stellantis, BYD, and Ford—over a 14-year period from 2010 to 2024. The selection of these manufacturers was based on their market presence, EV adoption rate, and financial impact within the industry. Additionally, Table 3 includes financial data for these manufacturers, showcasing key ratios such as the Investment in R&D (IR) ratio, ratio of total sales, and ratio of EV cars in total production.

As noted by Rakićević et al. (2023), the Covid-19 crisis led to a significant decline in sales for most car producers due to falling demand, as reflected in the data for 2020 in Table 4. This downturn also affected the financial results of these companies during that year. However, in other years within this 14-year period, it is evident that companies investing heavily in R&D, adopting sustainable development practices, and maintaining a high ratio of EV cars in their production lines have achieved significantly better results compared to those that did not prioritize sustainability.

Table 4: IR ratio, Ratio of sale, ratio of EV car, of eight specific car producer in 1.000 of car

Producer	Ratio	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BMW			4,4	4,6	0,6	5,5	5,2	4,6	5,0	7,1	6,2	0,6	5,7	4,6	4,8
Mercedes		5,0	5,3	4,9	4,7	4,4	4,4	4,9	5,3	5,4	5,6	7,5	6,4	6,1	4,1
VW		5,4	4,5	4,6	5,2	5,7	5,6	5,3	5,0	5,8	5,7	5,4	5,1	5,1	**6,8**
Tesla	Ratio of IR in total revenue	79,7	102,3	66,3	11,5	14,5	17,7	11,9	11,7	6,8	5,5	4,7	4,8	3,8	4,1
Toyota		3,8	3,8	4,2	3,7	3,5	3,7	3,7	3,8	8,5	6,2	6,9	8,3	9,1	2,9
Stellantis												3,3	3,4	3,1	2,9	3,0
BYD		3,0	3,0	2,6	2,6	3,4	2,6	3,2	3,6	3,8	4,4	4,8	3,7	4,4	**6,6**
FORD			1,7	1,7	0,9	1,1	1,3	1,2	0,4	0,3	0,4	1,0	0,8	2,0	2,2
BMW						0,8	1,3	2,6	4,2	5,7	5,7	8,5	13,3	18,2	**21,3**
Mercedes												14,0	16,3	16,3	**19,7**
VW												4,5	8,6	9,9	11,0
Tesla	Ratio of EV in total sales								100	100	100	100	100	100	**100**
Toyota														0,2	0,4
Stellantis															5,5
BYD										45,5	67,1	73,1	54,0	49,1	**52,3**
FORD														1,5	1,6

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BMW		4,1	4,1	4,2	3,6	3,5	4,1	4,0	4,0	3,9	4,1	4,4	4,5	6,0	5,8
Mercedes		6,8	7,9	7,1	8,6	7,8	8,5	8,2	8,5	6,3	2,5	5,4	21,7	13,6	**12,8**
VW	Ratio of profit before taxes in revenues	5,7	11,9	13,2	6,3	7,3	-0,6	3,4	6,0	6,6	7,3	5,2	8,0	7,9	7,2
Tesla		-116	-115	-88	3,0	3,6	-5,3	5,3	0,8	7,8	8,5	13,7	11,8	21,4	**14,0**
Toyota		1,5	3,0	2,3	6,4	9,5	10,6	10,5	7,9	8,2	8,2	8,2	8,1	9,5	**12,3**
Stellantis								2,8	5,6	3,7	3,7	1,6	10,1	10,9	11,7
BYD		6,7	3,7	0,7	1,7	1,6	4,9	6,6	5,5	3,4	1,9	4,4	2,1	5,0	6,2
FORD			11,4	10,6	15,1	10,2	14,9	9,6	8,6	7,2	5,8	2,4	7,7	8,1	6,8

Source: Bajramovic et al. (2024)

When it comes to the automotive industry, R&D will be the most important issue in the coming years, and that is why investment in R&D needs to be analyzed in this industry in particular. This is the reason why Chinese companies took a big piece of the cake which was the core of the European industry (Volvo is now Chinese-owned) and a company like BYD is coming with much innovation. Mercedes-Benz has successfully navigated the transition to electric mobility while maintaining strong financial performance. Unlike other manufacturers that have required significant increases in R&D spending to adapt, Mercedes-Benz has managed to grow its profit before taxes from 6.8% in 2010 to 21.7% in 2021, stabilizing at 12.8% in 2023. At the same time, its EV share in total sales reached 19.7% in 2023, positioning it as a leading premium brand in the EV space.

In contrast to Mercedes-Benz, Volkswagen is now making substantial R&D investments to catch up in the EV race. The company has been slower in shifting away from traditional internal combustion engines, leading to a need for increased funding to scale EV production. Volkswagen experienced a decline in total vehicle sales, dropping from 10.97 million units in 2019 to 8.26 million in 2023, marking a 24.7% decrease over four years. This downturn has pressured the company to accelerate its electrification strategy. To remain competitive, VW has significantly increased its R&D spending to 6.8% of total revenue in 2023, up from an average of 5.3% in the previous decade. This aggressive investment aims to develop new EV platforms, improve battery efficiency, and expand production capacity to recover lost market share and meet tightening EU emissions regulations.

3. The three-dimensional (3d) matrix: An Integrated Approach to Corporate Positioning

The three-dimensional (3D) strategic matrix, originally developed in 2010, is a comprehensive framework for evaluating corporate performance through a holistic approach. It examines how sustainability strategies influence financial outcomes and brand positioning in the automotive sector.

The model assesses three core dimensions:
- Z-axis: Ecological Sustainability Strategy – Measures CO_2 reduction targets, EV production goals, and ESG compliance,
- Y-axis: Brand Value – Evaluates consumer perception, brand loyalty, and competitive positioning,
- X-axis: Financial Performance – Analyzes profitability, revenue growth, and investment in innovation.

Figure 3. To Three-dimensional (3D) matrix: strategy of sustainability, brand value and financial results
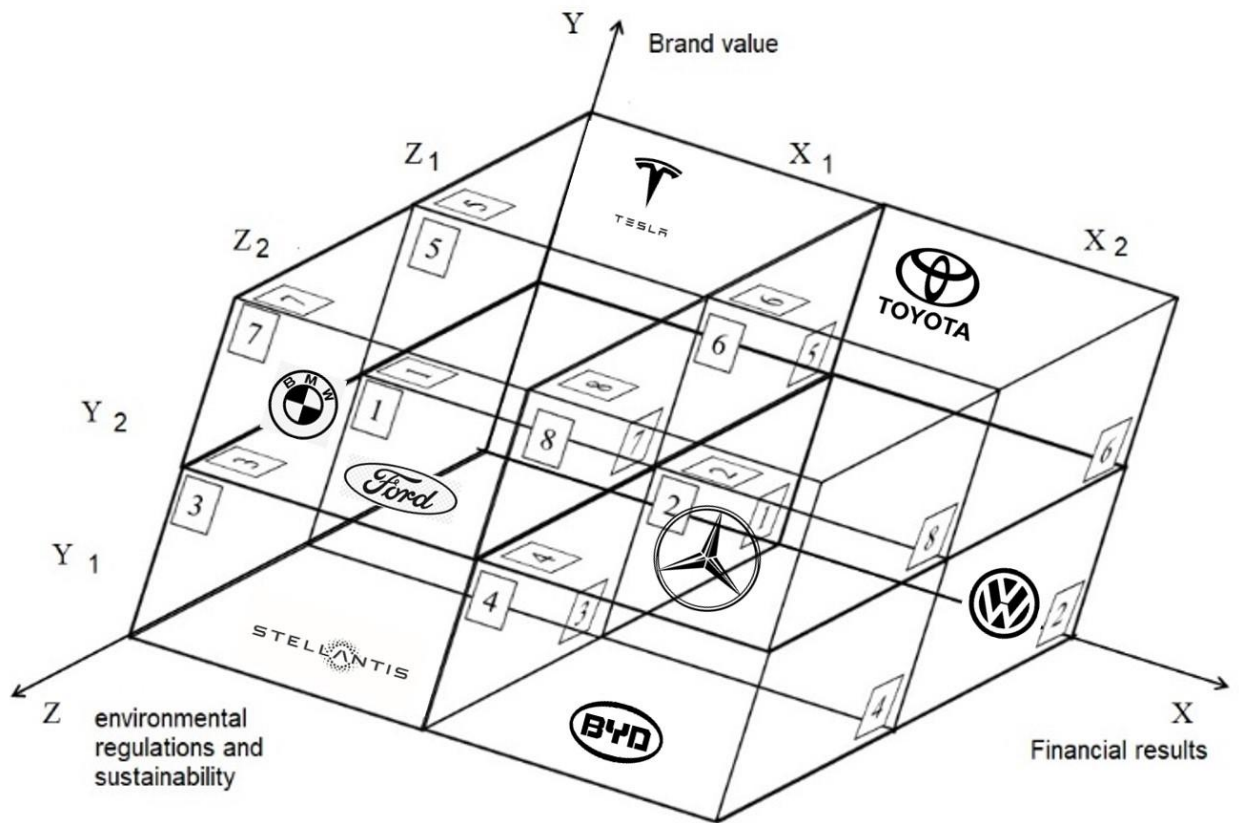
Explanation of eight boxes in the strategic tridimensional 3D matrix:

- Box 1: low brand value (Y1), low financial results (X1) and low investment in IR and sustainability (Z1),
- Box 2: low brand value (Y1), good financial results (X2) and low investment in IR and sustainability (Z1),
- Box 3: low brand value (Y1), low financial results (X1) and high investment in IR and sustainability (Z2),
- Box 4: low brand value (Y1), good financial results (X2) and high investment in IR and sustainability (Z2),
- Box 5: high brand value (Y2), low financial results (X1) and low investment in IR and sustainability (Z1),
- Box 6: high brand value (Y2), good financial results (X2) and low investment in IR and sustainability (Z1),
- Box 7: high brand value (Y2), low financial results (X1) and high investment in IR and sustainability (Z2),
- Box 8: high brand value (Y2), good financial results (X2) and high investment in IR and sustainability (Z2). Bajramović (2011)

For more information about this matrix, see Bajramovic et al (2024) "Application of the strategic three-dimensional 3d matrix in the automotive industry".

The chosen metrics reflect the strategic positioning of companies regarding sustainability and financial resilience. The IR ratio was selected as a key indicator of innovation capacity, while the EV ratio indicates the level of commitment to electrification. Financial ratios such as profitability margins, return on investment, and revenue growth were included to assess financial sustainability. These indicators provide a comprehensive view of how sustainability efforts correlate with financial success. All

financial and ESG data were sourced from official corporate reports, including annual reports from BMW, Mercedes, Tesla, Toyota, Stellantis, BYD, and Ford, as well as industry databases such as Yahoo finance ESG stats. These sources ensure the reliability and comparability of data across manufacturers. However, it is acknowledged that variations in corporate reporting standards may introduce some discrepancies, which were mitigated through data normalization methods.

Unlike traditional strategic models, which focus on single dimensions of corporate success, the 3D matrix integrates sustainability directly into financial and brand evaluations. The increasing relevance of sustainability regulations in global markets makes this a more dynamic and adaptable framework compared to classical models. Comparison with Alternative Strategic Models:

- Porter's Competitive Advantage Model – Focuses on financial performance and market competitiveness but does not directly incorporate sustainability factors,
- SWOT Analysis – Identifies strengths, weaknesses, opportunities, and threats but lacks a quantitative assessment of sustainability and financial trade-offs,
- ESG Frameworks – Primarily focus on sustainability and corporate responsibility, yet do not quantitatively link sustainability efforts with financial performance.

Compared to traditional strategic frameworks such as Porter's Competitive Advantage model (Grant, 1991), which primarily focuses on financial and competitive market positioning, the 3D matrix uniquely integrates sustainability as a core dimension. Additionally, while ESG frameworks offer qualitative assessments of sustainability, they often lack a direct link to financial and brand performance. The 3D matrix addresses this gap by quantitatively linking sustainability investments with both market and financial outcomes, making it a robust tool for evaluating corporate strategy in a regulated and rapidly evolving industry. The 3D matrix bridges this gap by offering a quantifiable approach to measuring how sustainability investments correlate with financial growth and brand positioning. When first introduced in 2010, the 3D strategic matrix was published in an academic journal during a period of limited online accessibility of scientific research. This paper reassesses its applicability in modern automotive challenges, such as the EU's 2035 zero-emission targets and the accelerated global transition to EVs.

3. Opportunities for the growth of the EV segment in Serbia, BiH and Montenegro

In addition to addressing battery issues, the widespread adoption of electric trucks will require the installation of tens of thousands of superchargers specifically designed for heavy trucks. A significant ongoing challenge in this field is the "supercharger war," with Round 1 in the USA being won by Tesla, as other companies have agreed to use Tesla's superchargers to charge their vehicles. Tesla has already installed over 50,000 superchargers worldwide, including 10,000 in the European Union. A study by GridX recorded a total of 137,258 charging stations across 28 countries (25 EU countries, plus Norway, Great Britain, and Switzerland). Of these stations, 46% have two chargers, followed by stations with four chargers (19%). Stations with one or three chargers make up 10% each, while only 14% of stations have five or more chargers. Notably, only 1% of stations are equipped to serve 20 or more vehicles simultaneously. (Ahmatović et al, 2024)

Figure 4. Map of EV charger in Serbia, BiH, Montenegro
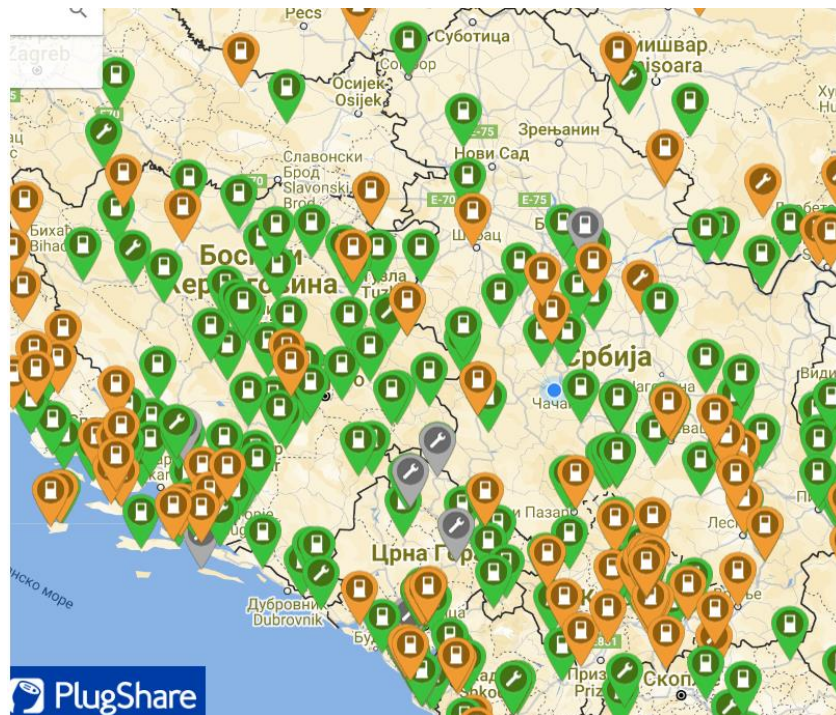
In Serbia, Bosnia and Herzegovina, Montenegro the development of charging infrastructure lags significantly behind. While areas along highways and the biggest cities have superchargers, cities like Novi Pazar, Kraljevo, and Tuzla are facing a critical situation with only a few chargers available, none of which are accessible to trucks. The situation is especially concerning in cities like Rožaje (Montenegro), Tutin and Sjenica (Serbia), and Bosanska Krupa (Bosnia and Herzegovina), which do not have any chargers for EVs according to "PlugShare".

3.1. Survey: attitude research EV segment in Serbia, BiH and Montenegro

Big changes have taken place in the field of electric cars and electric vehicles in general. Chinese companies are taking over the primacy. However, as we could see, Europe and America have taken drastic measures regarding customs duties on the import of electric vehicles. Thus, the most drastic steps in this regard were taken by the USA by introducing a tariff of 102.5 % from 24.may 2024. (Executive Office of the President USA). Following this situation, the EU has also introduced customs duties ranging from 17,4 % to 37,6 % depending on the materials that are installed in the cars. "The individual duties applying to the three sampled Chinese producers are: BYD: 17.4%; Geely: 19.9%; SAIC: 37.6%. Other BEV producers in China, which cooperated in the investigation but were not sampled, are subject to the 20.8% weighted average duty. The duty for other non-cooperating companies is 37.6%." (European Commission 2024) However, as shown in Table 3, different regions and their populations have adopted and accepted the EV trend in various ways so far. Eurostat data also shows that the data for Bosnia and Herzegovina, Serbia, Montenegro, North Macedonia, Kosovo*, and Albania is highly accurate. This is why we decided to conduct surveys on the population's attitudes toward EVs in Serbia, Montenegro, Bosnia and Herzegovina, and the city of Novi Pazar for the purposes of this work. We did not extend the survey to the wider areas of Kosovo, Albania, and North Macedonia due to language barriers. As seen in Table 5, the total number of respondents is approximately 600 across the entire area, with the majority from the Republic of Serbia,

where the response rate was highest, reaching 253 within the first two days of the survey. Montenegro, as the smallest country among the respondents, with slightly more than 500,000 inhabitants, was the last to complete the survey.

Table 4: Research sample

	Serbia	**Novi Pazar city**	**Montenegro**	**BiH**
Sample N	250	111	103	156
Total sample N: 620				
mode of collecting data	Online surway	Online surway	Online surway	Online surway
Link	https://forms.gle/Ce67fDiowGqawbo78	https://forms.gle/D6SYyfEcnoTEkJvr7	https://forms.gle/drSkwETcRf3HgeCG7	https://forms.gle/mWkNtdcLs33D1ooe8
Promoted	free promotion	Facebook/Instagram	Facebook/Instagram	Facebook/Instagram
Date	27.08-29.08.2024	27.08-29.08.2024	27.08-31.08.2024	27.08-30.08.2024

Source: Authors

The survey covered four regions: Serbia (250 respondents), Bosnia and Herzegovina (156 respondents), Montenegro (103 respondents), and Novi Pazar (111 respondents), with a total sample size of 620. The sample included respondents aged 18–65, representing diverse education levels (secondary school, undergraduate, postgraduate) and income brackets (low, middle, high-income groups). The demographic structure was designed to capture a broad representation of opinions regarding EV adoption. The survey was conducted via online platforms (Facebook, Instagram), which introduces potential sampling bias, as social media users may not be fully representative of the entire population. Age representation varies across regions, ensuring a diverse perspective. Young respondents (<30 years) make up 37.2% in Bosnia, 33% in Montenegro, 26.1% in Novi Pazar, and 45.2% in Serbia, capturing early EV adopters. Middle-aged respondents (30-50 years) form the largest group, ranging from 51% to 66.6%, representing key decision-makers in EV purchases. Older respondents (50+ years) account for 7.7% to 12.3%, ensuring insights from traditional consumers. This well-distributed sample enhances the study's reliability in assessing regional EV adoption attitudes without significant age-related bias.

The idea was to conduct an almost identical survey in all the above-mentioned areas and in the area of the city of Novi Pazar. Why the city of Novi Pazar? Because Novi Pazar is the city with the youngest population in Europe but also with the highest unemployment rate of around 50% - 23,265 people are listed as unemployed (there are no official data but newspaper articles, because unemployment is calculated at the level of the region to which the cities of Rashka and Kraljevo belong in which unemployment is less than 10%, which gives a distorted picture that unemployment in this region is only around 11%). The second reason is because the city of Novi Pazar is a trading center for the cities of Tutin, Sjenica, Priboj, Nova Varoš (in Serbia) and Rozaje, Berane, Plav and Gusinje (in Montenegro). At the same time, Novi Pazar is also the University center where a large number of students from these areas gravitate (the region we locally call Sandzak - an area that extends to the north of Montenegro and the south-west of the Republic of Serbia).

Another reason is reflected in the fact that it is measured whether the fact that this area has the smallest number of chargers in the entire region additionally affects that there is a lack of trust in EV vehicles. In this region, Novi Pazar is the only city that has a couple of ordinary chargers of 11 kw and 22 kw, but also only one super fast charger of 120 kwh, which is of course insufficient for the mass use of EVs, but it is much better compared to the cities in the Tutin region. Sjenica, Rozaje, which do not have a single ordinary (11 kw) let alone a super fast charger (according to: www.plugshare.com). Since the market (Kujović & Meta 2021), through the levers of supply and demand, finds a point of market equilibrium and satisfies the missing supply, the assumption is that the use of EVs in this region would be higher if the infrastructure were better organized. For these reasons, it was important to measure the views of the citizens of this area with the views of the citizens of the rest of Serbia and the regions of Bosnia and Herzegovina and Montenegro.

The hypothesis that is set as H0: *that there are no drastic differences between the attitudes of the citizens of Serbia, Bosnia and Herzegovina and Montenegro regarding the application of EVs as future traffic, but that these attitudes are even more drastic in regions like Novi Pazar where there is not enough infrastructure for EVs.*

From the Chi-Square test results, we can analyze regional differences in the perception of the long-term sustainability of electric vehicles:

Table 5: Case Processing Summary

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
City or State * Question: 18. Do you think that electric cars are a viable option for your region/country in the next 5-10 years?	620	100,0%	0	0,0%	620	100,0%

Source: Authors data of survey throw SPSS

Table 6: City or State * 18. Do you think that electric cars are a viable option for your region/country in the next 5-10 years? Cross-tabulation

			18. Do you think that electric cars are a viable option for your region/country in the next 5-10 years?			Total
			a. Yes	b. No	c. Not sure	
City or State	BIH	Count	25	91	40	156
		% within City Or State	16,0%	58,3%	25,6%	100,0%
		% within 18. Do you think that electric cars are a viable option for your region/country in the next 5-10 years?	13,7%	33,5%	24,1%	25,2%
		% of Total	4,0%	14,7%	6,5%	25,2%
	Montenegro	Count	32	39	32	103

	% within City Or State	31,1%	37,9%	31,1%	100,0%
	% within 18. Do you think that electric cars are a viable option for your region/country in the next 5-10 years?	17,6%	14,3%	19,3%	16,6%
	% of Total	5,2%	6,3%	5,2%	16,6%
Novi Pazar	Count	44	33	34	111
	% within City Or State	39,6%	29,7%	30,6%	100,0%
	% within 18. Do you think that electric cars are a viable option for your region/country in the next 5-10 years?	24,2%	12,1%	20,5%	17,9%
	% of Total	7,1%	5,3%	5,5%	17,9%
Serbia	Count	81	109	60	250
	% within City Or State	32,4%	43,6%	24,0%	100,0%
	% within 18. Do you think that electric cars are a viable option for your region/country in the next 5-10 years?	44,5%	40,1%	36,1%	40,3%
	% of Total	13,1%	17,6%	9,7%	40,3%
Total	Count	182	272	166	620
	% within City Or State	29,4%	43,9%	26,8%	100,0%
	% within 18. Do you think that electric cars are a viable option for your region/country in the next 5-10 years?	100,0%	100,0%	100,0%	100,0%
	% of Total	29,4%	43,9%	26,8%	100,0%

Source: Authors data of survey throw SPSS

Table 7: Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	29,802[a]	6	,000
Likelihood Ratio	31,211	6	,000
Linear-by-Linear Association	5,828	1	,016
N of Valid Cases	620		

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 27,58.

Source: Authors data of survey throw SPSS

Interpretation of Results Chi-Square test results: Pearson Chi-Square Value: Value: 29.802, Degrees of Freedom (df): 6, Asymptotic Significance (p-value): 0.000. Conclusion: Since the p-value is less than 0.05, we reject the null hypothesis (H0) that there are no statistically significant differences in attitudes between the regions (Serbia, Bosnia and Herzegovina, Montenegro, Novi Pazar).

This means that there are significant differences in attitudes toward the sustainability of electric vehicles (EVs) across these regions. Likelihood Ratio Test: Value: 31.211. Asymptotic Significance (p-value): 0.000 Conclusion: This result also confirms that there are significant differences between the regions in their perceptions of EV sustainability.

Percentages in the Crosstabs Table: Serbia: The highest percentage of respondents from Serbia (32.4%) believe that electric vehicles are a viable option in the next 5-10 years.

Novi Pazar: 29.7% of respondents from Novi Pazar believe that EVs are not a viable option, which may indicate lower confidence in EV sustainability due to insufficient infrastructure.

In Bosnia, 58.3% of respondents stated that EVs are not a viable option, while in Montenegro, 37.9% gave the same response.

Table 8: Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
14. Do you know where the electric car charging stations are located in your city? * CityOrState	620	100,0%	0	0,0%	620	100,0%

Source: Authors data of survey throw SPSS

Table 9: Cross-tabulation

14. Do you know where the electric car charging stations are located in your city/region/country? * CityOrState

			City or State				Total
			BIH	Montenegro	Novi Pazar	Serbia	
14. Do you know where the electric car charging stations are located in your city?	a. Yes	Count	104	52	50	158	364
		Expected Count	91,6	60,5	65,2	146,8	364,0
		% within 14. Do you know where the EV charging stations are located in your city?	28,6%	14,3%	13,7%	43,4%	100,0%
		% within City or State	66,7%	50,5%	45,0%	63,2%	58,7%
		% of Total	16,8%	8,4%	8,1%	25,5%	58,7%
	b. No	Count	31	31	45	56	163
		Expected Count	41,0	27,1	29,2	65,7	163,0
		% within 14. Do you know where the EV charging stations are located in your city?	19,0%	19,0%	27,6%	34,4%	100,0%
		% within City or State	19,9%	30,1%	40,5%	22,4%	26,3%
		% of Total	5,0%	5,0%	7,3%	9,0%	26,3%
	c. I'm not sure they exist	Count	21	20	16	36	93
		Expected Count	23,4	15,5	16,7	37,5	93,0
		% within 14. Do you know where the EV charging stations are located in your city?	22,6%	21,5%	17,2%	38,7%	100,0%
		% within City or State	13,5%	19,4%	14,4%	14,4%	15,0%
		% of Total	3,4%	3,2%	2,6%	5,8%	15,0%
Total		Count	156	103	111	250	620
		Expected Count	156,0	103,0	111,0	250,0	620,0
		% within 14. Do you know where the EV charging stations are located in your city?	25,2%	16,6%	17,9%	40,3%	100,0%

% within City or State		100,0%	100,0%	100,0%	100,0%	100,0%
% of Total		25,2%	16,6%	17,9%	40,3%	100,0%

Source: Authors data of survey throw SPSS

Table 10: Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21,955[a]	6	,001
Likelihood Ratio	21,177	6	,002
Linear-by-Linear Association	,029	1	,864
N of Valid Cases	620		

a. 0 cells (0,0%) have an expected count less than 5. The minimum expected count is 15,45.

Source: Authors data of survey through SPSS

Interpretation of the Results:

Crosstabulation Summary: Regions (City or State): Bosnia and Herzegovina, Montenegro, Novi Pazar, and Serbia. Responses: a. Yes, b. No, c. Not sure if they exist. Key Observations: Yes: The highest awareness of charging stations is in Serbia (43.4%), followed by BIH (28.6%). Montenegro and Novi Pazar have lower awareness (14.3% and 13.7%, respectively). No: Novi Pazar has a relatively high percentage of respondents who are not aware of charging stations (27.6%). Montenegro and BIH also show considerable unawareness (19% each). Not Sure if They Exist: The lowest percentage of uncertainty is in Serbia (14.4%), whereas BIH, Montenegro, and Novi Pazar are closer to each other (22.6%, 21.5%, 17.2%, respectively).

Chi-Square Test Results: Pearson Chi-Square Value: 21.955, with a significance level (p-value) of 0.001. Since the p-value is less than 0.05, this indicates that there is a statistically significant difference in awareness of charging stations among the different regions. So we can conclude that the Chi-Square test suggests that there are significant differences in awareness of electric vehicle charging stations across the surveyed regions. Specifically, Serbia shows higher awareness, while Montenegro, Novi Pazar, and BIH have lower awareness. This could imply that infrastructure development or public information campaigns regarding EV charging stations might be more effective or advanced in Serbia compared to the other regions.

Also, one of the questions was about price and we did a test of frequencies on question 15. Attitudes and Perception: To what extent do you agree with the following statements about electric cars? (Likert scale from 1 to 5: 1 - Strongly disagree, 2 - Disagree, 3 - Undecided, 4 - Agree, 5 - Strongly agree) 5.3. [Buying an electric car is too expensive.]

Table 9: Cross-tabulation

Statistics

		City Novi Pazar	Serbia	Montenegro	Bosnia and Herzegovina
N	Valid	111	250	103	156
	Total	620	620	620	620
Median		3,00	3,00	4,00	4,00
Mode		3	3	4	4

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Valid Number of Responses (N): The number of valid responses for each location. For example, Novi Pazar has 111 valid responses. Median: The middle value of the response set. This indicates the central tendency of agreement with the statement. For example, in Novi Pazar and Serbia, the median is 3 (Undecided), whereas in Montenegro and Bosnia and Herzegovina, the median is 4 (Agree). Mode: The most frequently occurring response. This shows which response was most common. For example, in Novi Pazar and Serbia, the mode is 3 (Disagree), while in Montenegro and Bosnia and Herzegovina, the mode is 4 (Agree). Interpretation:

- Novi Pazar and Serbia: The median and mode are 3 (Undecided or Disagree), which may suggest that most people believe that the price of electric cars is not too high, or they are uncertain about their opinion.
- Montenegro and Bosnia and Herzegovina: The median and mode are 4 (Agree), indicating that most people in these regions believe that the price of electric cars is too high.

These differences are illustrated in Figure 4, which clearly indicates that in Novi Pazar and Serbia, more people are undecided about the price of EVs, but in BiH and Montenegro most are agree that price of EVs is too high. Even in Serbia a significant portion of the sample disagrees that the price is too high, which is largely a result discussed in the next chapter as confirmed that "exploitative innovation significantly influences the innovation performance of SMEs in small emerging economies" (Pilav – Velic et al 2024) and we need much more innovation in EV segment.

Figure 4. Median of answer is buying an electric car too expensive NP, Serbia, Montenegro and BiH
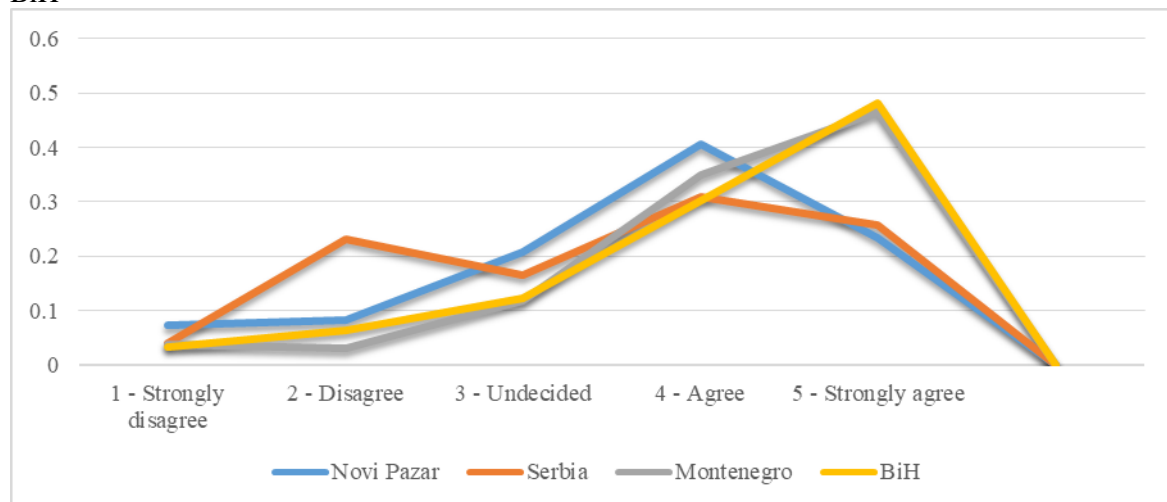
5. Regional law differences

By amending the law on planning, the Republic of Serbia introduces the obligation to predict charging points for electric vehicles. The situation in the Republic of Serbia regarding the infrastructure for electric vehicles (especially trucks) is not at an adequate level and we are lagging behind the rest of the world. This is especially illustrated by the picture showing the map of super-chargers in Serbia. The map clearly shows that the supercharger bases are located on the route from Hungary or Croatia to the exit towards

Bulgaria and Macedonia. In table 11 is a structured summary of the information provided regarding the legal acts, obligations for electric chargers, customs rates, and subventions in Serbia, Montenegro, and Bosnia and Herzegovina.

Table 11: Regional law differences

Country/ entity		Legal act	It mentions the obligation of electric chargers for electric vehicles	Customs rate	Subvention
Serbia		Law on planning and construction ('Sl. glasnik RS', 62/2023)	**prescribes an obligation**	Gradual abolition of 4.5% for china	5.000 eur and tax exemptions
Montenegro		Law on space planning and building construction ("Sl. list CG", 82/2020)	does not prescribe an obligation	no data	5.000 eur
Bosnia i Hercegovina	**Federation BiH**	Law on spatial planning and land use at the level of the Federation of Bosnia and Herzegovina ("Službene novine Federacije BiH", broj 92/21)	does not prescribe an obligation	Abolition by the end of 2024 (was 5%)	10.000 km (about 5.000 eur)
	RS	Law on space development and construction ("Sl. glasnik RS", br. 40/2013, 2/2015 – decision US, 106/2015 i 3/2016 - ispr., 104/2018 - odluka US i 84/2019)	does not prescribe an obligation		
	District Brchko	Law on spatial planning and construction (Assembly of the Brčko District of Bosnia and Herzegovina at the 70th regular session held on June 25, 2008)	does not prescribe an obligation		

Source: Authors with law data of this country

This table provides a clear overview of the obligations, customs rates, and subventions related to electric vehicle and chargers in these regions. So it is clear that Serbia's law is better in a way that new buildings must provide new stations for EVs as an obligation for building permits so this obligation is a possible answer to different ways of seeing the future of EVs in this region. In the EU, EV incentives vary widely, including purchase subsidies, tax benefits, and non-monetary perks. France offers up to €6,000, while Germany's former €9,000 subsidy ended in 2023, causing a sales drop. The Netherlands and Italy provide tax exemptions, and some countries grant free parking and bus lane access. While Western Europe scales back subsidies as adoption rises, emerging

markets like the Balkans struggle with high costs and poor infrastructure, highlighting the need for targeted policies to boost EV adoption.

6. Conclusion

The automotive industry's adaptation to stringent environmental regulations, particularly within the European Union, highlights the sector's shift towards sustainability as a strategic imperative. The zero-emission targets set for 2035, alongside the phased reductions leading up to that year, underscore the EU's commitment to climate neutrality by 2050. The analysis using the three-dimensional (3D) strategic matrix reveals a clear trend: car manufacturers that have prioritized ecological sustainability, alongside maintaining strong brand value and financial performance, have better navigated the challenges posed by these regulations. The comparison of electric vehicle (EV) adoption across different European regions further illustrates significant disparities. Northern Europe, leading in EV adoption, contrasts sharply with the Balkan regions where infrastructure and public acceptance lag behind. This disparity emphasizes the need for targeted policy interventions and infrastructure development to promote wider adoption of EVs in less developed areas. Survey data from Serbia, Bosnia and Herzegovina, and Montenegro reveal regional differences in public attitudes toward EVs, with infrastructure inadequacies playing a critical role in shaping these perceptions. The findings suggest that while there is potential for growth in EV adoption in these regions, achieving this will require concerted efforts to improve charging infrastructure and public awareness.

Overall, this study demonstrates that sustainability is not just an environmental goal but a strategic tool that significantly influences the market positioning and success of car manufacturers in an increasingly competitive global market. The classification of "winners" and "losers" in sustainability adaptation was based on two key criteria: (1) the ability to successfully transition a strong brand identity into the EV era while maintaining high total vehicle sales and (2) sustained financial growth, particularly measured by profitability ratios before taxation. Mercedes-Benz stands out as a prime example of a "winner" in this transition. The company has managed to transfer its strong luxury brand equity into the EV sector while maintaining a high sales volume across both electric and internal combustion vehicles. Furthermore, Mercedes-Benz has achieved the highest pre-tax profit ratio in total revenue among the analyzed manufacturers, demonstrating that financial resilience and strategic adaptability in sustainability efforts can go hand in hand. This case underscores that success in sustainability adaptation is not solely dependent on the percentage of EVs sold but also on the ability to maintain brand strength and financial stability during the industry's shift toward electrification. Also governments must make significant efforts regarding the question of building supercharger stations soon as possible. To accelerate EV adoption, governments should amend construction laws to mandate the installation of electric vehicle (EV) charging stations in newly built hotels, shopping centers, government buildings, and large private facilities. This regulation would ensure that future infrastructure supports sustainable mobility, reducing range anxiety and encouraging broader EV usage.

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SUSTAINABLE DEVELOPMENT OF SPELEOTOURISM IN BOSNIA AND HERZEGOVINA: CURRENT STATE AND DEVELOPMENT PERSPECTIVES

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Abstract

Speleotourism represents a selective form of tourism based on the valorization of the most attractive underground karst formations, such as caves and pits. The geological structure and relief characteristics of Bosnia and Herzegovina (BiH) have led to the emergence of a large number of speleological objects in the holokarst areas of the external Dinarides, as well as in the zone of the internal Dinarides. Although numerous caves and pits have been the subject of various speleological, paleontological, and archaeological research for over a century, efforts to prepare them for tourist visits only began in the mid-20th century. The aim of this research is to analyze the potential of caves for tourist exploitation, as well as the possibilities for improving the current state of speleotourism in BiH. Through the analysis of the most significant tourist caves, their potential for the development of sustainable tourism is highlighted, along with the challenges they face, including lack of infrastructure, promotion, and education about the importance of preserving these natural sites. By surveying domestic visitors, the attitudes and perceptions regarding speleotourism have been explored, including motivations for visits and their experiences. The results of the survey show that the majority of visitors recognize the importance of cave preservation and express interest in additional educational tourist content and activities. This paper provides a foundation for future research and the development of strategies for enhancing speleotourism in BiH, taking into account sustainability and the preservation of natural heritage.

Keywords: caves, speleology, sustainable tourism, Bosnia and Herzegovina.

JEL code: Z320 Tourism and Development

Introduction

The Dinaric karst region holds significant importance for BiH, as well as for the neighboring countries it spans. The values of the Dinaric karst are manifold: natural, scientific, economic, cultural, educational, recreational, etc. (Mulaomerović & Osmanković, 2010). This naturally formed entity should leverage its uniqueness through the process of tourism valorization. Despite the fact that the Dinaric karst is rich in underground karst features, until 2006, BiH had no database on them. The first cadaster of speleological sites in BiH, published in 2006, lists 4,033 speleological sites, with the note that this number is not final. More recently, the Regulation on the conditions and methods for Establishing and maintaining the cadaster of speleological sites in the Federation of BiH from 2021 defines the method for acquiring, linking, and utilizing data on speleological sites, and defines a cave as a speleological site in which geomorphological properties determine the horizontal extension of channels, with an average channel gradient of less than 45 degrees.

Karst terrains in BiH are generally perceived as depopulated and economically underdeveloped, so in this context, the tourism valorization of caves and the development of speleotourism can be discussed as one way to economically revitalize these traditionally passive areas. Caves, due to their internal morphological characteristics, cultural-historical values, and/or aesthetic values, are significant and unique natural entities that can provide additional tourist value to existing destinations or represent standalone tourist destinations. The valorization of the attractive properties of caves is conditioned by the possibilities for presentation to visitors, the manner of presentation, and the accessibility of the cave (Maksin-Mićić, 2007; Kadušić et al., 2018). However, the development of speleotourism and the tourist arrangement of caves require high initial investments, so it is necessary to demonstrate the profitability of the investment, while primarily ensuring the protection and carrying capacity of these sensitive ecosystems (Tičar et al., 2018). Additionally, the tourist use of caves necessitates the implementation of safety measures.

The aim of this research is to provide an overview of the current state of tourist caves and to explore the potential for sustainable development of speleotourism in BiH. The research also represents one of the first attempts to analyze the attitudes, perceptions, and motivations of domestic visitors for visiting caves in BiH.

Literature review

Development of speleological research and speleotourism in BiH

Although speleological research in BiH began in 15th century, significant progress only started with the arrival of Austria-Hungary, whose Military Geographical Institute based in Vienna began exploring the natural features of the entire state territory, including karst forms. The first research on karst phenomena was published in 1884 in the Journal of the Speleological Section of the Austrian Tourist Club (Sivac, 2023). At the end of the 19th century, the National Museum was established in Sarajevo, initiating significant field research on caves to study their morphological features for military and economic purposes, analyzing cave fauna, and discovering archaeological sites, etc. Members of the Sarajevo Tourist Society "Friends of Nature" also made a significant contribution to cave research, engaging in the exploration and protection of caves and organizing visits to sites like Megara and Bijambare for their members (Mulaomerović & Osmanković, 2010). With the establishment of speleological societies, karst research intensified in Yugoslavia,

resulting in a significant number of scientific papers and presentations at speleologist congresses. Mulaomerović (2000) notes that after the war (1992–1995), active speleologists and their associations emerged in Sarajevo, Banja Luka, Zavidovići, etc.

The valorization of tourist potential began quite late, even though it is evident from the previous discussion that their potential was recognized much earlier. Mulaomerović (2009) states that although BiH recorded its first visits to caves in the 16th century by explorers and travel writers from various countries, the initial development of speleotourism in BiH is considered to have started at the end of the 19th century.

The first significant papers on speleotourism in BiH discuss the tourist potential of the Vjetrenica and Bijambare caves. Gujić (1942) highlights the tourist significance of Vjetrenica in Herzegovina, pointing out poor accessibility due to inadequate road infrastructure as an obstacle to better visitation. Fukarek & Ržehak (1956) were among the first to address the issue of adequate protection and valorization of caves, providing one of the first classifications of caves as tourist sites. They identify Vjetrenica, Bijambare, Megara, and Hrustovača as the most significant caves for tourism development (under supervision). Ržehak (1965; 1975) emphasizes that the tourist valorization of caves should be planned and in accordance with the local community.

Avdagić (1979) notes that due to an increase in the number of visitors, especially organized tourist groups, work began on arranging the interior of Vjetrenica at the end of the 1970s. During this period, the potential of Hrustovača cave for tourist development was also explored (Lajovic & Malečkar, 1983). Svoboda (1980) points out the favorable tourist-geographic position of Vjetrenica (the hinterland of Dubrovnik and proximity to Mostar) and the Ledenica cave (close to the then highly visited Tito's cave). Bokan (1983) investigates the tourist valorization of Vjetrenica and its inclusion in the tourist offer of Herzegovina. Avdagić et al. (1985) prepared one of the first reports on the tourist valorization of Orlovača cave. In former Yugoslavia, speleotourism particularly developed in Slovenia, followed by Croatia and Serbia, fostering similar efforts in BiH. In this regard, the Bijambare and Vjetrenica caves were recognized as primary destinations for the development of speleotourism, managed by local organizations lacking sufficient personnel and financial resources for their more intensive development (Mulaomerović & Osmanković, 2010).

The war in BiH (1992–1995) led to the destruction of tourist infrastructure in the caves, as well as the cave decorations. After the war, caves and speleotourism became the subject of research by only a few authors, including notable works by Mulaomerović (2000; 2001; 2009), Drešković (2002), Mulaomerović et al. (2012), Osmanković et al. (2006), Osmanković & Mulaomerović (2007), and Spahić (2015), among others. From this, it is evident that various scientists have made significant contributions to the research of speleotourism, emphasizing that through the tourist valorization of caves, their protection and continuous monitoring can be ensured.

The opening of caves for tourist visits was recorded only after 2005. Tito's cave reopened for visits in 2006. After the Bijambare area was declared a protected landscape in 2003, research on speleological sites began, as well as the construction of new paths and an information center, and in 2007, this area was opened for tourist visits. However, due to unprofessional restoration of the area and a lack of adequate staff, the cave was soon closed to visitors. The infrastructure in Vjetrenica cave was renovated in 2003, when the project for its valorization and nomination for inclusion on the UNESCO World Heritage List also began.

Current state of speleotourism in BiH

In BiH, there is a significant number of caves, but not all are suitable for tourism valorization. Favorable traffic location, dimensions, richness of cave formations, history of tourist visits, and the presence of aesthetic or cultural value are some of the criteria that must be met for a particular speleological site to be considered a tourist resource. The Tourism Development Strategy of the Federation of BiH for the period 2022-2027 mentions only five caves within the tourism resource base, without proposals for their tourist exploitation and development. In contrast, the Tourism Development Strategy of the Republika Srpska for the period 2021-2027 recognizes the tourist significance of caves more clearly and provides recommendations for the development and protection of certain caves. Important studies and reports, such as the Management Plan for the Protected Landscape of Bijambare 2021-2030 and the Draft Management Plan for the Protected Landscape of Vjetrenica – Popovo polje, recognize speleotourism as an important component of the protection and sustainable development of these caves.

Currently, only a few caves in BiH are developed and open for tourist visits, equipped with certain tourist infrastructure and charge for entrance: Vjetrenica, Bijambare cave, Tito's cave, and Ravlića cave. Rastuša cave near Teslić has been opened for tourist visits despite previous neglect, while Orlovača cave has not been open to visitors since 2022 due to ongoing renovations.

The statistics related to the Protected Landscape of Bijambare (PL Bijambare) show visitor data for the entire area and the Middle Bijambare cave, which is prepared for visits (Table 1). Entrance to the Upper Bijambare cave is free of charge. According to ticket sales records from 2010 to 2019, the number of visits to the protected area shows a trend of growth. In 2020, the number of visits to the PL Bijambare declined due to the COVID-19 pandemic; however, the number of visits to the cave did not experience a significant drop. It is important to note that visits that were free of charge are not included in the records.

Table 1. Number of visitors to PL Bijambare and Middle Bijambare cave

Year	Number of visitors to PL Bijambare	Number of visits to the Middle Bijambare Cave
2010.	14.356	2.970
2011.	24.497	7.201
2012.	33.740	12.058
2013.	40.508	13.052
2014.	38.425	10.441
2015.	53.025	18.456
2016.	63.981	22.866
2017.	68.354	25.126
2018.	64.645	21.656
2019.	68.789	24.236
2020.	34.376	23.892
2021.	52.591	/
2022.	57.710	18.723
2023.	60.258	21.899

Source: Management Plan for the PL Bijambare 2021-2030

According to data held by the management of Vjetrenica cave, the number of visits has been increasing over the years. In 2016, they recorded 8,753 visits, while in 2024, they expect over 20,000 visits. The visitor structure continues to be dominated by guests from

BiH, with the rest mainly coming from the region (Croatia, Serbia, and Montenegro). Additionally, a significant number of visitors come from the Czech Republic, Poland, Germany, and Scandinavian countries. In 2024, Vjetrenica was added to the UNESCO World Heritage List, which is expected to contribute to its increased visitation and better promotion in the future.

Research methodology

The analysis of available data on the most significant tourist caves, as well as the development of speleology and speleotourism in BiH, included a review of relevant scientific literature, strategic and spatial planning documents, and available tourism statistics. For the purposes of the research, a quantitative method was used.

A survey was conducted among domestic visitors, focusing on (1) motivations for visiting caves, (2) tourist experiences, and (3) suggestions for improving the tourist offerings of the caves. The survey questionnaire was prepared in local language and distributed directly to visitors on-site, as well as via social networks (Facebook, Instagram, and LinkedIn). The research was carried out from June to September 2023, during the peak tourist season for caves. Since the study pertains to visitor satisfaction with tourist caves, an initial screening question was posed at the start of the online survey: Have you ever visited any caves in BiH? The questionnaire was developed by authors based on existing literature and contained a total of 17 questions, with the first group related to the socio-economic characteristics of the respondents, the second addressing motivations for visiting, modes of transportation, and sources of information about the caves, and the third covering satisfaction with the visit, suggestions for improving the tourist offerings, and potential future visits to tourist caves in BiH.

To determine the potential of individual caves for tourism development, field research assessed their accessibility and availability (internal accessibility, trail slope, and access), as well as aesthetic value, following the methodology proposed by Buzjak (2008). This methodological procedure involves field research to evaluate the condition of the caves within the context of appropriate infrastructure (access roads, parking, walking paths) and access to the entrance, including lighting, guiding services, promotional materials, and adequate management services for the caves. This process results in the identification of several caves with significant tourist value.

Results and discussion
Sample characteristics

This survey comprised 604 respondents. The gender structure of respondents is equally distributed by women (50,7%) and 49,3% (men). Age group 18-25 is the most numerous with 32,7%, followed by the group 26-35 (26,4%). More than half of the respondents are employed (52.8%), while the rest of the respondents are unemployed, students, retired or run their own business. Also, 36,1 % stated that their household income is higher between 1.501-2.000 BAM and only 0,8 % have income less than 500 BAM. Higher income than 2.500 BAM have 8,8% of the respondents (Table 2).

Table 2. Sociodemographic characteristics of respondents

SAMPLE CHARACTERISTICS		N	%
Gender	Men	298	49,3
	Women	306	50,7
Age	18-25	198	32,7
	26-35	160	26,4
	36-45	125	20,7
	46-55	108	17,8
	56-65	6	0,9
	65+	7	1,1
Level of education	Primary school	2	0,3
	High school	303	50,2
	College or university	284	47,0
	Master's or PhD	15	2,5
Employment	Employed	319	52,8
	Unemployed	48	7,9
	I run my own business	43	7,1
	Student	180	29,8
	Retired	12	2,0
Household income (BAM)	< 500	5	0,8
	500 - 1.000	103	17,1
	1.001 - 1.500	107	17,7
	1.501 -2.000	218	36,1
	2.001 - 2.500	118	19,5
	> 2.500	53	8,8

Source: *Primary data*

An important research question related to whether the respondents had visited any of the caves in BiH, which influences their experience and opinion on the quality of the tourist offer. The largest number of respondents, 274 of them (45,4%), had visited the Bijambare cave, while 38,1% respondents (230) had visited Vjetrenica, which is expected given that these are the most attractive tourist caves. Tito's cave was visited by 7,9% (48 respondents), while only 4,6% respondents (28) visited the Ravlića cave. However, considering the fact that Ravlića cave was opened in 2020, in the midst of the COVID-19 pandemic, it is expected that its tourist recognition will take place in the coming period.

As many as 43,9% of respondents (265) informed themselves about caves through the internet and social media, while a significant number (25,8%, or 156 respondents) stated that they received information in school or university. Only 11,4% of respondents (69) gathered information through tourist promotional activities. In this regard, it is not surprising that 74,3% of respondents (449) reported that they did not receive any tourist promotional material during their visit, nor did they have the opportunity to purchase souvenirs.

Regarding means of transportation, 57,3% of respondents indicated that they mostly traveled by their own car, while 32,5% used organized transportation, mostly by bus. Additionally, 70% of respondents stated that they traveled independently, while 30% traveled as part of an organized tourist visit.
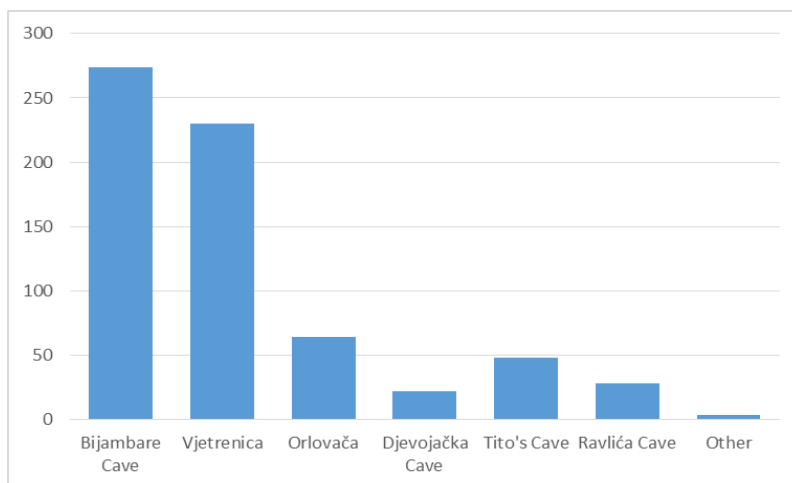
Figure. 1. Caves visited by the respondents
Source: *Primary data*

Main motivation and reasons for visiting caves

Rest and relaxation are cited as important motives for visiting cave destinations, as confirmed by research conducted by Dela Cruz et al. (2019) and Telbisz et al. (2023). The motivations for visiting are equally represented by enjoyment of nature (23,3%) and learning about caves and karst (22,4%) (Table 3).

Table 3. Respondents' main motivation for visit

Main motivation for visit	N	%
Rest and relaxation	149	24,7
Enjoy the nature	141	23,3
Learn more about caves and karst areas	135	22,4
New experiences and adventures	91	15,1
Exploring Cultural and Historical Landmarks	101	16,7
Enjoyment	31	5,1
Engaging in sports	9	1,5
Manifestations	4	0,7
Work	3	0,5
Adrenaline Sports	6	1,0

Source: Primary data

The most significant reason for visiting caves is "easily accessible," cited by 33,8% of respondents, indicating that geographical location and proximity to transportation routes are important factors when selecting cave destinations. This is not surprising, considering that Bijambare cave is among the most visited and is located next to the main road, which significantly facilitates access. The ease of organizing a visit is also an important reason for 18,0% of respondents, which correlates with the previous point. "Recommendations from

family and friends" are important reasons for 20,2% of respondents, while "previous experience with the destination" is important for 17,1%, suggesting that word of mouth influences their travel choices and that they value familiarity and positive past experiences (Table 4).

Table 4. Respondents' reasons for choosing the cave(s) visited

Reasons for choosing the caves visited	N	%
Easily accessible	204	33,8
Recommendations from family and friends	122	20,2
Simplicity of travel organization	109	18,0
Previous experience with the destination	103	17,1
Tourist attractions nearby	101	16,7
Visiting a destination that many people consider a must-see	93	15,4
Attractiveness/Image of the cave	86	14,2
Online promotion of speleotourism	59	9,8
Good price	58	9,6
Package deals from travel agencies	13	2,2
Field/study trip	2	0,3

Source: Primary data

Satisfaction with the tourist offer of the visited caves
Respondents were asked to rate the level of their satisfaction and tourist experience from 1 to 5 (Figure 2). The high percentage of positive ratings (55,5% rated their experience as a 4 and 26,2% as a 5) indicates that the cave experience is likely meeting visitors' expectations, which may correlate with the previous findings about respondents' motivation and reasons for choosing destination.
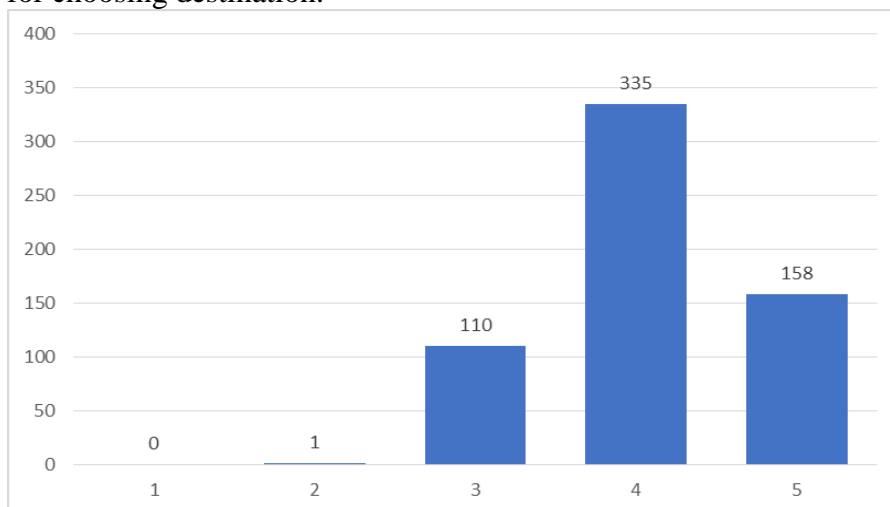

Figure. 2. Level of satisfaction with the visited cave
Source: Primary data

Table 5. Suggested improvements for cave tourist offer

Suggested improvements for cave tourist offer	N	%
Better-maintained paths	168	27,8
Better tourist signalization	134	22,2
Information about the culture and history of the area	103	17,1
More hospitality establishments	101	16,7
Bicycle and sports equipment rental options	97	16,1
More parking spaces	74	12,3
Detailed tourist maps	68	11,3
Tourist promotional materials	63	10,4
Information about the natural features of the area	47	7,8

Source: Primary data

Respondents were also asked to express their opinion on what is missing from the tourists' offerings of the caves they visited. The most common suggestion for improvement referred to tourist paths (27,8%) and tourist signalization (22,2%), which indicates that most visitors prioritize safety as well as easy access (Table 5). Respondents also expressed a desire for more information about the culture and history of the area (17,1%), which suggests that visitors are interested in learning more about the caves which correlate with one their main motive for visiting (Learn more about caves and karst areas). Although a large percentage of respondents stated that they did not receive tourist promotional materials during their visit to the cave, the low percentages related to 'detailed tourist maps' (11,3%) and 'tourist promotional materials' (10,4%) suggest that these are not of great importance to tourists, considering the availability of information online.

When asked about their future intentions, 95,7% of respondents stated that they intend to visit another cave in BiH. A possible reason could be an interest in karst phenomena, a desire to explore new cave destinations, or the positive experience they had during their previous visit. Additionally, for previously mentioned reasons, the proximity and accessibility of caves to their place of residence, as well as recommendations from friends and family, contribute to the high percentage.

After conducting field research, several caves have been identified as having certain tourist value. In addition to the already established caves of Vjetrenica, Bijambare, Ravlića, and Tito's cave, as well as Orlovača, the following caves stand out: Djevojačka cave (Kladanj), Vaganska cave (Šipovo), Rastuša (Teslić), and the Source of Mokranjska Miljacka (Pale) (Figure 3).
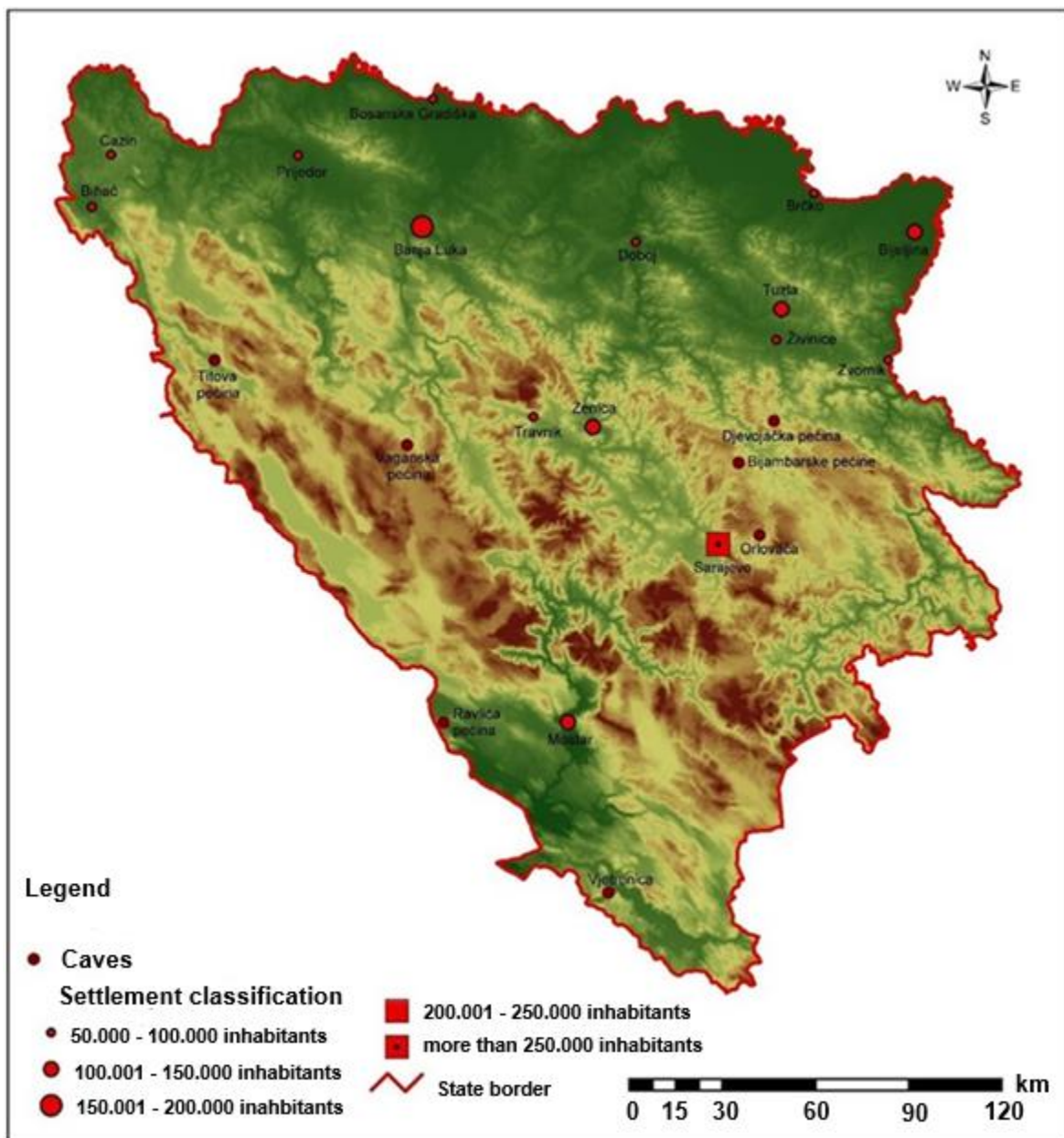
Figure. 3. The most important caves for the development of speleological tourism in BiH
Source: Authors

Djevojačka cave is in the municipality of Kladanj, in the far south of the Tuzla Canton. The cave is approximately 8 km away from the municipal center and the main road M-18, making it favorable for its tourism valuation. It is partially arranged for tourist visits, and it particularly stands out for its significance in the development of religious tourism. This location is the second largest Muslim pilgrimage site in BiH. During the time of prayer at the end of August, between 20,000 and 30,000 visitors come to this cave (Mulaomerović, 2009). A special tourist attraction of this site are the drawings on the cave walls, which date back to the Middle Ages. The local community has provided improvised lighting, but this should be removed, and adequate lighting should be established throughout the cave. There is no adequate parking or access facilities. The offerings, accompanying amenities, and marketing are modest, although the cave and its surroundings have tourist potential.

Rastuša near Teslić holds great significance from paleontological and archaeological perspectives, as remains of animals (primarily bears) and human tools from the last Ice Age have been found in it. In addition to cave formations, the walls of the cave are decorated with what is known as "leopard skin", which places Rastuša among the rare European caves that possess this still unexplained natural phenomenon. The cave was declared a natural monument in 2012, and despite earlier neglect, it has been opened for tourist visits.

The main attraction of the Source of Mokranjska Miljacka cave is the fact that it is one of the longest caves in BiH. To date, 7,100 meters of its channels have been explored. This site is recognized as a highly attractive location for adventure speleotourism. Exploring the interior of the cave is also significant from a biological perspective.

Vaganska cave is located in the western part of BiH, near the village of Vagan. Administratively, it belongs to the municipality of Šipovo. It is 165 km away from Sarajevo, situated close to the main road Šipovo-Kupres. The richness of cave formations and its favorable location provide a solid foundation for the valorization of the cave for tourism purposes (Sivac, 2023).

Moreover, due to their dimensions, diversity of cave formations, and cultural and historical significance, the caves of Dugovještica (Rogatica), Mračna cave (Rogatica), Ledenjača (Foča – RS), Badanj (Stolac), Megara (Hadžići), Ledenica (Bosansko Grahovo), Dabarska cave (Sanski Most), Hrustovača (Sanski Most), and Fajtovačka cave (Sanski Most) also have long-term potential. However, for their tourism valuation, there should be intensive work on improving road infrastructure, arranging them for visits (construction of paths, lighting, information panels, etc), and better promotion.

Conclusion

The results of this research represent a theoretical contribution to the development and improvement of speleotourism. Although the research is limited to a certain area (BiH) and conducted over a shorter period, it serves as a preliminary study that can provide a basis for future research.

Although BiH has significant potential for the development of this selective form of tourism, the current tourist infrastructure and development strategies have not adequately valorized the caves as tourist resources. While some caves, such as Vjetrenica and Bijambarska caves, are open for visits, many remain underutilized due to a lack of information and weaker promotion. Nevertheless, the growing trend of visitors in recent years indicates an interest in these sites. The research revealed that speleotourism does not have a significant place in BH tourism, and to realize its full potential, it is essential to invest in infrastructure development, visitor education, and effective promotion. Including speleotourism in strategic plans can significantly contribute to the sustainable development and protection of these natural resources.

Analysis of visitor satisfaction indicates a high level of contentment, emphasizing the natural values of the area (e.g., the richness of cave decorations), accessibility, and ease of organizing visits as key factors. However, there is a clear need for improving tourist facilities, such as better-maintained paths, tourist signage, and additional services (e.g., bike rentals), alongside better promotional activities.

Given that most caves are located in the karst regions of BiH, which mostly record a lower index of development for municipalities/cities, the tourist valorization of speleological systems can contribute to improving the quality of life for the local population, as tourism fosters the development of complementary activities. Planned tourism development favors the practice of sustainable tourism, which is becoming increasingly important due to the evident impact of tourism on the environment and the population.

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Tourism Development Strategy of the Republika Srpska for the period 2021-2027

Tourism Development Strategy of the Federation of Bosnia and Herzegovina for the period 2022-2027

DYNAMICS AND FINANCING OF THE STRATEGIC INVESTMENTS: AN EXAMPLE OF SLOVENIAN COMPANIES

- ABSTRACT -

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As the main purpose of his research, the author shows how companies in the real sector of the economy carry out their investment activities, especially how they invest in long-term fixed assets, in terms of both investment dynamics and investment financing, with an emphasis on strategic investments. The latter are the only ones that ensure their growth. In the theoretical part of the paper, the author presents certain laws that apply in the field of investment activity, addressing the issue of the intensity of the investment activity of companies over time and the issue of providing the necessary financial resources for the implementation of strategic investments. In his paper author gives significant weight to the dynamics of investing itself. Depending on investment frequency, investment activity in companies takes place in two ways. First, investments in companies take place routinely. Second, from time to time companies are faced with a larger comprehensive investment project (a lumpy, non-divisible investment project). Author describes lumpy investment as an investment-to-capital ratio that surpasses a certain threshold, called the investment spike.

Based on a thorough review of the literature dealing with the financing of corporate investments, the author has outlined certain theories and laws that apply in this area. Thus, under normal conditions, companies can maintain their capital adequacy when they invest a lot, take on heavy debt, and pay off said debt after the investment spike. On the other hand, relatively large investment projects require diverse financial resources. If there are not enough internal resources in the company, the company must find external resources if it is to implement its investment. The author discerns several possible methods related to the external financing of investments. As far as the research methodology, in the theoretical part of the study, the author used the scientific method of description, as well as the scientific methods of classification, comparison, analysis, and synthesis. In the empirical part of the study, the author used statistical methods and processed the data using the SPSS statistical package. The data were captured at a single point in time (cross-sectional data). The primary data were collected in the period January–April 2017 by means of the questionnaire.

In the empirical part of the paper, on a sample of Slovenian large and medium-sized companies from the real sector of the economy, the investment activity of companies in the period 2010–2017, i.e. after the great financial crisis and economic recession, is shown. This is done through the prism of various factors and their effects on investment ability. The author puts forward several research hypotheses (7), which he fully confirms. The goals of the author's research represent a relevant contribution to investment theory as well as to real-world practice, suggesting that company management should be encouraged to achieve lasting competitive advantages so as to strengthen the company's investment ability continuously. The results of this study offer quite a few opportunities for further research in the area under consideration.

Keywords: strategic investments, investment opportunities, investment dynamics, investment financing, investment ability.
JEL classification: G31

GOING CONCERN ASSESSMENT – THE CHALLENGES FOR ACCOUNTANTS

-ABSTRACT-

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The assumption going concern in the financial statements of companies implies the intention of the entity to continue operations in the future. According to the requirements of International financial reporting standards, each business entitiy is obliged to publish information about the subject's ability to continue with unlimited operations in the notes to the financial statements. Although the management has the primary responsibility for presenting the going concern assumption, accountants, by preparing financial statements, also take the responsibility for evaluating the company's ability to continue operating. In addition, auditors have the task of assessing the going concern presumption through the financial auditing in accordance with the requirements of international standards on auditing. In the light of different international and national frameworks, there are different regulations related to the assessment and publishing of information about the going concern assumption. This paper analyises the guidelines prescribed by current international accounting and auditing standards and theoretical models that accountants can apply during the preparation of financial statements. Taking into account the lack of research related to the issue of going concern assesssment in the local context, the main goal of the subject research is: to investigate and analyze whether and which positions of financial statements, and whether and which financial indicators based on the positions of financial statements of companies in the Federation Bosnia and Herzegovina can provide insight into potential problems with time-limited business operations. The research was conducted on a sample of companies from the Federation of BiH that filed for bankruptcy or liquidation in 2022 or 2023, and a sample of companies from the Federation of BiH that did not publish financial problems in the highlighted years. The analysis of financial positions and financial indicators were carried out on the basis of financial reports for 102 companies over a five-year period (2018 – 2022). The results of the research showed that the positions: equity and net profit, as well as indicators: current ratio, quick ratio and financial leverage can serve accountants in the assessment of whether the company has potential problems for continuing operations. Posting such analysis in the notes to the financial statements, accountants can justify the preparation of financial statements on a going concern basis, in accordance with IFRS requirements.

Keywords: going concern, financial statements, financial positions, financial indicators, accountants.
JEL classification: M40

1. Introduction

The going concern concept represents a topic that has become especially relevant in the recent period, caused by the situation of the COVID-19 pandemic, when a large number of companies were faced with challenges such as business decline, bankruptcy or liquidation. However, even before the onset of the coronavirus pandemic, the going concern concept was recognized as a key postulate in accounting and represented the basis of the previous Framework for the preparation and presentation of financial statements (1999) as well as the current Conceptual Framework for Financial Reporting (2010) and International Financial Reporting Standards.

According to International Accounting Standard (IAS) 1 - Presentation of financial statements (p.26) if the entity previously achieved a profit and had unhindered access to financial resources, it can be concluded that the accounting assumption going concern is appropriate without the need for detailed analysis. However, in other situations, factors such as current and expected profitability, debt repayment plans and possible alternative sources of financing need to be carefully considered before concluding about the appropriateness of the going concern assumption. In today's challenging economic environment, an entity's operations can be affected by a wide range of factors compared to the past, and IAS 1 requires entity to consider all available information about the future.

Accountants indirectly assume the responsibility for the preparation and presentation of financial statements, which, in accordance with the going concern principle, also includes an assessment of the company's ability to continue operating. There are different approaches and methods for evaluating a going concern. Certain experts investigate the use and importance of financial indicators in this context, others emphasize the importance of cash flow, while a smaller number has recently been engaged in research that includes qualitative factors in the assessment.

Taking into account the above, as well as the lack of research regarding the issue of going concern, especially in local conditions, and the fact that companies are increasingly encountering unexpected financial challenges, there is a need to develop tools that can predict possible problems in the future of the company's operations. Accordingly, the primary goals to be achieved through this research work are:

- Investigate and analyse whether financial statement positions can provide insight into potential problems with going concern and
- Investigate and analyse whether financial indicators based on financial statement positions can provide insight into potential going concern problems.

The stated goals should ensure that the research results, not only contribute to the academic narrative, but also improve practical application in accounting practice, providing relevant guidelines for the assessment of going concern of economic entities.

2. Literature review

The going concern concept is considered as basic postulate in accounting because it represents a fundamental assumption about the nature and continuity of business operations of companies. The postulates are not specific to any particular accounting standard or practice. They are universally applicable principles that support the entire field of accounting and apply to all entities for the preparation of financial statements, whether they are large corporations, small businesses or non-profit organizations (Moontiz, 2021). While the going concern concept is a postulate that assumes business continuity, it also requires management to assess and disclose any uncertainties or events that may cast doubt on the entity's ability to continue with the going concern assumption. This dual aspect of the going concern concept ensures that potential risks are transparently communicated to users of financial statements.

Although the generally accepted international accounting standards recognize the going concern as a fundamental assumption for the preparation of financial statements, a large part of the accounting regulation has not yet given sufficient and clear guidelines, and there are great doubts during application of this concept (Sever Mališ & Keglević Kozjak, 2016). In addition to the previously mentioned IAS 1, at the beginning of 2021 the International Accounting Standards Board (IASB) published a document about the going concern concept with a focus on disclosure called "Going concern – a focus on disclosure" (IASB, 2021). The document was published during the period when the Corona virus pandemic and the restrictions caused by it were at their peak. Namely, in the period 2020 -2021. a large number of companies encountered problems in business, and many were even forced to initiate bankruptcy or liquidation proceedings and to suspend their operations. Deficiencies occurred during the going concern assessment and consequences of insufficient attention to the mentioned concept were observed and IASB tried to solve them by special document focused on the basic accounting postulate.

Considering all the above, additional question arises: who is responsible for the evaluation the going concern of company. According to research by Hospodka (2018), that responsibility should primarily be attributed to the management of the company because it has the best understanding of the financial situation of the company and if there is any doubt about its ability to continue in the future, the information should be disclosed in the notes accompanying the financial statements. However, the problem arises because the management usually refuses and avoids announcing any doubts about the going concern of the company. Some literature claims that this could be partially solved by introducing an obligation for management to publish a confirmation about going concern (Venutti, 2004).

Additionally, according to Hospodka (2018), in the case of doubt that the going concern of entity was not disclosed in the notes to the financial statements (if it existed), it can be concluded that accounting does not fulfil its primary role: management control. Therefore, the following responsible parties for the going concern assessment process are accountants. In the previous literature, there is little information about the responsibility of accountants in the process of going concern. However, accountants as parties responsible for the preparation and presentation of financial statements can be considered practically responsible for the assessment of the company's ability to continue operating in accordance with the going concern principle and its publication within the notes - part of the financial statements set.

Various approaches and methods are used to estimate the going concern. Some authors base the going concern assessment on the analysis of the positions of the financial statements, while others use financial indicators that can provide insight into the company's financial condition. In their research, Gromis di Trana and Alfiero (2019) presented the use and importance of financial indicators when assessing a going concern. Since liquidity difficulties cause financial problems and threaten the going concern, liquidity ratios are the central research variable in numerous studies of going concern assessment (Zmijewski 1984; Martens, Bruyneseels, Baesens, Willekens & Vanthienen, 2008; Korol, 2013; Cultrera & Bredart, 2016; Rezende, Montezano, Oliveira & Lameira, 2017; Svabova, Durica & Podhorska, 2018; Bogdan, Šikić & Bareša, 2021). Considering that inventories often represent a significant part of current assets, but they are characterized by difficult liquidity, the quick ratio is used as a more reliable measure of liquidity. Additionally, studies show that companies with poor solvency, i.e., those with weak liquidity ratios and high levels of indebtedness, fall into the high-risk category (Rasplock, 2001; Weiss 2002). Financial statements positions that showed significant predictability, as independent items and also through the financial indicators, are capital and net profit (or financial result, in general). These are the key positions of the balance sheet and income statement, which, thanks to the method of recognition and valuation, synthesize the effect of all financial positions and business events on the company's operations.

3. Research methodology

In accordance with the presented research problem, as well as the review of previous literature the following research hypotheses were set and tested in the research part of the paper:
- H[1]: Financial statement positions can serve as a valuable tool for accountants in assessing going concern.
- H[2]: Financial indicators based on financial statement positions can serve as a valuable tool for accountants in assessing going concern.

3.1. Relevant sample information

The backbone of the research is the comparative method applied to two samples. One sample consisted of companies with expressed business problems. The criterion for concluding that the company has business problems was considered to be reported bankruptcy or liquidation procedure. The sample included 51 companies that operate in the territory of FBiH, have initiated bankruptcy proceedings in 2022 or 2023, and have available financial reports on Bisnode for the period 2018 - 2022. The second sample consisted of 51 companies that did not record problems in business during the observed period, rated with grade A, which Bisnode assigns as the best grade for companies that record exceptionally good operations based on data from the companies' financial reports.

3.2. Research variables

According to earlier research findings, net profit and capital were used as the most relevant positions of financial statements for the assessment of going concern, and as the most relevant financial indicators used are: current ratio, quick ratio and financial leverage. The method of calculating the research variables was shown in table 1.

*Table 1. **The method of calculation of research variables***

Variable	Calculation
Financial result	income statement item: net profit or loss for the period
Capital	balance sheet item: total assets - total liabilities
Current ratio	current assets / current liabilities
Quick ratio	(current assets – inventories) / current liabilities
Financial leverage	total debt / equity

Source: Anggana (2013), Sever Mališ & Keglević Kozjak (2016), Klikovac, Varović & Volarević (2019).

Reference points were defined for selected research variables and presented in Table 2.

*Table 2. **The reference points of research variables***

Variable	Reference point	Description
Financial result	>0	Satisfying
Capital	>0	Satisfying
Current ratio	>1	Satisfying
Quick ratio	>1	Satisfying
Financial leverage	<2	Satisfying

Source: Author's selection

The reference point >0 was shown as a satisfactory amount of capital, which means that the amount of capital is satisfactory if it is positive, and if it is negative, it is an indicator for potential concern. The same is valid for the financial result, where >0 was also used as a reference point, which means that a negative financial result indicates that the subject is facing potential problems in business.

Current and quick ratio belong to the financial indicators of liquidity. A reference point for both indicators was >1. If the current ratio is greater than 1, it means that the company has a larger amount of current assets compared to current liabilities and is able to settle its current liabilities in the short term. If the quick ratio is greater than 1, it means that the company has a larger amount of cash, cash equivalents and current receivables and investments in relation to current liabilities and is able to settle its current liabilities in the short term without using inventories. Current and quick ratios less than 1 indicate liquidity problems.

Financial leverage is an indicator from the group of solvency indicators. For financial leverage, it is quite challenging to choose an appropriate reference point, because it often depends on the industry and it varies with individual company strategy. However, the literature most often shows two basic reference points for this indicator: financial leverage less than 1, which represents a more conservative capital structure with less reliance on debt financing and financial leverage greater than 2, which represents a somewhat more 'aggressive' capital structure with a much greater degree of reliance on debt financing.

3.3. Research results

The research results were presented for each variable individually. The goal is to show the number of companies that recorded the corresponding indicator above and below the selected reference point and its average increase or decrease for the period 2019 – 2022. The increase was shown for the mentioned period due to the fact that financial data for 2017 were not available, which were needed to calculate the change of value in 2018. All of the above were calculated for both selected samples. The first sample, which consists of companies with potential business problems, is referred to below as *Sample 1*. The second sample which consists of companies with an outstanding creditworthiness is referred as *Sample 2* in the following text. In order to test the statistical significance of the observed parameters, the non-parametric Mann-Whitney U test was used.

3.3.1. Financial result

The tables below show the structure of companies according to the nature of the achieved result as well as the average percentage change in the financial result over the observed period.

Table 3. Financial result – the sample structure according to the reference value

Financial result	2018		2019		2020		2021		2022	
Sample 1										
<0	13	25%	17	33%	22	43%	23	45%	37	73%
>0	38	75%	34	67%	29	57%	28	55%	14	27%
Total	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*
Sample 2										
<0	0	0%	0	0%	0	0%	0	0%	0	0%
>0	51	100%	51	100%	51	100%	51	100%	51	100%
Total	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*

Source: Author's calculation

According to the results shown in the tables above, it can be concluded that no company in Sample 2 reported negative financial result in a period of 5 years. On the other hand, Sample 1 shows an increase in the number of companies that recorded a negative financial result in the period from 2018 to 2022. For example, in 2022, i.e. in the year of initiation of the bankruptcy/liquidation procedure or in the year before the initiation of the bankruptcy/liquidation procedure, 37 companies recorded a negative financial result, which represents 73% of the companies from the selected sample. According to the results shown in Table 3, it can be concluded that there was a noticeable increase in the number of companies from the Sample 1 with recorded a negative financial result as the date of initiation of the bankruptcy/liquidation procedure approached. Considering that, in order to get an even clearer picture, the table below show the percentage increase/decrease in the financial result for both samples for the period 2019 – 2022. During the analysis, a large number of companies with extreme percentage changes (deviations, outliers) were observed, and in order to avoid a distorted picture of the average increase/decrease, instead of calculating the standard average, the median was used as a statistical measure. Firstly, the percentage change was calculated for each company individually in the observed year compared to the previous one. After that, the statistical measure of the median was applied to the obtained results of percentage changes of individual companies to calculate the average percentage change for all companies within the sample.

*Table 4. **Financial result - Average percentage change***

Financial result	2019	2020	2021	2022
Average Percent Change - Sample 1	-9%	-77%	-34%	-51%
Average Percent Change - Sample 2	9%	2%	45%	29%

Source: Author's calculation

Based on the results shown in Table 4, it can be concluded that on average, companies from Sample 1 record a decline in financial results for the period 2019 – 2022 while the companies from Sample 2 on average record an increase in results from year to year, although this increase varies during the period. So, for example, it is noticeable that the particularly problematic year for companies from both samples was 2020, when companies from Sample 1 on average recorded the biggest drop in financial results (77%), and companies from Sample 2 in the same year recorded the smallest increase in financial results (2%) in the observed period. It is important to take into account that this is the year of the beginning of the Corona virus pandemic, when the economy had experienced a large decline at the global level. In the next year, the companies from both samples have managed to recover in some way. Companies from Sample 1 managed to mitigate the decline in financial results in 2021 compared to 2020 from 77% to 34%, while companies from Sample 2 for the same period managed to increase their financial result by 45% on average. Such example can serve as a good lesson that there are a large number of unpredictable factors that can affect a company's operations.

According to the results obtained based on the analysis of the financial results for 102 companies for the period 2018 – 2022, it can be concluded that the financial result can provide significant insight into the financial health of the company. By monitoring the changes in the financial result for a certain period, a significant assessment can be made about the temporal continuity of the business. Companies from Sample 2, which are considered financially healthy companies, do not record a negative result for the observed period, and already based on that, it can potentially be concluded that the company should not have problems with the continuation of business. On the other hand, Sample 1 has recorded a constant decline in the financial result for the observed period, and the increase in the number of companies recording a negative result. This

shows that continuous monitoring of the financial result is extremely important. The company may not currently record a negative result, however, if a decline in results was recorded through financial analysis, this should raise suspicion among users of financial statements.

3.3.2. Capital

The structure of the companies in the samples according to the character of capital, and the average percentage change in capital during the analysed period were shown in the following tables.

*Table 5. **Capital – the sample structure according to the reference value***

Capital	2018		2019		2020		2021		2022	
Sample 1										
<0	9	18%	9	18%	11	22%	15	29%	22	43%
>0	42	82%	42	82%	40	78%	36	71%	29	57%
Total	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*
Sample 2										
<0	0	0%	0	0%	0	0%	0	0%	0	0%
>0	51	100%	51	100%	51	100%	51	100%	51	100%
Total	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*

Source: Author's calculation

The results in table 5 have a lot of similarities with the results in the table related to the financial result. No company from Sample 2 records negative capital in the period 2018 – 2022, while the situation with companies from Sample 1 is quite different. In 2018 already, 9 companies recorded negative equity, and that number will increase after 2020, so in 2022, 22 companies from Sample 1 with negative capital were recorded, which represents 43% of the total sample. Furthermore, table 6 shows the average percentage change in capital for companies from both samples for the period 2019 – 2022. After additional analysis of the structure of samples, and the fact that capital is a financial statement position that in a large number of cases remains the same from period to period, to calculate the average, the arithmetic mean was used as the standard mean value.

*Table 6. **Capital - Average percentage change***

Capital	2019	2020	2021	2022
Average Percent Change - Sample 1	-86%	-12%	49%	-142%
Average Percent Change - Sample 2	13%	16%	28%	30%

Source: Author's calculation

According to the data from Table 6, it can be concluded that companies from Sample 1 in the period 2019 – 2022 recorded capital growth only in 2021. After additional analysis of the Sample, it was found that companies had significant increase in their capital in 2021, and for this reason the average has increased significantly. Regarding that recapitalization was done in 2021, the assumption is that investors or owners tried to mitigate the decline in business caused by the coronavirus pandemic. Except for the characteristic year 2021, for all other periods from 2019 to 2022, companies from Sample 1 record a decline in total capital. On the other hand, the companies from Sample 2 record an increase in all years during the period 2019 – 2022.

Taking into account the results of the research of financial results and capital for the period 2018 - 2022 for 102 companies, which were presented above, the first hypothesis of the paper can be accepted, i.e. financial statement positions can serve as a valuable tool for accountants in assessing going concern. Analysing and monitoring data in the years before the initiation of bankruptcy or liquidation proceedings for 51 companies, and which can be identified with the cessation of business, can lead to the conclusion that the initiation of bankruptcy or liquidation proceedings was even certain and expected, because the mentioned companies recorded a negative financial result and capital from period to period, or a decrease in financial result and capital over a period of 5 years.

3.3.3. Current ratio

The following tables show the results related to the current ratio for 102 companies. The reference point for the current ratio is 1, and the Table 7 shows the structure for both samples according to the reference value for the analysed period.

Table 7. Current ratio – the sample structure according to the reference value

Current ratio	2018		2019		2020		2021		2022	
Sample 1										
<1	16	31%	18	35%	21	41%	21	41%	24	47%
>1	35	69%	33	65%	30	59%	30	59%	27	53%
Total	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*
Sample 2										
<1	0	0%	0	0%	0	0%	0	0%	0	0%
>1	51	100%	51	100%	51	100%	51	100%	51	100%
Total	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*

Source: Author's calculation

According to the current ratio, all companies in Sample 2 should be able to meet their current liabilities by using current assets. The situation was constant for a period of 5 years. The results from Sample 1 show an increase in the number of companies with a current ratio less than 1. This would mean that an increasing number of companies from Sample 1, as the date of initiation of bankruptcy or liquidation proceedings approaches, are facing liquidity problems. Looking at Table 7, it can be concluded that more than 50% of companies, even in the year of initiation of the bankruptcy/liquidation procedure or in the year before its initiation, did not record problems with liquidity. Therefore, in order to gain a better insight into the liquidity indicator, the table below shows a comparison of the average current ratio for both samples over a 5-year period by using the median as statistical measure.

Table 8. Current ratio – Average value and percentage change

Current ratio	2018	2019	2020	2021	2022
Sample 1					
Average value	1,34	1,39	1,24	1,21	1,20
Average percentage change	N/D	4%	-11%	-2%	-1%
Sample 2					
Average value	5,23	4,64	6,91	7,88	8,36
Average percentage change	N/D	-11%	49%	14%	6%

Given that the current ratio is an indicator for which the acceptable and satisfactory reference value can be accurately determined, it is possible to display them for both samples. On the other hand, the financial result and capital are positions from the financial statements for which there were not acceptable or non-acceptable value determination, because these positions largely depend on the size of the company, industry, etc., and so that their average values were not presented in the previous tables. Table 8 shows the average values of the current ratio for a period of 5 years and its average percentage changes for a period of 4 years for companies from both samples. The average percentage change for 2018 was not shown due to the unavailability of data for the period of 2017. From Table 7 it is noticeable that slightly more than 50% of companies from Sample 1 had a current ratio above 1, and Table 8 shows that the current ratio for these companies were between 1.2 and 1.3. Also, a decrease in the current ratio from 2019 to 2022 was visible for companies from Sample 1. On other side the current ratios for companies from Sample 2 were between 5 and 8 from 2018 to 2022. Also, a drop in the current ratio for companies from Sample 2 was noticeable in 2019 while an increases in the current ratio were recorded in the following years. According to the data from Tables 7 and 8, it could be concluded that the companies from both samples were relatively liquid, and they were able to settle their current liabilities by using their current assets. Therefore, for the purpose of determining liquidity, a somewhat stricter indicator is often used, quick ratio.

3.3.4. Quick ratio

By analysing the current ratio, it could be concluded that the companies from both samples were liquid during the analysed period. The tables below show results of quick ratio analysis. Quick ratio is an indicator that excludes inventories from calculation. Quick ratio is often considered as a more relevant liquidity indicator, precisely for the aforementioned reason. Inventories in certain industries and in certain companies sometimes are not so liquid, i.e. they cannot be sold in a short period. With the exclusion of inventories, the quick ratio provides a more conservative estimation of a company's ability to meet its short-term liabilities. In times of financial stress or economic crisis, a company may have difficulties with quickly converting its inventories into cash. The quick ratio therefore gives a more accurate picture of a company's immediate liquidity. The quick ratio is particularly useful for assessing a company's ability to meet its most immediate financial obligations, such as paying off short-term debts or covering operating costs. This can be especially important in industries with seasonal fluctuations or where sudden financial challenges may arise. The results of the quick ratio analysis are shown below.

Table 9. Quick ratio – the sample structure according to the reference value

Quick ratio	2018		2019		2020		2021		2022	
Sample 1										
<1	24	47%	26	51%	28	55%	26	51%	26	51%
>1	27	53%	25	49%	23	45%	25	49%	25	49%
Total	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*
Sample 2										
<1	5	10%	3	6%	1	2%	0	0%	1	2%
>1	46	90%	48	94%	50	98%	51	100%	50	98%
Total	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*

Table 9 shows the number of companies from Sample 1 that had a quick ratio less than 1 for a period of 5 years - more than 50% such companies, which would mean that more than 50% of companies from Sample 1 in the period before the initiation of bankruptcy or liquidation proceedings showed problems with liquidity. On the other hand, if a comparison was made with the companies from Sample 2, it is evident that these companies generally did not have problems with liquidity. In 2022, only one company from Sample 2 had potential problem with meeting current liabilities by using current assets excluding inventories. Also, according to the data shown in the table above, a more conservative approach in the calculation of quick ratio can be additionally confirmed by its comparation with the current ratio. If Table 9 was compared with the results shown in Table 7, it can be concluded that according to the current ratio, no company from Sample 2 had problems with liquidity, while Table 9 - which represents a quick ratio - shows that a certain number of companies from Sample 2 potentially had liquidity problems. In any case, that number is rather insignificant considering the number of companies in Sample 1 that were reporting problems with the settlement of current liabilities by using current assets excluding inventories. Also, the table below shows the average value of the quick ratio and the average percentage change for companies from both samples for a period of 5 years.

Table 10. **Quick Ratio – Average value and percentage change**

Quick ratio	2018	2019	2020	2021	2022
Sample 1					
Average value	1,01	0,97	0,75	0,85	0,90
Average percentage change	N/D	-4%	-23%	13%	6%
Sample 2					
Average value	3,12	3,52	3,26	4,71	5,96
Average percentage change	N/D	13%	-7%	44%	27%

Source: Author's calculation

According to the data in Table 10, the companies from Sample 1 had a quick ratio greater than 1 only in 2018. This suggests that, on average, companies from Sample 1 experienced liquidity issues according to the quick ratio four years before the initiation of bankruptcy or liquidation proceedings. Although there is a visible increase in the quick ratio from 2020 to 2022 for companies from Sample 1, that increase is still not enough for the average quick ratio to be satisfactory according to reference measures. Further analysis of the data shows that companies from Sample 2 compared to Sample 1 have a significantly higher quick ratio. Also, increase in the quick ratio for companies from Sample 2 was noticeable through the whole analysed period, except for 2020 which was the year of the Corona virus pandemic, when business to a large extent recorded a decline at the global level. However, already in the following year, there was a noticeable recovery, so the ratio grows by 44% in 2021 compared to 2020.

3.3.5. Financial leverage

Financial leverage can largely serve as an assessment of a company's financial risk. Namely, high financial leverage often makes a company more vulnerable during major economic downturns or changes in interest rates. Accordingly, the following tables show data on financial leverage for Sample 1 and Sample 2 for a period of 5 years. The sample structure according to reference point value 2 were shown in Table 11. According to the previous discussion, financial leverage below 1 is considered satisfactory, while a ratio above 2 is concerning. In this regard, 2 was taken as a

reference point, which means that for all company's coefficient financial leverage below 2 is considered as satisfactory.

Table 11. **Financial leverage – the sample structure according to the reference value**

Financial leverage	2018		2019		2020		2021		2022	
Sample 1										
<2	36	71%	32	63%	32	63%	38	75%	39	86%
>2	15	29%	19	37%	19	37%	13	25%	12	14%
Total	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*
Sample 2										
<2	49	96%	49	96%	50	98%	51	100%	51	100%
>2	2	4%	2	4%	1	2%	0	0%	0	0%
Total	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*	*51*	*100%*

Source: Author's calculation

According to the data from Table 11, it can be concluded that most of the companies from Sample 1 recorded a satisfactory value of financial leverage during all 5 years. The number of companies with financial leverage above 2 even decreases from period to period. However, by looking into the results for Sample 2, it is noticeable that only 2 companies recorded financial leverage greater than 2 in 2018 and 2019, while in 2021 and 2022 no company from Sample 2 had a recorded financial leverage greater than 2. Therefore, it could be concluded that even satisfactory financial leverage can lead to bankruptcy or liquidation, so an excessive value of financial leverage should automatically alarm the users of financial statements as a sign that the company is experiencing potential problems. The following table shows average values and percentage changes of financial leverage for both samples.

Table 12. *Financial leverage - Average value and percentage change*

Financial leverage	2018	2019	2020	2021	2022
Sample 1					
Average value	15,52	12,90	13,83	5,33	3,57
Average percentage change	N/D	-17%	7%	-61%	-33%
Sample 2					
Average value	0,45	0,46	0,34	0,25	0,20
Average percentage change	N/D	1%	-27%	-26%	-20%

Source: Author's calculation

According to the first comparison of the average values of financial leverage, it can be concluded that the companies from Sample 1 generally had a significantly higher financial leverage on average compared to the companies from Sample 2. Also, it is important to note and emphasize that this value for Sample 1 decreased during the analysed period, however, that reduction is still not enough for the indicator to be within a satisfactory reference point. On the other hand, companies from Sample 2 on average have a financial leverage less than 1 for all 5 years. Companies from Sample 2 also recorded a decrease in financial leverage from period to period, which is a good sign.

3.3.6. Synthesis of research results

After presenting the analysis of financial indicators for five years period for 102 companies divided into 2 different samples, it can be concluded that monitoring financial indicators over a certain period gives significant value for understanding the financial health of the company. Through this research, only some of the basic indicators were shown (current ratio, quick ratio and financial leverage), however there is a large number of liquidity and solvency indicators. It was possible to conclude from the above 3 indicators that they can provide significant insight into the financial stability of a company, and certainly with a more comprehensive and extensive analysis that includes a greater number of indicators, even wider insight and understanding of the business of a certain company could be obtained. Research results show that sometimes even companies with satisfactory financial indicators can face problems in business, but it is certain that when a company shows problems with liquidity or solvency it should be a warning sign for investors, owners, management and other users of financial statements, as well as accountants who prepare financial statements. Ultimately, the accountant prepares the financial statements in accordance with the principle of going concern or not, depending on assessment performed.

In order to examine the existence of statistically significant difference in the median values of the observed indicators between companies in sample 1 and 2, the non-parametric Mann-Whitney U test was used. The test results are presented in the Table 13.

Table 13. **Mann-Whitney U test results based on comparison of observed samples**

Year	Current ratio	Quick ratio	Financial leverage
2018	0.000***	0.000***	0.001***
2019	0.000***	0.000***	0.003***
2020	0.000***	0.000***	0.022**
2021	0.000***	0.000***	0.587
2022	0.000***	0.000***	0.000***
Note: * p ≤ 0.10; ** p ≤ 0.05; ***p ≤ 0.001			

Source: Author's calculation

It is observed that the current, as well as the quick ratio were statistically significantly higher in companies with an outstanding creditworthiness rating (Sample 2), compared to companies with potential business problems (Sample 1) during all observed years. Furthermore, the use of financial leverage is statistically significantly higher in companies with potential problems in business (Sample 1) during all years except 2021. This confirms the second hypothesis of the paper, i.e. financial indicators based on financial statement positions can serve as a valuable tool for accountants in assessing going concern.

4. Conclusion

Although the going concern assumption is considered as fundamental in the accounting standards for the preparation of financial statements, the current accounting regulation still leaves a lot of space for a more precise definition of its application. It often happens that companies submit their year-end financial reports without any evaluation of going concern.

In accordance with the above, one of the goals of this paper was to present examples and ideas regarding the going concern assessment, and which accountants could very easily apply in their regular routine, especially at the end of the reporting year for the preparation and presentation of annual financial reports. The research was conducted by using a comparative method based on historical data of companies that initiated bankruptcy or liquidation proceedings. The goal is to come to a conclusion whether such an outcome could have been predicted by regular analysis of the

financial statements of companies in the period before initiation of bankruptcy or liquidation proceedings. The basic positions of the financial reports and the basic financial indicators for 102 companies operating in the territory of FBiH for a period of 5 years were analysed. The research results point to the conclusion that by analysing capital and net profit as positions of financial statements, and by analysing the current ratio, quick ratio and financial leverage as financial indicators, accountants can very quickly and effectively determine whether the company has potential problems for continuing operations. By attaching such analysis when submitting financial statements, accountants can very simply justify the preparation of financial statements on a going concern basis, or on some other basis, all in accordance with International financial reporting standards.

Although this study provides significant insight into the understanding of the concept of going concern in the accounting world, it is important to emphasize that there are certain limitations within this research. The lack of extensive prior research in this specific area limits the scope of available literature for comparison. However, this limitation also emphasizes the exploratory nature of the paper, contributing to the emerging body of knowledge in this area. Future research efforts could benefit from expanding the literature base to further improve general understanding of the accounting assessment of going concern.

An additional limitation is the research based on a sample of 102 companies operating in the territory of FBiH, limited to the time period 2018 – 2022. This means that it is possible that the time frame and area in which the research was conducted influenced the results. A limitation of the research may be the focus on financial reports and financial indicators. Although financial statements are considered the most reliable representation of a company's operations, they alone cannot fully capture all the complexities of the business. In today's business environment, where there are many external factors that can have an impact on the company in an unpredictable way, accountants should extend the analysis to non-financial indicators that may indicate potential problems in the company, such as attributes of corporate governance and analysis of the environment in which the business entity operates.

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CAN EMOTIONAL INTELLIGENCE OF LEADERS REDUCE EMPLOYEES' RESISTANCE TO ORGANIZATIONAL CHANGES?

— ABSTRACT —

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People are not inclined to change by nature, and since changes on each level in organizations are constant and always bring something different and quite unknown, people are most often afraid of them. One of the biggest challenges of modern management, both today and in the future, is represented by numerous negative emotions observed in a large number of employees as one of the most significant sources of resistance in the process of managing organizational changes. The aim of this paper is to prove that the existence of empathic values as a component of emotional intelligence in managers of organizational changes leads to the remission of negative emotions and the reduction of employees' resistance to organizational changes. Two hypotheses were put forward in the research: managers of organizational changes have developed empathic values and processes of compassionately guiding employees through changes (1), empathic values and processes of the same lead to a reduction of resistance to organizational changes among employees (2). Primary data for this research was collected through two online surveys (two survey questionnaires). The first survey questionnaire was intended for managers (n=36), and the second one for employees (n=120). The respondents were from 36 medium and small companies from different industries from the area of three counties in northwestern Croatia (Koprivničko- križevačka, Varaždinska, Zagrebačka). The companies were selected randomly. The method of linear discriminant analysis (LDA) was applied. This analysis is closely related to one-way multivariate analysis of variance (ANOVA) and regression analysis. It seeks to evaluate the linear combination of variables that best discriminates the belonging of individual elements to a certain group. Based on this, the discrimination analysis is reduced to determining the differences between the two groups with regard to the mean values of their variables. The results of the research indicate the achieved level and meaningful forms of implementation of emotional intelligence in employees' resistance to organizational changes. The existence of empathic values and empathic tendencies in the majority of managers was established, which gives visible results in reducing the intensity of negative emotions of employees towards organizational changes. Leaders of changes, however, do not yet have such developed empathic values and tendencies that lead to more intense generation of positive and rejection of negative emotions and resistance among employees. The results of the research should be useful knowledge in the implementation of a compassionate empathic style of management of employees that leads to the involvement of employees and support for organizational changes.

Keywords: changes, emotions, guidance, employees, resistance

JEL classification: A13, D22, M14, M53

GOAL SETTING IN THE EARLY STAGES OF ENTREPRENEURSHIP

─ ABSTRACT ─

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Entrepreneurship is an interdisciplinary phenomenon with high dynamism and innovation, which requires taking into account different concepts, applied samples and heterogeneous attributes from dependent socio-economic fields. However, the issues affecting entrepreneurial goal setting in the initial stage of the activity are still underrepresented in the scientific literature and the practical field. The studies are fragmentary and do not offer a general construct with a focus on entrepreneurial goal setting. In the current article, based on the integration approach, a conceptual framework of entrepreneurial goal setting is derived, which is a set of stages and actions corresponding to the initial entrepreneurial process. For this purpose, a systematic review of relevant areas and consolidated practical experience is carried out. Through a set of activities that can be followed by entrepreneurs, we present a model for approbation in a business environment. The research methodology is a synthesis of empirical observations and desktop research. We collected two categories of data - theoretical and practical-applied. The main source of the practical data is gathered by an international project, funded via Erasmus+ program of EU. In parallel with the work on the project activities, the lack of a theoretical basis regarding the first stages of the entrepreneurial process and, more specifically, goal setting, was established. This prompted part of the project team to search and develop this idea. The result is presented in the present paper as we believe that such a model with adjacent activities will support start-up entrepreneurs. At the same time, we bring forth a new field for discussion in scientific circles. Attempting a supportive model will put a focus on entrepreneurship and innovation when they are still an intention, among scientists and practitioners.

Keywords: goal setting, starting phase, model,

JEL classification: L26

ASSESSING CONVEREGANCE CRITERIA IN BOSNIA AND HERZEGOVINA: A PATH TO EU MEMBERSHIP

─ ABSTRACT ─

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Abstract

One of the most important strategic goals of Bosnia and Herzegovina (BiH) is to become a member of the European Union (EU). Membership negotiations commenced in March 2023, marking a pivotal moment for BiH, following its membership request in 2016 and the attainment of candidate status in December 2022. On its path to European integration, BiH is achieving the necessary alignment to become a full member of the EU. Through accession negotiations and the fulfillment of requisite conditions, BiH is witnessing economic development. This progression towards a strong economic and political community like the EU places the candidate country in a politically and economically more stable category, thereby fostering favorable opportunities for economic growth. Candidate status and the initiation of negotiations enhance the country's rating and attract foreign investors, which in turn creates better conditions for entrepreneurship development, labor market improvement, efficient functioning of institutions, and numerous other economic opportunities.

The aim of this paper is to evaluate whether Bosnia and Herzegovina will be able to meet the monetary and fiscal convergence conditions on its path to EU accession, based on the trends of indicators used in the analysis of convergence criteria. This paper examines the relationship between these variables and key macroeconomic indicators, highlighting their correlations and significant influence on trends. In addition to nominal convergence criteria, the paper also analyzes real convergence criteria, which assess a country's development level relative to the average developed countries of the European Union. The focus is on several key indicators of real economic convergence, including GDP growth and GDP per capita.

This research is of critical importance for Bosnia and Herzegovina as it examines the fulfillment of the economic convergence criteria necessary for European Union membership, thereby ensuring the country's economic and financial stability. Furthermore, the assessment of Bosnia and Herzegovina's capacity to meet monetary and fiscal convergence conditions offers valuable guidelines for economic policies and reforms. Ultimately, the findings of this research can assist authorities in accelerating the EU integration process, attracting foreign investments, and fostering overall economic development within the country.

1. Introduction

The idea for the creation of the European Union arose after World War II, as a consequence of the war-torn European economy, fragmented by national borders and divided markets in the reduced space caused by decolonization and the rise of socialism. The main goal of the largest European countries at that time was the need for an organized approach to solving common problems (Hadžiahmetović, 2009, p. 356). Just as the formation of the European Union itself sought to consolidate peace and prosperity in Europe, so did its expansions. Europe has always been guided by the ideology that a larger Europe is a stronger and more stable Europe, better equipped to face internal and external challenges. From the original 6 countries that founded the European Union to the current 27 members, the main motives for creating the European Union were economic, political, military-strategic, and ideological. These motives have guided the European Union through all of its expansions so far. Many countries have joined, and through their journey and expansion, they have become part of the Union, while the United Kingdom, which was also one of the founding members, is the only country that left the community of European nations. It exited the European Union in January 2020, after 47 years of membership.

At the Copenhagen Summit in 1993, the European Union defined the criteria for the accession of future member states. These criteria reflect the values upon which the European Union is founded: democracy, the rule of law, respect for fundamental rights, and the importance of a functioning market economy. These principles laid the foundation for historic changes and the accession of Central and Eastern European nations, and they remain relevant today. They have also served as a framework for reforms in all countries that are candidates or potential candidates for membership. Currently, the Western Balkan candidate countries are Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, Serbia, and Turkey. In addition to these countries, Ukraine, Moldova, and Georgia also have candidate status. Kosovo holds the status of a potential candidate.

The criteria and conditions for expansion are defined by the Copenhagen (1993), Essen (1994), and Brussels (1995) criteria. The latter relate to the White Paper, which contains proposals for the European Union's actions in specific areas. These include: the White Paper on Artificial Intelligence – A European Approach to Excellence and Trust (2020), the White Paper on leveling the playing field regarding foreign subsidies (2020), and the White Paper on the Future of Europe – Reflections and Scenarios for the EU27 by 2025 (2017). The so-called "Copenhagen Criteria" encompass three elements that each new member state must fulfill:

- **Political criteria:** Relate to the stability of institutions guaranteeing democracy, the rule of law, human rights, and respect for and protection of minorities.
- **Economic criteria:** Involve the existence of a functioning market economy capable of coping with competition and market forces within the European Union.
- **The third criterion:** Refers to the acceptance of the European Union's laws and regulations and the ability to assume all membership obligations, including adherence to the political, economic, and monetary union's objectives.

The new revised EU enlargement methodology is built upon four key principles: credibility, predictability, dynamism, and enhanced political governance. It structures its previous chapters into six thematic clusters: an overarching area that includes the rule of law; the internal market; competitiveness and inclusive growth; the green agenda and sustainable connectivity; resources, agriculture, and cohesion; and external relations (European Commission, 2020). The accession process has become increasingly rigorous and comprehensive over the years, directly reflecting the development of European Union policies, but also many mistakes and lessons learned from previous expansions. Progress towards membership depends on each country individually and its steps towards achieving the outlined criteria at each stage. In addition to the defined economic

criteria, the accession process of member countries has also significantly depended, and continues to depend, on the political ideologies and objectives of individual member countries, particularly those that have had the greatest influence, which is closely correlated with their economic and political power.

Main aim of this paper is to evaluate whether Bosnia and Herzegovina will be able to meet the monetary and fiscal convergence conditions on its path to EU accession. This evaluation is based on analyzing the trends of the indicators used to assess the convergence criteria, specifically focusing on price stability and public finance stability. Additionally, the paper examines the relationship between these variables and key macroeconomic indicators. The methodology in this paper involves a analysis of key indicators related to price stability and public finance, with an emphasis on understanding the relationships between these indicators and broader macroeconomic variables. The study also excludes two of the Maastricht criteria (long-term interest rates and exchange rate stability) due to the specific economic setup of BiH, which operates under a currency board and does not issue long-term government bonds. The paper is structured as follows: **Introduction which provides an overview of** background on EU accession, the importance of convergence criteria. Second section includes the discussion on both nominal and real convergence criteria, with a focus on price stability, public finance, and the development level of BiH compared to the EU. Third section of the paper provides a detailed examination of the Maastricht criteria and it is followed by the fourth section which is focused on the real convergance criteria. Conclusion is provided at the end of the paper.

2. Candidate Status of Bosnia and Herzegovina for European Union Membership and the Implementation of Key Priorities

The Council of the European Union, in December 2022, granted Bosnia and Herzegovina the status of a candidate country, following the recommendations of the European Commission. After submitting its application for EU membership in February 2016, Bosnia and Herzegovina had to meet 14 key priorities. The rule is that the European Commission recommends the opening of accession negotiations with the European Union once it assesses that the country has achieved the necessary level of compliance with the membership criteria, particularly in fulfilling key priorities. A certain positive momentum followed immediately after the candidate status was granted, but with limited progress regarding key priorities. Positive developments at the national level were in stark contrast to negative developments at the level of the Republika Srpska entity, which affected the country as a whole. After gaining candidate status, the commitment of political parties to the strategic goal of European integration brought positive results. The Council of Ministers adopted strategies for combating organized crime, developed an updated risk assessment and accompanying action plan to prevent money laundering and combat the financing of terrorism, adopted migration strategies and action plans, and appointed a supervisory body for the implementation of the national war crimes prosecution strategy. All the political and economic issues that occurred, particularly in Republika Srpska, contributed to delays in the necessary reforms to fulfill the priorities. These were primarily issues concerning the functioning of the Constitutional Court and violations of the constitutional and legal order of the country.[1] Once a country gains candidate status, the next step is the opening of negotiations. Accession negotiations are a process in which the candidate country negotiates with the member states of the European Union. In the case of Bosnia and Herzegovina, this process took more than a year, from December 2022 to March 2024.

2.1. Fiscal Aspects of Bosnia and Herzegovina's Accession to the European Union

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[1] More in European Commission (2023).

During the accession process, from applying for membership, gaining candidate status, to full membership, the country needs to go through all phases of fiscal integration. With full membership in the European Union, the country becomes part of the single European market as well as part of the EU fiscal system. Throughout the accession journey, fiscal relations with the EU are built, and fiscal institutions are developed in a way that enables full integration with the EU. The fiscal aspect of accession involves two fiscal pillars of the European Union. One is the EU budget and the ability to use EU funds, both in the accession process and during the candidate status, which is where Bosnia and Herzegovina currently stands, and in gaining full membership. The second and much more challenging aspect of accession is the harmonization of Bosnia and Herzegovina's tax system.

2.1.1. Using European Union Budget Funds

Bosnia and Herzegovina has so far utilized a significant portion of EU funds, and following the granting of candidate status, there are further possibilities for using funds from pre-accession funds. After the end of the war and before the first official steps towards EU membership, Bosnia and Herzegovina used EU funds through humanitarian and other aid programs, mainly through the CARDS program and others. After gaining full membership, Bosnia and Herzegovina will no longer be able to use pre-accession funds but will be able to use other funds from the EU budget that relate to the budget for structural operations, i.e., funds from the Structural and Cohesion Funds of the European Union. In this future phase of using EU funds (as well as now through the use of pre-accession funds), it is crucial that the European Union prepares appropriate regional development strategies. Furthermore, the efficient use of EU funds depends on the optimal and purposeful allocation of funds across different levels of government in Bosnia and Herzegovina. The use of EU budget funds in the pre-accession phase is carried out through the Instrument for Pre-Accession Assistance (IPA), which is the main tool for providing aid to candidate countries in the process of aligning with EU standards and policies, through financial assistance, technical, and expert support. IPA was established in 2006 to support candidate and potential candidate countries and consolidates all previous support instruments (CARDS, SAPARD, ISPA, PHARE, etc.). IPA is primarily intended for institutions at all levels of government in Bosnia and Herzegovina, but it is also used by non-governmental organizations, local government units, the business community, and other types of legal and physical entities.

The current framework is IPA III for the period from 2021 to 2027. It is intended for the Western Balkans and Turkey and has the largest budget of all IPA funds so far. IPA III is the third generation of the European Union's Instrument for Pre-Accession Assistance for the Western Balkans and Turkey. Through this instrument, the European Union supports candidate countries in becoming its members. With a budget of €14.2 billion over the seven-year period from 2021 to 2027.

2.1.2. Harmonization of Bosnia and Herzegovina's Tax System with European Union Requirements

Tax harmonization, by definition, is the process of removing tax barriers and inconsistencies in tax systems in certain state communities, with the goal of strengthening the internal economic and fiscal space and thereby achieving macroeconomic stability. The adjustment of the tax system for each candidate country is carried out according to EU Directives, which are part of EU legislation and, after the Treaties establishing the European Union, represent the second most important legal instrument. In addition to the Directives, the EU also uses other instruments for the harmonization of tax systems, such as efforts to eliminate harmful tax competition across all tax forms. This mainly refers to direct taxes, particularly corporate tax.

Bosnia and Herzegovina, after obtaining candidate status, will now have to take several measures for further harmonization of direct and indirect taxes. In the field of indirect taxes, particularly in the area of VAT, the harmonization process has been achieved to a greater extent compared to direct taxes. Major reforms in the area of indirect taxation have been implemented gradually since 2003, culminating in 2006 with the introduction of VAT into Bosnia and Herzegovina's tax system. Before that, there was a complex process of transferring constitutional competences for indirect tax policy from the entity level to the state level. Although the VAT system has certain shortcomings, its introduction has been regarded by many experts as the best transition from a sales tax system to a VAT system. Bosnia and Herzegovina's VAT Law is aligned with the EU's Sixth Directive on VAT. In recent years, there have been no significant reforms in the VAT segment, although the introduction of differentiated VAT rates, following the example of some European countries and neighboring countries such as Croatia, Serbia, and Slovenia, has been discussed for years. (source needed – specify expert opinions or reports).

The issue of further VAT harmonization is crucial for fiscal adjustment in the area of indirect taxes. This issue is defined by the EU's Sixth Directive, with a particularly important part related to VAT being the introduction of reduced rates and zero rates of taxation, i.e., exemptions. This issue has been discussed for many years, and with the granting of candidate status, it will certainly continue in this direction. The mere fact that reduced VAT rates and zero rates exist in half of the EU member states indicates that Bosnia and Herzegovina must also address this issue in detail. According to the Sixth Directive, it is recommended to use one standard rate not less than 15% and one or two reduced rates not less than 5%.

When it comes to other forms of indirect taxes in Bosnia and Herzegovina, such as excise duties and customs, significant harmonization with EU countries has been achieved in this segment as well, following the relevant Directives. The signing of the Stabilization and Association Agreement with the European Union (July 1, 2008) resulted in a significant loss of customs revenue, which the fiscal authorities of Bosnia and Herzegovina attempted to compensate for by increasing excise duties in line with EU standards. The new Excise Law of 2009 increased road tolls as a special type of excise on petroleum products and established a continuous excise increase for cigarettes. Due to the increase in minimum excise rates in the European Union, a new adjustment schedule for excise duties on tobacco products and energy was established in Bosnia and Herzegovina in 2011. The most recent amendments to the Excise Law have been in effect since 2022.

In the direct tax harmonization segment, more attention is paid in the EU to corporate taxation than to income taxation, which has the lowest degree of harmonization in the European Union. Given that direct taxation of citizens can lead to harmful tax competition, the EU's legislative bodies have adopted the first directives in this tax area. When it comes to income tax harmonization, the Directives pay particular attention to the taxation of parent and associated companies, the tax treatment of mergers, demergers, and the transfer of assets and shares between companies, and the taxation of interest and royalties between associated legal entities. In connection with the aforementioned, the two most important directives in this area are the Directive on Small and Associated Companies and the Merger Directive.

In terms of direct taxation in Bosnia and Herzegovina, the most significant reform was implemented with the introduction of corporate and income tax laws in the Federation of Bosnia and Herzegovina, Republika Srpska, and Brčko District. Corporate and income taxes were first introduced in Republika Srpska in 2007. The Federation of Bosnia and Herzegovina began implementing its Corporate Tax Law in 2008, and its Income Tax Law in 2009. The Federation of Bosnia and Herzegovina currently applies the Corporate Tax Law, which came into force in 2016. In Brčko District, a new Corporate Tax Law was introduced on January 1, 2012, and its provisions are largely harmonized with the corresponding legal solutions in the Federation of Bosnia and Herzegovina and Republika Srpska.

It is considered that corporate tax should fall under the jurisdiction of the central government, i.e., at the state level in Bosnia and Herzegovina. This is justified by the fact that the devolution of corporate tax competences to lower organizational units (the Federation of Bosnia and Herzegovina, Republika Srpska, and Brčko District) has led to unhealthy tax competition, an issue that is particularly monitored in the European Union. Ideally, the direct taxation system in Bosnia and Herzegovina should be centralized at the state level, similar to the case with indirect taxes. Income taxation in Bosnia and Herzegovina is at the entity and Brčko District level. When it comes to income taxation, it is not significantly covered by EU guidelines. Structurally, Bosnia and Herzegovina's tax revenue system differs significantly from both transitional and developed EU countries. A high share of indirect taxes (especially VAT) in total revenue characterizes both transitional EU countries and Bosnia and Herzegovina, but compared to these countries, Bosnia and Herzegovina has a very low share of direct taxes. (source needed – provide supporting references).

Despite a series of reforms in Bosnia and Herzegovina's tax system, there has been no significant positive effect on investment, GDP, or the country's competitive position. Bosnia and Herzegovina remains in the group of highly uncompetitive countries, with the worst position in the region. Among other factors, high tax rates and complex tax regulations have a particularly negative impact on the assessment of competitiveness. These lessons indicate that policymakers in the coming period must clearly bear in mind that tax policy should be developmental and focused solely on the simplest, most efficient, and fairest collection of tax revenues that serve to finance state expenditures. The European Commission's 2023 report, in Chapter 16, states that Bosnia and Herzegovina should enhance cooperation between tax administrations in the coming period, with a focus on information exchange to prevent tax evasion and fraud. It also emphasizes the need to harmonize VAT and excise regulations with the EU acquis and to continue work on the electronic signature to ensure interoperability and consistency throughout the country. Although the VAT system's legal framework is largely aligned with the acquis, further regulatory harmonization is necessary, and joint tax audits between all tax administrations in Bosnia and Herzegovina should be ensured, with the Indirect Taxation Authority retaining a central role in this. Furthermore, it is essential to strengthen the personnel and information capacities of all tax administrations in Bosnia and Herzegovina. In the domain of direct taxes, entity tax systems and the social contribution system should be harmonized, with a particular emphasis on the need to reduce the tax burden in the Federation of Bosnia and Herzegovina.

3. **Convergence Criteria Analysis**

The most important step in the creation of the European Monetary Union (EMU) was the convergence of fiscal and monetary rules of its member states through the signing of the Maastricht Treaty on February 7, 1992. The signing of this treaty marked the beginning of a new stage of integration and new integration goals, the most significant of which was the implementation of the final phase of economic and monetary integration, namely the introduction of a common currency. For this purpose, five criteria were established to determine whether a country is ready to adopt the euro as its currency and become part of the European monetary area. These are the following areas:
1. **High price stability** – The inflation rate must not exceed 1.5% above the average inflation rate of the three countries with the most stable prices;
2. **Budget deficit** – It should generally be less than 3% of GDP;
3. **Public debt** – It must not exceed 60% of GDP;
4. **Long-term interest rates** – They must not exceed 2% above the interest rates of the three member states with the lowest interest rates;
5. **Achieving a stable exchange rate** – Two years before the introduction of the euro, the national currency must not devalue and must remain within the limits of the European Monetary System.

One of Bosnia and Herzegovina's most important strategic goals is EU accession, and the country has been strongly committed to this goal for many years. The condition for joining the European Union is achieving an appropriate level of real and nominal convergence, which involves the country's macroeconomic stability and a competitive economy compared to other EU member states. Nominal convergence includes monetary and fiscal convergence, and it is defined by the Maastricht convergence criteria. Real convergence, on the other hand, is a more complex economic category and represents the actual development of the country and its competitiveness compared to the rest of the world or, in the case of Bosnia and Herzegovina's accession, compared to EU countries. Since these two categories of convergence are closely connected, when determining measures to achieve one, it is essential to consider how this will affect the other category. This relationship is particularly important in the short term because, for example, achieving a higher level of real convergence can increase inflation, indebtedness, and the budget deficit. This may happen in the short term, but in the long term, a higher level of real convergence, reflected in a higher degree of development and competitiveness, has positive implications for nominal convergence criteria, as economic balance will be achieved through the multiplier effect.

3.1. Nominal-Criteria Using the Example of Bosnia and Herzegovina

Meeting the nominal convergence criteria is a prerequisite for joining the Economic and Monetary Union, and it is crucial that a country fulfills these conditions even before gaining European Union membership status, as Bosnia and Herzegovina is currently in candidate status. This is also the reason for analyzing the fulfillment of these criteria in this article. The importance of these criteria stems from the fact that the single monetary policy implemented by the European Union cannot be successful if all its members do not meet the criteria related to price stability, exchange rate stability, public finance stability, and criteria concerning interest rates before entering the monetary union.

3.1. 1. Price Stability Analysis

When it comes to the criterion of high price stability that a country must meet, the Maastricht Criteria define that the inflation rate must not exceed 1.5% above the average inflation rate of the three countries with the most stable prices. In such cases, the reference rate is calculated at the level of the European Union, which is then compared to the inflation rate in a given country. Meeting this criterion is of primary importance for maintaining price stability in the monetary union. The aim of introducing this criterion is to bring inflation rates in high-inflation countries closer to the inflation rates of low-inflation countries. The inflation data for Bosnia and Herzegovina for the period from 2010 to 2023 are presented in the following table and refer to the average annual price growth rate.

Table 1. Inflation in Bosnia and Herzegovina (2010-2023)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Average annual CPI growth rate (%)	2.1	3.7	2.1	-0.1	-0.9	-1.0	-1.1	1.2	1.4	0.6	-1.0	2.0	14.0	6.1

Source: CBBH

The latest official data published in periodic macroeconomic statistical publications by the Central Bank of Bosnia and Herzegovina (BiH) for the annual level was released for the year 2023. Compared to the previous year, inflation significantly decreased. Of all the observed years in the tabular overview, the year 2022 particularly stands out, having recorded a peak inflation rate. The annual inflation rate for 2022 was 14%, while for 2023, it was 6.1%. According to comprehensive analyses by the Central Bank presented in their publications (quarterly bulletins and annual reports), pronounced inflationary pressures marked the beginning of 2022, and these trends continued throughout all months of that period. This occurred partly due to the low inflation base in previous years and the occurrence of deflation in 2020, as well as a significant increase in consumer prices, which was much higher than in the Eurozone, particularly in the period following the onset of the Ukraine crisis in the second quarter of 2022. The war in Ukraine especially contributed to the rise in prices of energy, food, and all production raw materials on international markets. In fact, as assessed, this war was merely the trigger for already disrupted economic and political relations worldwide, stemming from numerous previous crises (the 2009 crisis, the pandemic crisis, etc.).

As for the data on inflation for 2022, the overall inflation increase was driven by rising prices in hospitality, tourism, and trade, as well as in the manufacturing industry (CBBH, 2024). Despite certain improvements in the labor market, which marked the end of 2021 and the beginning of 2022, due to pronounced negative demographic trends, large-scale migration of the population, particularly the working-age population, there were no significant positive economic trends in 2022. Due to labor shortages, wages increased in the medium and long term, which largely strengthened inflationary trends through rising domestic consumer prices. The war in Ukraine and the sanctions imposed on Russia resulted in record increases in the prices of all energy, food, and production materials on a global scale. These price increases particularly affected low-income populations, as rising prices meant that an increasing portion of disposable income was allocated to basic necessities. Bosnia and Herzegovina is among the first countries in this category.

Inflation in Bosnia and Herzegovina was present throughout all months of 2022, reaching a record annual rate of 14%. By the end of the year, inflation was significantly above the multi-year average and more than double the rate measured in 2006 when the 17% value-added tax (VAT) was introduced (CBBH, 2024). Food prices contributed the most to the inflation rise, with almost half of the total inflation attributed to food and non-alcoholic beverages. In Bosnia and Herzegovina, as in other developing countries, rising prices in the food and non-alcoholic beverage categories have a significant impact on overall inflation. According to available statistical data, the share of this category in the total consumer basket is around 33%. After the large and extraordinary inflationary shock that occurred in 2022, average consumer prices slowed down in 2023 across the entire region, resulting in an inflation rate of 6.1% in 2023.

The continuation of the weakening of inflationary pressures is expected in the coming period, as indicated by already available data for 2024. Inflation in 2023 was not solely the result of exogenous factors but also significant pressures on domestic prices. Core and overall inflation in 2023 were slightly higher (5.9% and 6.1%, respectively), primarily due to the significant increases in food and non-alcoholic beverage prices, which rose the most (10.6%), as well as significant growth in other goods and services categories (9.5%). Electricity prices also contributed significantly to inflation in 2023, with an annual increase of 6%. Certain categories, such as transportation costs, saw price declines, which contributed to inflation stabilization in 2023 (CBBH, 2023). Economists have always paid special attention to the occurrence of deflation, which was present during 2020. After several years of moderate inflation (around 1%), 2020 saw annual deflation of 1%. Deflation was largely the result of negative contributions from certain sectors, such as transport, trade, and others. Deflation was also present in 2014, 2015, 2016, and 2020.

The reference inflation value in the European Union for 2023 was 3.3%, and according to this, Bosnia and Herzegovina had inflation significantly above that value.[2] In this case, the reference

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[2] More in European Central Bank (2024).

value for inflation measured by the Harmonized Index of Consumer Prices (HICP) is for the period from June 2023 to May 2024. According to the European Union's Convergence Report published in June 2024, the twelve-month average inflation rate in five out of six observed states was significantly above the reference value for the price stability criterion of 3.3%. Inflation strongly increased in 2021, largely influenced by base effects, a sharp rise in energy prices, supply chain disruptions due to the coronavirus, and strong growth in global demand for products. Due to the war in Ukraine and the problems caused by this crisis, inflation also sharply rose in most countries in 2022, but it followed different trends due to various domestic policies. Compared to the 2022 Convergence Report, inflation slowed down in most countries, but in Bulgaria, the Czech Republic, Hungary, Poland, and Romania, it remained higher due to their pronounced sensitivity to external shocks and negative trends in the labor market, resulting in inflation significantly exceeding the reference value.[3]

3.1.2 Budget Deficits as a Convergence Criterion

The second nominal convergence criterion is the budget deficit, which should not exceed 3% of GDP. Bosnia and Herzegovina's complex fiscal arrangement, decentralized and uncoordinated fiscal policy, negatively affects achieving fiscal balance and a fiscal position that contributes to public finance stability and sustainability. This situation has led to high public expenditures and insufficient public revenues for years. Reducing expenditures across the board is key to fiscal consolidation, but the long-standing growth trend is difficult to stop without radical changes. As shown in the following table, which tracks budget surpluses/deficits at the Bosnia and Herzegovina level from 2010 to 2023, positive changes were observed between 2015 and 2019, when a positive budget balance was recorded. However, the onset of the coronavirus crisis led to a decrease in tax revenues and budget deficits, which have characterized the last three years.

This indicates that, in the realm of fiscal policy, regardless of occasional surpluses, many measures need to be implemented to ensure that Bosnia and Herzegovina's tax and budget policy have a developmental and stabilization component and align with European and international standards. The current situation, characterized by frequent imbalances and budgetary disparities, leads to unstable public finances and the creation of frequent fiscal imbalances at all levels of government.

Table 2. Bosnia and Herzegovina - Surplus/Deficit Trends as % of GDP (2010-2023)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Balance	-2.4%	-1.2%	-2.0%	-2.2%	-2.0%	0.7%	1.2%	2.5%	2.2%	1.9%	-5.2%	-0.3%	-0.4%	-1.2%

Source: CBBH

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[3] Inflation in 2023 amounted to 8.6% in Bulgaria, 12% in the Czech Republic, 17% in Hungary, 10.9% in Poland, and 9.7% in Romania, data source – Eurostat.

In the period of 2006 and 2007, Bosnia and Herzegovina achieved budget surpluses, but the rapid and strong spillover of the crisis from neighboring and global countries into Bosnia and Herzegovina in 2008 and 2009 changed this situation, leading to a sudden weakening of demand for domestic products, reduced exports, production decreases, increased unemployment, and a general state of pessimism. This ultimately resulted in a 3% drop in GDP in 2009, along with a large gap between revenues and expenditures, leading to a deficit of over 1 billion BAM, or 4.3% of GDP. The amount would have been much higher (estimated by the IMF at over 5.5%) had there not been savings at all levels of government, prompted by the stand-by arrangement.

After the major economic crisis of 2009 and a certain degree of economic recovery that occurred with the mitigation of the negative effects of the crisis, the following years saw GDP growth until the onset of the COVID-19 crisis, when GDP fell by 3%. The last three years have been marked by GDP growth, which was the highest in 2021 (7.4%), but then began to decline, reaching only 1.7% in 2023. In most cases, with the arrival of crises, rapid and strong spillovers of crises from neighboring and global countries into Bosnia and Herzegovina lead to a sudden decline in demand for domestic export products, modest foreign direct investments, and a drop in private investments. Reduced export demand results in lower exports and a drop in export prices, leading to general pessimism in the economy, which triggers a chain of negative events such as a decline in production, a decrease in employment, and a reduction in tax revenues. Tighter credit conditions resulting from this lead to reduced consumption of capital and durable consumer goods.

Analyzing Bosnia and Herzegovina's macroeconomic indicators in this observed period, it is evident that every economic crisis occurring globally immediately causes significant consequences for Bosnia and Herzegovina's economy, and the unstable fiscal position results in budget deficits, which are driven by years of increasing public expenditures and declining revenues, with insignificant or negative GDP growth. All this indicates that Bosnia and Herzegovina, as a fiscally and politically complex country with poor macroeconomic indicators, cannot sustain such high public spending. In 2020, public spending amounted to 46.8% of GDP, placing it among the highest in Europe and neighboring countries, and it was at approximately the same level in previous years[4]. Given that the realized deficits were mainly used to finance current spending and were financed by public debt, such a situation does not contribute to strengthening fiscal capacities, and this needs to be addressed. However, this requires structural reforms and tackling key macroeconomic challenges, such as insufficient GDP growth, low foreign investment, and the country's poor balance of payments position.

When it comes to meeting the convergence criterion related to the budget deficit, in all the observed years in Table 2, it remained within defined limits, i.e., it did not exceed the 3% threshold, except in 2020 when it reached 5.2%.

3.1.3. Public Debt as a Convergence Criterion

Bosnia and Herzegovina's total public debt, which in this case includes total domestic debt and public external debt, excluding private external debt, increased in all years from 2010 to 2023, except in 2018 due to a reduction in domestic debt and in 2023 due to a decrease in external debt. The share of public debt in GDP up to 2016 averaged around 40% of GDP, but in the following years, it began to decline, primarily due to GDP growth, which was significantly higher than the growth of indebtedness.

When it comes to the relationship between external debt and GDP in this observed period, there were different trends. In the period immediately after the war (although there were high GDP growth rates), this indicator was quite high, as the total GDP was relatively low, but from 1999 to

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[4] In 2009, public spending in Bosnia and Herzegovina amounted to 46.1% of GDP, in Germany 47.5% of GDP, and in Italy 51.8%. Among the neighboring countries, only Montenegro had slightly higher public spending than BiH (47.7% of GDP) – data source: Eurostat for EU countries, and for Montenegro Central Bank of Montenegro.

2018, it increased significantly. The highest share of external debt was recorded between 2019 and 2016, when external debt amounted to 28% of GDP. In most of the observed years, budget deficit growth was accompanied by public debt growth, which increased by 12% in 2010 compared to the previous year, by 11% in 2014, and by 10% in 2020. Although public debt slightly decreased by 0.4% in 2023, it remained within the permissible reference frameworks of the European Union's fiscal rules in recent years, there has been a deterioration of many other debt indicators. (Specify which debt indicators have deteriorated to align with Table 3).

Table 3. Public Debt of Bosnia and Herzegovina for the Period from 2010 to 2023

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Public Debt (% of GDP)	37.4	38.0	39.9	38.9	42.1	41.3	40.0	3.7	32.7	31.3	35.1	32.8	28.5	25.1

Source: MFT BiH (2024)

In all the observed years, public debt is below the limits determined by the convergence criteria, and in that case, Bosnia and Herzegovina meets the requirements. However, the movement of indebtedness is closely linked to the movements of other macroeconomic indicators. Just as every economic phenomenon reflects on another through the multiplier effect in macroeconomics, so too do public, external, and internal debts closely correlate with trends in economic activities, government spending, revenues, exports, interest rates, etc. In this case, the movement of public debt should be directed toward growth and development and the improvement of the state's macroeconomic position.

3.1.4. Criterion of Long-Term Interest Rates and Exchange Rate Stability

The last two convergence criteria refer to long-term interest rates, which must not exceed 2% of the interest rates of the three member states with the lowest interest rates, and achieving a stable exchange rate. These are not considered in this paper, as the exchange rate stability criterion cannot be considered due to the Currency Board system in place in Bosnia and Herzegovina. Under this system, the domestic currency (BAM) is pegged to the euro as the 'anchor currency,' with full coverage of monetary liabilities by foreign reserves. Similarly, given that Bosnia and Herzegovina does not issue long-term government bonds, the variable of long-term interest rates on government bonds is not analyzed.

3.2. Real Convergence Criteria

In addition to the nominal convergence criteria, which are quantified and precisely defined, real criteria include a broader range of indicators related to development, employment, competitive position, and others. Real criteria are important because their fulfillment allows a country to be competitive in the single European market. In this case, broader development indicators are observed.

Table 4. Development indicators for the period 2010-2023

Year	Nominal GDP BiH (in million BAM)	Public Debt (in million BAM)	Population (in thousands)	GDP per capita (BAM)	Debt per capita (BAM)	GDP Growth Rate (%)	Population Growth Rate (%)	Unemployment Rate (%)
2010	25.365	9.491	3.541	7.163	2.680	0,9	0,0	27,2
2011	26.231	9.976	3.538	7.414	2.819	1,0	-0,1	27,6
2012	26.223	10.464	3.535	7.418	2.960	-0,8	-0,1	28,0
2013	26.779	10.423	3.531	7.584	2.952	2,4	-0,1	27,5
2014	27.359	11.516	3.526	7.759	3.266	1,2	-0,1	27,5
2015	28.929	11.949	3.518	8.223	3.397	3,1	-0,2	27,7
2016	30.265	12.098	3.511	8.620	3.446	3,2	-0,2	25,4
2017	31.803	11.354	3.504	9.076	3.240	3,2	-0,2	20,5
2018	33.942	11.107	3.496	9.709	3.177	3,7	-0,2	18,4
2019	35.785	11.211	3.491	10.251	3.211	2,8	-0,1	15,7
2020	34.728	12.193	3.475	9.994	3.508	-3,1	-0,5	15,9
2021	39.145	12.858	3.453	11.326	3.723	7,4	-0,6	17,4
2022	45.618	13.017	3.434	13.284	3.790	4,2	-0,6	15,4
2023	48.948	12.952	3.427	14.280	3.427	1,7	-0,2	13,2

Source: BHAS and CBBH

The trends in debt per capita were lower, with debt increasing by 37%. In 2007, it amounted to 2,492 BAM, and in 2023, it was 3,427 BAM. Given the very poor trends in natural population growth, i.e., in recent years, the birth rate has been lower than the mortality rate, and there has been significant migration of the population, the debt per capita is very likely to increase in the coming period. This is supported by the fact that external debt plays a very dominant role in Bosnia and Herzegovina's total debt. The problem of rising debt is also related to other factors of indebtedness and significant exposure to currency risks due to the structure of debts, which are not expressed in euros but in dollars or other currencies and arrangements with the IMF.

BiH has a very low GDP per capita compared to most European Union countries and the highest unemployment rate in Europe. GDP per capita has significantly increased in recent years, but it is lower than in all European countries and is nearly seven times smaller than that of Luxembourg, which has the highest GDP per capita in the EU. It is also much lower than the countries with the lowest GDP per capita in the EU (Bulgaria, Greece, Latvia). When it comes to the unemployment rate in Bosnia and Herzegovina, according to data from the previous table, it is evident that it has been exceptionally high for many years and among the highest in Europe. Due to the pronounced trend of emigration from Bosnia and Herzegovina, the unemployment rate has been lower in recent years compared to the period from 2010 to 2015 when unemployment reached over 27%. Most European countries have unemployment rates below 10%, with some even below 5%. The lowest unemployment rate in the past three years has been recorded in Germany (3.7% in 2021, 3.1% in 2022, and 3.1% in 2023). After Germany, countries with very low unemployment rates include Malta, Poland, the Czech Republic, the Netherlands, and others. Greece and Spain have had the highest unemployment rates in Europe for years, with rates of 16.3% and 15.5%, respectively, in 2020, but even they reduced unemployment to 11.1% and 12.1%, respectively, in 2023. In this area, Bosnia and Herzegovina does not meet the realistic convergence criteria and needs to create favorable conditions for the labor market. In this regard, pre-accession funds from the European Union should help significantly. Achieving real economic convergence primarily depends on institutional economic convergence, which involves the process of building an appropriate

economic structure and state regulation that will adequately implement the necessary economic policy measures.

4. Conclusion

Obtaining candidate status is an essential milestone in the process of joining the European Union and comes before the accession itself. It is awarded to a country that has made significant progress in meeting specific criteria. In essence, candidate status indicates that Bosnia and Herzegovina will have to align its legal framework, economy, and societal structures with those of the European Union before achieving full membership. Countries on the path to EU membership gain access to European funds, which are distributed based on projects each country proposes, offering opportunities that should be fully leveraged. Even though Bosnia and Herzegovina was granted candidate status during a time of political complexity and difficulties, exacerbated by the economic crisis triggered by the war in Ukraine and other simultaneous challenges, this achievement marks a critical moment. It offers substantial economic and financial advantages for Bosnia and Herzegovina, serving as a stepping stone toward societal advancement and overall development

When it comes to nominal convergence criteria, Bosnia and Herzegovina does not have significant deviations in this area. The movement of public debt and budget deficits has, in most observed years, been within the allowable Maastricht convergence criteria, and these expectations are likely to continue in the future. Considering that inflation has significantly decreased recently, it is expected that the predicted conditions in this area will also be met. However, the challenge lies in meeting the real convergence criteria, where significant efforts must be made to create positive economic trends focused on the economic growth and development of the country. This will result in an increase in GDP per capita, employment growth, an increase in exports, a reduction in the negative trade deficit, and the attraction of foreign investments. In the case of Bosnia and Herzegovina, it can be concluded that the fulfillment of nominal convergence criteria has come at the expense of real convergence criteria. However, this cannot be fully accepted as the reason for Bosnia and Herzegovina's significant deviation from EU countries in terms of real economic convergence criteria, which relate to insufficient economic growth, significant unemployment, low GDP per capita, a large trade deficit, and low levels of foreign investment, among others. In this regard, Bosnia and Herzegovina and its authorities must focus on continuing to build institutional capacities that will support the country's growth and development. Meeting these economic convergence criteria will ensure that Bosnia and Herzegovina economically and financially integrates as soon as possible into the community of EU member states operating within the single European market.

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STABILITY OF THE BANKING SECTOR IN BULGARIA DURING THE COVID AND POST-COVID PERIOD

─ ABSTRACT ─

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The banking sector plays a key role in the financial system in Bulgaria, as well as in all economies. As a main supplier of financing banks are among the main driving forces in economic processes. In the recent years the assets in the Bulgarian banking system show constant growth reaching the GBP, which is why its stability is crucial for the Bulgarian economy.

 The Covid and the post-Covid period was challenging for the stability of the banking sector due to the unprecedent changes in the economy, locking of many sectors and uncertainties. Some economic sectors almost stopped their activities during the pandemic or had to change entirely their business models. Many companies had to leave their business sector due to failures or restructuring. The banks also had to change their business model and to devote more to remote working, digital channels and online offering to products and services. Regulatory changes were implemented during the pandemic affecting bank profits, capital buffers, lending as bank on dividend distributions, placements, loan moratoria. These measures aimed to contribute to the stability of the banking sector and to its smooth path through the turbulent period.

During the pandemic Bulgaria became a member of the Banking Union as four banks started to be directly supervised by the ECB. During the Covid pandemic moratorium on bank loans was in force as well as the measures applicable for the banks in the EU, e.g. decrease of counter-cyclical buffer, ban on dividends, ban on transfers of bank placements abroad. All these measures were implemented by the Central Bank of Bulgaria aiming at increasing bank resilience.

The aim of the paper is to investigate the stability of the banking system in Bulgaria during the Covid and post-Covid period as key determinants for the stability are investigated using data from the banks financial reports. Key research papers in the field are investigated and applied to the banking sector in Bulgaria by considering its local peculiarities. To achieve its aim the article analyses key banking indicators. In the applied model the main capital adequacy ratios are used as dependent variables as the independent variables are divided into two categories - internal banking

independent variables as ROA, ROE, Loans-to-Deposits ratio, Loans-to-Asses, NIM, Cost-to-Income ratio, Credit Impairments-to-Loans, and Leverage ratio, NPLs. Independent variables characterizing the banking system, e.g. bank size, bank concentration, direct supervision of the ECB and ownership are also used in the analyses as well as macroeconomic independent variables as the GDP growth, market capitalization and level of inflation. The results are interpreted for Bulgaria as recommendations and possibilities for developing the model are proposed.

INVESTIGATING BARRIERS TO BUILDING INCLUSIVE FINANCIAL SYSTEMS IN SOUTHEAST EUROPEAN COUNTRIES

─ ABSTRACT ─

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Inclusive financial systems refer to ensuring financial inclusion of all countries population into financial system in terms of ensuring access to formal financial services/products such as bank accounts, savings, borrowing and insurance). Development of inclusive financial systems are in line with the overall sustainable development goals and as such, financial inclusion has been on the governments agendas for more than two decades. Vast number of research have confirmed over the years that inclusive financial systems contributes to countries economic growth, poverty reduction, decrease in overall inequalities among different income groups, lover inflation and makes economies more resilient to different macro shocks.

The main purpose of this paper is to investigate the key barriers towards developing a more inclusive financial system in Southeast European counties (SEE), namely Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo, Montenegro, North Macedonia, Romania, Slovenia, Serbia and Turkey in the period from 2011 to 2021.

Methodology approach includes creation of the multidimensional index of financial inclusion (FII) using Principal Component Analysis (PCA) for measuring the level of financial system inclusiveness, and development of the panel regression model (OLS, fixed-effect and random-effect models) for investigation of the relationship between inclusive financial systems and barriers to financial inclusion.

The research shows that in the period from 2011 to 2021 the mayor barriers to financial inclusion decreased. Although a decreasing number of respondents state the existence of barriers to opening a bank account, the following were singled out as the most significant barriers: lack of financial resources, opening a bank account of another family member and the cost of financial services. The results of the panel regression model, which analyzed the contribution of barriers to the level of financial system inclusiveness, show that the following barriers: the price of financial services, not having the necessary documentation for opening a bank account, trust in a financial institution, and the open bank account of another family member, have a statistically significant impact on the level of financial inclusion. The research results are the starting point for both governments to create strategies and action plans for financial inclusion, and for financial institutions to create more inclusive financial products/services.

LIQUIDITY AS A HARBINGER OF PROFITABILITY: A CROSS-REGIONAL STUDY BETWEEN EU AND SEEC COMPANIES

─ ABSTRACT ─

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This study aims to explore the relationship between liquidity ratios and profitability metrics among companies operating within the European Union (EU) and South East European Countries (SEEC). The research methodology involved a comparative analysis of three pivotal liquidity ratios— Current Ratio (CR), Quick Ratio (QR), and Cash Ratio (CaR), and their influence on three key profitability indicators: Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). To reveal the impact of liquidity on profitability multiple linear regression model was employed. The data-driven approach revealed that in the EU, there exists a subtle but significant positive correlation between company SIZE (Total assets), as a contorl varible in the model, and profitability metrics, suggesting nuanced shifts in profitability as firms expand. In contrast, SEEC firms demonstrate a more pronounced correlation between SIZE and ROA, with a distinct positive association with NPM. The study's hypotheses testing further elucidates these findings. For the effect on ROA, EU companies exhibit a notable relationship, reflecting effective working capital management, while SEEC companies present a more intricate landscape possibly influenced by regional financial dynamics. Regarding the effect on ROE, EU companies display a subdued association between liquidity and ROE, pointing towards intrinsic corporate strategies as primary drivers. In SEEC companies, this relationship is even more attenuated, suggesting other influential factors at play. Finally, for the effect on NPM, both regions emphasize the central role of the CaR in shaping NPM. The study makes a significant academic contribution by emphasizing the importance of regional economic contexts in financial correlations and underscores the need for companies to understand and adapt to these regional nuances. Limitations of this study include potential biases in data sources and the generalizability of the findings. Future research directions include deeper investigations into regional financial dynamics and potential influencing factors.

Keywords: Liquidity, Profitability, Cross-Regional Comparison, EU and SEEC Companies

Jel classification: M41, G15, G32

DEVELOPING SOLUTIONS FOR THE IMPROVEMENT OF BUSINESS PROCESSES IN THE MACEDONIAN AUTOMOTIVE INDUSTRY

─ ABSTRACT ─

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This paper presents the research towards developing solutions for the improvement of business processes in the automotive industry in the R. N. Macedonia by implementing the techniques and methods of the Kaizen philosophy. The principal goal of the paper is a comprehensive analysis of the factors that enable the improvement of the entire production process through the application of tools for identifying, monitoring and solving problems. The first part of the methodology is taking the initiative by the management or the management structure of the company to use modern tools and techniques to improve quality towards achieving the planned goals. The implementation of activities preparations implies the formation of teams for improvement, detection of problems and selection of Kaizen technique. Furthermore, it follows the definition of a plan with activities, foresees goal setting and projection of the outcome of the results of the planned corrective measures. After obtaining and analyzing the results, an internal analysis is conducted and the processes in the business process are standardized. As a result of the implemented changes in all production processes in the automotive industry, the responsible persons of each department commence to standardize their daily activities and implement greater coordination in their teams. The introduction of modern tools and techniques of Kaizen aimed to improving business processes in the automotive industry, enabled slow but continuous changes at all levels and in all areas of operation. The awareness of the management and all employees was growing that something should be done on a daily basis in order to obtain a result, improve the work, productivity, efficiency and effectiveness, make the workplace a pleasant working place and of course ultimately to result in increased profits and higher wages.

Keywords: Kaizen philosophy, methods and techniques, continuous improvement, automotive industry

JEL classification: O32 Management of Technological Innovation and R&D; O33 Technological Change: Choices and Consequences

TO DIVERSIFY OR NOT? ANALYSIS OF AGRICULTURAL CASE STUDIES FROM BULGARIA

-ABSTRACT-

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Abstract

Agriculture has traditionally been an important sector for Bulgaria, but over the past 30 years its role has been significantly transformed. Today it is one of the lagging sectors, with a low share of GDP (3-5%) and low value added. However, the potential for development is high: a significant number of farms and producers (132742 total number of farms in Bulgaria, according 2020 census) and a growing entrepreneurial interest, stimulated by factors such as increasing demand for food, EU policies and access to EU funds, favourable climatic conditions in Bulgaria, etc.

Current Situation: Agricultural entrepreneurship is characterized by a wide range of activities carried out by agricultural producers, which covers from the implementation of innovations in production technology and the use of new raw material sources to the development of new markets for their production. Farms and producers are predominantly focused on monoculture crop production. This makes them vulnerable to unpredictable weather conditions, climate change, market fluctuations, etc. Diversifying the "portfolio" of activities could ensure greater sustainability and stimulate growth, including innovation in the sector. In support of our thesis, the report presents comparative analyzes on macro level - Bulgaria and micro level - Severen Tsentralen statistical region based on the presence/absence of diversification in the offered agricultural products, which serve as a practical insight into the realities of Bulgarian agriculture.

Research aims to analyse the business environment in Bulgarian agriculture and to evaluate diversification as a tool for sustainable growth. To implement it, a mixed approach is applied:

Methodology: A mixed approach was used, based on a combination of the following methods:

- Deduction: to derive the hypothesis that diversification can reduce vulnerability in agriculture.

- Two-stage empirical test: on macro level: SWOT analysis to assess the macroeconomic environment and the factors influencing the sector's development opportunities; and on micro level: empirical study of the practices of Bulgarian farms and producers.

- Induction: to provide general conclusions from specific farms and producers.

The study examines the entrepreneurial environment in Bulgarian agriculture, investigates diversification as a tool for sustainable growth, and provides recommendations for Bulgarian farms and producers. This would help farmers at the micro level to make better informed decisions about the development of their farms, while at the macro level the state could focus support measures in the agriculture sector where there are natural features and traditions in production.

Keywords: agriculture, entrepreneurship, SWOT analysis

JEL classification: Q10, Q12, O0, O5, R10

1. Introduction

Global challenges such as climate change, depletion of natural resources and a growing world population in recent decades have highlighted the need to rethink traditional agricultural models. The concept of sustainable development has become a guiding principle worldwide, with the focus on meeting the needs of the present without compromising the ability of future generations to meet their own needs. In this context, sustainable agriculture is emerging as a key component of sustainable development, aiming to provide food, feed and other useful products in a way that preserves ecological balance, enhances social equity and maintains economic viability.

Sustainable agriculture is defined as a system for "the efficient production of safe, high-quality agricultural products in a way that protects and enhances the natural environment, the social and economic conditions of farmers, their employees and local communities, and the health and well-being of all farmed species" (Buckwell et al., 2015 cit. op. Marandure, T., et al.,.2020, p.1). It aims to optimize the use of natural resources, reduce negative environmental impacts and improve the quality of life for local communities. The main goal of sustainable agriculture is to achieve efficiency and sustainable growth.

Agriculture in Bulgaria is currently changing to become sustainable. This process is slow and requires addressing challenges such as:

- *Fragmentation of land*: Small and scattered farms make it difficult to apply modern technologies and practices.

- *Weak competitiveness*: Bulgarian farms often have low productivity and limited access to markets.

- *Climate change*: Frequent extreme weather events threaten the stability of production and increase the risk of losses, especially in monoculture production.

- *Insufficient numbers* of young people in the sector, leading to a decline in innovation and difficulty in adapting to new conditions.

In order to adapt to new conditions, farms need to seek innovative solutions and improve their sustainability and resilience. The extent to which "agricultural sustainability at the local level is achieved by practices that simultaneously increase resource-use efficiency or overall system self-sufficiency, while, decreasing environmental degradation and enhancing the social well-being of farmers" (Moraine et al., 2017, cit op. Marandure, T., et al.,.2020, p.1), diversification of agricultural activities has emerged as a key strategy to address the challenges faced. By diversifying crops, products and even areas of activity, farmers can reduce risk, increase income and create more sustainable farms.

The aim of this study is to analyze the business environment in Bulgarian agriculture and to assess the potential of diversification as a tool for sustainable growth. To achieve this goal, a mixed approach is used, combining both qualitative and quantitative research methods. The study includes a two-stage empirical test: at the macro level, using SWOT analyses to assess the macroeconomic

environment in Bulgaria and the factors influencing the development of the sector; and at the micro level, through an empirical study of the practices of Bulgarian farms and producers in Severen Tsentralen statistical region[5].

This research will contribute to the achievement of the country's sustainable development goals, while providing valuable information for the development of effective strategies for the development of Bulgarian agriculture.

2. THEORETICAL FRAMEWORK

Diversification in general is an approach that describes the application of the principle of distribution to adapt to dynamic changes in the environment through innovation, resilience and growth. Depending on the specifics of the different areas, the understanding of diversification specifies the objectives and the context of application. Agricultural diversification[6], for example, is a process of reduction of reliance on a single crop, livestock and/or farming activity and the introduction of a variety of crops, livestock and activities. (Petit, M. and Barghouti, Sh., 1992, pp. 6-8; Schuh, G. Ed. and Barghouti, Sh., 1988, p. 42) It occurs at four levels: farm, sector, regional and inter-sectoral (national). There are three main forms of agricultural diversification, depending on the nature of the change:

(a) a shift from farm activities to non-farm activities;
(b) a shift from less profitable crops/activities/enterprises to more profitable ones; and
(c) the use of resources in different but complementary activities (Vyast 1996, p. 637).

Agricultural diversification is a broad concept that can be specified in different dimensions, such as crop diversification and farm diversification. The first type of diversification focuses solely on the variety of crops grown (crop rotation) at the farm level. Farm diversification, on the other hand, covers a wider range of activities at the macro level (sectorial, regional). It includes not only agricultural activities but also non-agricultural activities such as agro-tourism and the development of related markets. Although with different specializations, both types of diversification are components of agricultural diversification, which can be visualized as follows (Figure 1).

Diversification creates opportunities for achieving higher and more stable rural incomes through the more efficient use of resources and the exploitation of comparative advantages (Trends in Agricultural Diversification. Regional Perspectives, Shawki Barghouti, Lisa Garbus, and Dina Umali, editors, The World Bank Washington, D.C.,1992, p. i). However, these opportunities are limited by land, climate, and socio-economic factors (Zandstra, 1992, p.13). These limitations can be overcome through appropriate policies, infrastructure, and support for rural areas.

Figure 1. COMPONENTS OF AGRICULTURAL DIVERSIFICATION

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[5] We use Eurostat name of Severen Tsentralen statistical region in the article, which is transliterated from North Central statistical region in Bulgarian.
[6] We agree with Hufnagel et al. (2020, p. 13) that there is no clear definition of diversification in agriculture and that the term is therefore used in many different ways. The following definition is the authors' view of the essence of diversification in agriculture.

Agriculture diversification (*umbrella term*)

Farm diversification (*broader category*)

Crop diversification
(*specific type*)
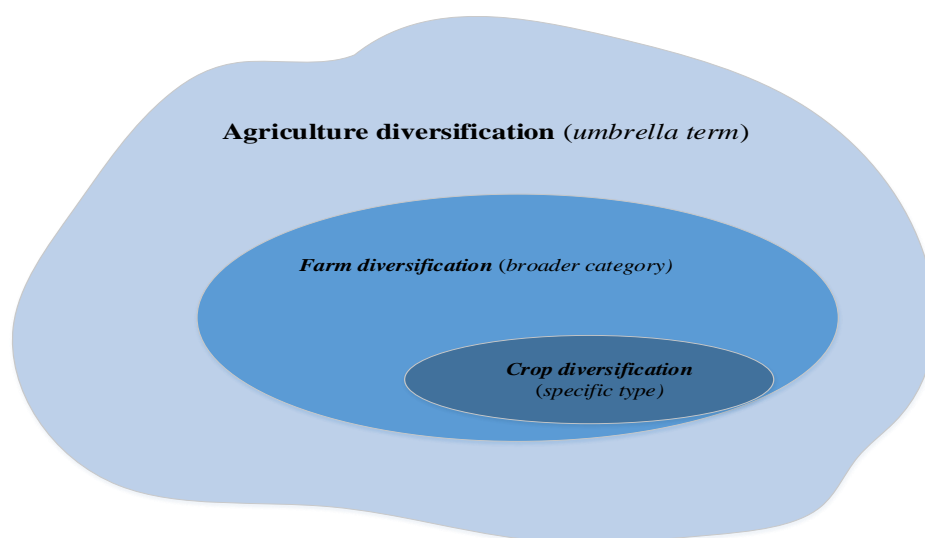
Source: Authors' development.

The inherent characteristics of agricultural diversity are essential for the growth and prosperity of both rural farming and the agricultural sector. By cultivating a variety of crops and livestock, it becomes possible to mitigate risks, increase incomes, generate employment, and strengthen food security. Furthermore, agricultural diversification promotes environmental sustainability and stimulates value-added processing. Diversification is an effective business strategy to build resilience and ensure long-term growth (Rizvi, 2024), including for farms and agro-enterprises.

Agricultural diversification has considerable potential for the improvement of rural livelihoods. By optimizing resource use, implementing activities and exploiting comparative advantages, farmers can achieve higher and more stable incomes. However, geographical, climate and socio-economic constraints can hinder this process. Supporting policies, infrastructure and rural development initiatives are essential to overcome these challenges.

3. LITERATURE REVIEW

Diversification in agriculture is becoming an increasingly important strategy for adapting to a dynamic economic environment and enhancing farm resilience. With climate change, growing competition, and evolving consumer preferences, agricultural enterprises face numerous challenges that require flexibility and innovation. For this reason, more and more farmers are recognizing the benefits of diversification and efficient allocation of their resources, products, and activities. Despite the growing interest in implementing diversification strategies, there is a limited amount of research in the Bulgarian context. Existing studies focus on:

Macroeconomic aspects of diversification: Research has focused on the macroeconomic effects of diversification, such as the economic benefits for rural areas and the impact on the national economy (Atanasova, 2023, pp. 56-62); factors for the development of agricultural enterprises in Bulgaria (with a focus on small farms) (Borisov, Radev, Nikolov, 2014); and attitudes towards the development and diversification of investments and activities in small farms (Study of MIG Belene - Nikopol, 2019). Through SWOT analyses, diversification is identified as a strength for the development of agricultural enterprises (Borisov, Radev, Nikolov, 2014, p. 39). At the same time, the low level of diversification is one of the factors causing fluctuations in the average net income of agricultural holdings (Institute of Agricultural Economics, 2020, p. 45). This limits the opportunities for increasing income and increases the risk of income instability (Institute of Agricultural Economics, 2020, p. 95).

Diversification as a risk management tool: Diversification is described as a tool to minimize risk and stimulate the agricultural sector (Nikolova, Linkova, 2011, p. 306). It provides entrepreneurs with opportunities to generate additional income, resulting in a reduced dependence on the production of subsidized agricultural products (Nikolova, Linkova, 2011, p. 319). Diversification is considered an effective risk management strategy in agriculture when farmers rely on several activities or assets whose incomes are negatively or weakly correlated (Georgieva, Kirechev, 2021, p. 58).

Diversification as a driver for farm development in the following directions

- *Sustainability and efficiency of farms*: Diversification is one of the preferred and applied solutions to achieve higher agricultural sustainability (Bachev et al., 2019, p. 230). Its application leads to positive changes that occur slowly and still apply to a limited number of farms (Doichinova, 2021, p. 21).

- Economic growth: Research examines how integrated development through diversification enables multifunctional use of resources, which increases opportunities for growth (Turlakova, 2014).

A review of the literature shows that most of the studies to date have focused on the macro-economic aspects of agriculture and on the impact of diversification at the sectoral level. However, there is a lack of in-depth analysis of individual farms, their specific conditions and the challenges they face in implementing diversification strategies, as well as information on whether they implement such strategies. This study aims to fill this gap by focusing on the factors that influence farmers' decisions to diversify their activities, as well as the specific difficulties and benefits they encounter in this process. The results of the study will have both theoretical and practical significance, contributing to a better understanding of diversification processes and providing valuable information for the development of effective policies and programs to support farms.

4. AGRICULTURE IN BULGARIA – BULGARIAN CONTEXT IN EUROPEAN UNION

Agriculture remains a cornerstone of the European Union's economy, with market-oriented agricultural holdings playing a crucial role in ensuring food security, economic stability, and social welfare especially in rural areas. The transition towards market-oriented agricultural holdings has been a key aspect of Common Agricultural Policy (CAP) reforms within the EU. This shift aims to enhance competitiveness, efficiency, and sustainability within the agricultural sector. Agricultural holdings in Bulgaria are not isolated from the global trend of EU. The market-oriented agricultural holdings are part of all farms and are divided into different stages according to their standard output. The standard output (SO) of an agricultural product (crop or livestock) is the average monetary value of the agricultural output at farm-gate price, in euro per hectare or per head of livestock[7]. The standard output is used to classify agricultural holdings by type of farming and by economic size[8]. This article delves into the development of such holdings in Bulgaria, providing a case study that reflects the broader EU context. The analysis is divided on two parts, i.e. Bulgaria covered the period 2007 – 2022 and Severen Tsentralen statistical region covered period 2016 – 2022. This is made due to better in-depth research comparable in accordance with data as well as before and after Covid-19 turbulence.

The selected indicators for this research are Farms Represented (number), Farm Net Value Added (€/farm), Total livestock output (€/LU), Total crops output (€/ha), Total output (€/farm) which will be examine on macro level – Bulgaria, and microlevel - Severen Tsentralen statistical region.

The comparative analysis as method is used to compare the situation in different types of agricultural holdings within Bulgaria. The types of specialization are 8, i.e.

[7] Glossary:Standard output (SO) - Statistics Explained (europa.eu) [Accessed: Aug. 3, 2024].
[8] Glossary:Agricultural holding - Statistics Explained (europa.eu) [Accessed: Jul. 25, 2024].

(1) Fieldcrops
(2) Horticulture
(3) Wine
(4) Other permanent crops
(5) Milk
(6) Other grazing livestock
(7) Granivores
(8) Mixed

It helps to contextualize the findings and understand the relative performance or characteristics of the subject of study. The researchers of this study assume that agricultural holdings which have Mixed specialization should be more sustainable compared to others.

Figure 2 represents the dynamics of the market-oriented agricultural holdings in Bulgaria according to their specialization through the period 2007 – 2022. The total number of these holding drops by 61 % (or 89 782 farms disappeared) for the reference period which is a clear indicator for constant consolidation of the farms. The other two exceptions are specialized farms in Fieldcrops and Other permanent crops which have increased their presence with 50% and 29% respectively from the beginning of the period. The most severe drop is in farms specialized in Granivores and Mixed – with 90 % for the period. The milk farms drop by 79 % while the Other grazing livestock is down by 70 %. As we can see the sustainability of the farms on macro level is questionable despite the CAP funds and EU membership of Bulgaria. Sustainable practices must be followed to ensure that agriculture is responsible towards the natural resources, biodiversity, climate and the society itself (H.Uzunov and E.Marinov, 2021, p. 125). The economic uncertainty since COVID-19 and different interventions in Europeans countries are the most relevant difficulties with which the market-oriented holdings must resolve. The EU managed to react timely to the new market developments and responded fast to the COVID-19 crisis by applying new rules and procedures, not only in sectoral policies, but also in the more general competition and competitiveness stimulating policy directions (E. Marinov, 2022, p. 621).

Figure 2. TRENDS IN NUMBER OF MARKET-ORIENTED AGRICULTURAL HOLDINGS IN BULGARIA

Farms represented, nb
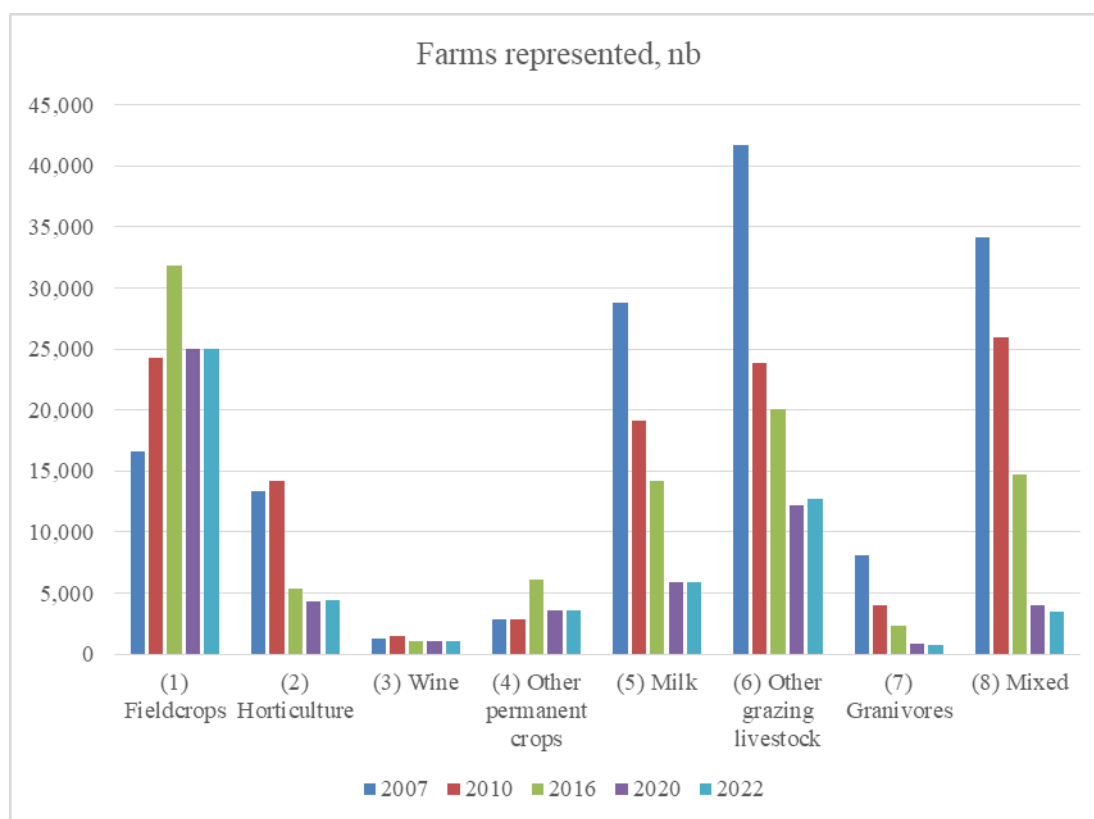
Source: Authors' development on the base of FADN data [Accessed: Aug. 18, 2024].

The bigger and mixed in specialization farms in terms of economic point of view means better economic sustainability and more options of adoption of new Agriculture 4.0 related cut edge technologies. The application of smart village's concept is a forefront example of social innovation in rural areas (Ilcheva, 2022, p. 275). However, tremendous decreasing of the smallest farms could indicate severe depopulation of the rural areas. Thus, will undeniably lower national security. The topic of career attitudes is rooted in human resource management, provoking academics, practitioners, psychologists, labor market analysts and others to seek solutions to real and potential challenges. The subject is dynamic due to changing generations, living environment, and career opportunities (Mancheva-Ali and Kostadinova, 2023, p. 190). The lack of infrastructure and job opportunity add more negative effect of rural areas in Bulgaria.

Mixed farms should be more sustainable and open for applying innovations and cutting-edge technologies; thus, we can't see this according to their rapid vanish. On the one hand, advances in science and technology have had an impact on how the results of human labour are presented, accessed, used, and disseminated. On the other hand, demand, market niches and sales have undergone revision and reorganization. Changes in supply, demand and affordability have become an opportunity and/or a threat (Stoyanov, 2023, p.168). The unpredicted turbulence during the period reveals weaknesses of market-oriented farms which are shown as too fast decreasing of their numbers without any clear improvement of competitiveness. The digitalization and innovations in market-oriented agriculture will be in great beneficent for the society and Bulgarian's economy. In recent years the interest in innovation and implementation of digital solutions in the public sector is growing at a rapid pace, both at global and regional level (Dimitrova, 2018, p. 1).

4.1. SWOT analysis of Bulgarian agriculture

The environment in which agricultural farms realize their activities is a complex network of interactions with other economic and non-economic entities, government organizations, social, natural and other systems. Agricultural structures themselves are also open and complex systems

that are "fed" by the external environment with the resources they need to produce their final product/service. A set of methods are used to analyse the internal and external environment in which agricultural farms operate, the most frequently applied being PEST and SWOT analyses. Taking into account the threats and opportunities in the development of environment and taking into account the strengths and weaknesses of the Bulgarian agricultural farms, a strategy is being developed for its survival and development. In recent years, a detailed analysis through this tool was implemented in 2020 by the Institute of Agrarian Economics at the Agricultural Academy (Analysis of the State of Agriculture and Food Industry: SWOT Analysis, 2020). It draws substantiated conclusions and recommendations from the positions of some of those laid down in the Regulation of European Parliament and EU and the general cross-sectoral goal for innovation and digitization in agriculture, namely:

• Goal 1: Support sufficiently reliable agricultural incomes and sustainability across the EU to improve food security;

• Goal 2: Strengthen market orientation and increase competitiveness, including placing greater emphasis on research, technology and digitization;

• Goal 3: Improving the position of farmers in the value chain;

• Goal 7: Employment and attraction of young farmers;

• Goal 9: Improve the responsiveness of EU agriculture to societal food and health demands, including for safe, nutritious and sustainable food and animal welfare;

• Main Goal: Modernize the sector by stimulating and sharing knowledge, innovation and digitization in agriculture and rural areas and promoting their use to a greater extent.

Summarizing the data for these goals and based on the changes that have occurred since the period of preparation of the Analysis, through the prism of the diversification of agricultural farmers in Bulgaria, the following strengths and weaknesses can be deduced:

Table 1. STRENGTHS AND WEAKNESSES OF AGRICULTURAL FARMS IN BULGARIA

Strengths	Weaknesses
- Consolidation of agricultural holdings at an accelerated pace	- Insufficient manpower in the industry.
- Modernization and renewal in the sector is proceeding at a rapid pace, which contributes to the consolidation of production and reduction of the employed.	- The added value in the industry is relatively low per area unit and animal unit.
- Good and sustainable position of agricultural producers from the grain and technical crops sectors in the value chain.	- Problems with profitability and efficiency in many sectors make it difficult for farmers to innovate.
- The interest of agricultural farmers in short supply chains is growing, which are a prerequisite not only for increasing producers' incomes, but also strengthen competition.	- The capacity of the processing plants is partially loaded.
- Higher orientation of young farmers, compared to others, to the implementation of innovations and the use of digitization in agriculture.	- Low professional qualification level of farm managers, including young ones.
- The certified areas for growing organic products in our country are increasing, as well as the number of operators in bio-agriculture.	- Small number of processing enterprises for some of the sectors (livestock) and insufficiently developed processing sector (livestock).
- The number of recognized new varieties and hybrids of plants and breeds of animals, established technologies, is significant.	- Deteriorated personnel security and age structure of R&D in the agrarian sphere.

Source: Analysis of the State of Agriculture and Food Industry: SWOT Analysis, 2020 and Authors' Own View.

Table 1 summarizes the strengths and weaknesses of specialized farms in Bulgaria relevant to this publication. The authors do not claim that these alone are the most important elements, but they are the most focused at the time of research.

Table 2. OPPORTUNITIES AND THREATS

Opportunities	Threats
- With a focused policy, small viable farms can increase their potential and improve their economic performance.	- Strong dependence of farmers' income on the received subsidies and uneven distribution of support by types of agricultural holdings.
- The modernization of agricultural holdings is an important direction of public support for Bulgarian holdings.	- The support is insufficient to stop the decline in production and the reduction in the number of agricultural holdings in the mountainous regions.
- Integration and membership in EU contribute significantly to increasing not only the trade turnover in the sector, but also improve access to a much bigger European market.	- Bulgarian producers orient their behavior very often towards receiving subsidies rather than towards market competitiveness.
- Linking investment support in processing with quality standards and use of local raw materials.	- Presence of a significant grey sector.
- Modernization and implementation of new technologies and techniques to improve working conditions are the way to overcome the majority of problems.	- Demographic crisis (permanent depopulation, constant reduction and deterioration of the age structure of the rural population, etc.).
- The prospect of getting good returns from farming and developing is a reliable motive for retaining young people in agriculture.	- Agriculture continues to have unacceptable technical (low degree of mechanization), technological, ergonomic, etc. working conditions for young people.
- Growing demand for clean and tasty organic products and orientation towards applying environmentally friendly agricultural practices.	- Growing requirements for agricultural producers in terms of environmental protection, production quality, animal welfare, which increase costs and create obstacles for agricultural producers.

Source: Analysis of the State of Agriculture and Food Industry: SWOT Analysis, 2020 and Authors' Own View.

From the presented Table 2, the significant opportunities and threats for specialized agricultural holdings, considered at the macro and micro level in this article, are clearly distinguished. Regardless of the visible progress in Bulgarian agriculture, there is still a wide horizon for improvement, innovation and diversification of adopted policies and strategies for its development. However, the threats to it are substantial, since the strong influence of the demographic crisis, the depopulation of villages and lack of enough people for the sector, can partially reduce the outlined opportunities.

4.2. Empirical section
Methodology

In this article, an approach is used to analyze the business environment in Bulgarian agriculture by evaluating diversification as a tool for sustainable growth. The research includes SWOT analyses to provide a comprehensive view of the sector. Using the deductive approach, the following hypothesis is proposed: Diversification of agricultural activities can reduce vulnerability to external factors and promote the growth (or sustainable growth) of Bulgarian agriculture. The study includes a two-stage empirical test consisting of macro- and micro-level analyses.

At the macro level, the SWOT analysis used data sources such as: national and international reports on Bulgarian agriculture, state statistics and academic literature. Strengths, weaknesses, opportunities and threats are identified and categorized based on the data collected.

The micro-level analysis used a purposive sampling method to select a diverse population of farms representing different sizes, types of production and levels of diversification. Survey studies were conducted with farm owners and managers to gather detailed information about their practices, challenges and views on diversification.

Data from SWOT analysis is quantified to measure the impact of various factors on the agricultural sector. Statistical tools and software (eg SPSS, Excel) were used to analyze the survey data and draw meaningful conclusions.

The blended approach, combining macro-level SWOT analyze with micro-level empirical studies and case studies, provides a comprehensive understanding of the agricultural sector in Bulgaria. This methodology ensures that the research results are well grounded, offering practical understanding and recommendations regarding diversification in Bulgarian agriculture.

Analysis

The farm accountancy data network (FADN) will be the primary data source for this study, which provides comprehensive and detailed data on farm economics within the EU. The FADN monitors farms' income and business activities and is a reliable informative source for analysis of market-oriented agricultural holdings. This database of microeconomic variables is based on harmonized bookkeeping principles, i.e. covers only EU agricultural holdings which, due to their size, can be considered commercial.

The secondary data analysis is a quantitative method which involves analyzing existing data sets, such as agricultural productivity statistics, economic indicators, and demographic data. This data for agricultural holdings is from FADN EU databases, research institutions, and international organizations.

The research is focused on three types of specialized agricultural holdings – Fieldcrops, Granivores and Mixed. The types of farms are representative in the Severen Tsentralen statistical region, thus it's possible to compare the selected variables of the region in micro level with the same variables at national macrolevel.

Results

This section provides a comprehensive analysis of various indicators relevant to agricultural holdings in Bulgaria. Examines trends with a focus on different types of farms, including field crops, cereals and mixed farms. The analysis highlights key economic indicators such as net farm value added, total livestock and total crop production, offering insight into the overall performance, sustainability and challenges facing these agricultural enterprises. The results highlight significant changes in farm size, productivity and economic sustainability within the sector over the observed period.

Figure 3 is focused on analyze of Fieldcrops farms in Bulgaria. The dynamic of following indicators as Farms Represented (number), Farm Net Value Added (€/farm), Total livestock output (€/LU), Total crops output (€/ha), Total output (€/farm) is examined on macrolevel. The first indicator Farms Represented (number) we can see clear decreasing of the smallest farms which is almost twice for 15 years. The bigger holdings are increasing their numbers between 2 and 4 times. In these types of holdings, it's clear that expression "the bigger, the better" is valid for hundred per cent. This is proven through analysis of the second indicator Total output (€/farm) – shows increasing at all levels of the farms. Here we should proceed with caution because the increase is not so huge as the decreasing of numbers. So, the efficiency of these holdings might fall behind in the future which will result in their competitiveness. According to this indicator the only farms with an increase of more than two times are the biggest ones with an economic size equal to or more than 500 000 €.

At the same Figure 3 the indicator Total crops output (€/ha) is even more interesting – the smallest increase in it is the smallest farms in stage (1) of economic size. The other stages of these types of farms reveal better values between 3 and 4 times – the best here are farms in stage (5) economic size where increasing is 4,34 times. The next indicator Total livestock output (€/LU) shows us that the animal breeding is really challenging for these types of specialization in Bulgaria. Here we should remark that in 2020 in the farms of stages (1), (2) and (4) this indicator was higher than in 2022 with relatively same numbers of the holdings. So, under any other equal conditions, we could conclude that these holdings suffer from market fluctuations more than the others in this specialization. There is the same issue in the farms of stages (3) and (5) but in 2016 to 2020.

The last indicator under review in Figure 3 is Farm Net Value Added (€/farm) which is crucial for the financial future and sustainability of the farm. It's good that there is an increase of the value in all stages of agricultural holdings but within the period there is clear view that between 2010 and 2016 there was clear drop of the values. This is likely of more depreciation costs and opportunity for the farms to participate in CAP subsidies for renewing their facilities.

Figure 3. TRENDS IN FIELDCROPS MARKET-ORIENTED AGRICULTURAL HOLDINGS IN BULGARIA

(1) Fieldcrops	(SYS02) Farms represented (nb)				
	2007	**2010**	**2016**	**2020**	**2022**
(1) 2 000 - < 8 000 EUR	10 224	14 261	14 061	5 651	5 641
(2) 8 000 - < 25 000 EUR	2 568	4 259	8 684	9 105	9 109
(3) 25 000 - < 50 000 EUR	943	1 375	2 387	3 090	3 179
(4) 50 000 - < 100 000 EUR	1 049	1 685	2 517	2 695	2 596
(5) 100 000 - < 500 000 EUR	1 567	2 235	2 925	3 158	3 160
(6) >= 500 000 EUR	296	500	1 283	1 298	1 295

(1) Fieldcrops	(SE131) Total output (€/farm)				
	2007	**2010**	**2016**	**2020**	**2022**
(1) 2 000 - < 8 000 EUR	6 637	8 052	4 895	6 579	9 387
(2) 8 000 - < 25 000 EUR	14 535	21 333	16 290	13 745	23 365
(3) 25 000 - < 50 000 EUR	38 029	55 497	33 409	32 553	47 176
(4) 50 000 - < 100 000 EUR	75 877	82 511	55 255	61 302	114 231
(5) 100 000 - < 500 000 EUR	264 878	409 993	231 474	260 809	472 774
(6) >= 500 000 EUR	883 167	1 383 373	1 188 526	1 212 840	2 182 972

(1) Fieldcrops	(SE136) Total crops output (€/ha)				
	2007	**2010**	**2016**	**2020**	**2022**
(1) 2 000 - < 8 000 EUR	898	1 223	1 155	1 128	1 459
(2) 8 000 - < 25 000 EUR	412	617	882	769	1 384
(3) 25 000 - < 50 000 EUR	339	561	792	878	1 141
(4) 50 000 - < 100 000 EUR	333	471	618	740	1 386
(5) 100 000 - < 500 000 EUR	332	570	687	780	1 422
(6) >= 500 000 EUR	417	621	772	808	1 592

(1) Fieldcrops	(SE207) Total livestock output (€/LU)				
	2007	**2010**	**2016**	**2020**	**2022**
(1) 2 000 - < 8 000 EUR	666	592	315	1 294	279
(2) 8 000 - < 25 000 EUR	360	454	773	817	739

(1) Fieldcrops					
(3) 25 000 - < 50 000 EUR	556	482	535	431	1 658
(4) 50 000 - < 100 000 EUR	530	256	511	1 896	720
(5) 100 000 - < 500 000 EUR	544	842	769	532	1 198
(6) >= 500 000 EUR	813	888	802	1 006	1 025

(1) Fieldcrops	(SE415) Farm Net Value Added (€/farm)				
	2007	**2010**	**2016**	**2020**	**2022**
(1) 2 000 - < 8 000 EUR	3 908	5 599	3 857	5 812	8 487
(2) 8 000 - < 25 000 EUR	6 846	11 706	11 957	12 944	20 328
(3) 25 000 - < 50 000 EUR	21 913	30 043	26 146	33 440	39 794
(4) 50 000 - < 100 000 EUR	48 146	56 059	39 511	45 372	73 656
(5) 100 000 - < 500 000 EUR	141 367	240 164	125 272	154 142	287 649
(6) >= 500 000 EUR	500 413	841 878	573 786	680 481	1 405 797

Source: Authors' development on the base of FADN data [Accessed: Aug. 21, 2024].

Figure 4 represents the microlevel of Fieldcrops in Severen Tsentralen statistical region. The indicators are the same, i.e. Farms Represented (number), Farm Net Value Added (€/farm), Total livestock output (€/LU), Total crops output (€/ha), Total output (€/farm), but the timeline is shorter from 2016 till 2022. Here is obvious that the smallest farms in this region disappear from 2018 onwards, while the number of farms from the other stages are relatively constant. In the region in total the decrease is 35% for the period – this is the opposite of the macro level increasing. The Total output (€/farm) is increasing between 50%, in the biggest farms to twice in the other economic sizes. Again, it's quite different compared to macro level for these holdings. The same picture we can observe in the next indicator - Total crops output (€/ha) where in all economic sizes, without the smallest, we can see increase of the value in 2022 two times compare to 2016.

In Figure 4 the last two indicators are very interesting, i.e. Total livestock output (€/LU) and Farm Net Value Added (€/farm). The livestock output has even negative value which shows great difficulties during the period in the Severen Tsentralen statistical region. This could be influenced by a few animals deceased and following termination of animal breeding in the farms. According to the last indicator - Farm Net Value Added (€/farm), the increase in the value is notable especially in the farms of economic size in stage (3), i.e. 3 times. The other farms in the rest of economic stages increased their Net Value Added 1,5 till 2 times and it's the same as in the macro level in Bulgaria.

Figure 4. TRENDS IN FIELDCROPS MARKET-ORIENTED AGRICULTURAL HOLDINGS IN SEVEREN TSENTRALEN STATISTICAL REGION OF BULGARIA

(1) Fieldcrops	(SYS02) Farms represented (nb)			
	2016	**2018**	**2020**	**2022**
(1) 2 000 - < 8 000 EUR	2 232			
(2) 8 000 - < 25 000 EUR	1 474	1 559	1 567	1 545
(3) 25 000 - < 50 000 EUR	420	430	373	478
(4) 50 000 - < 100 000 EUR		428	453	380
(5) 100 000 - < 500 000 EUR	532	534	536	561
(6) >= 500 000 EUR	258	276	282	282

(1) Fieldcrops	(SE131) Total output (€/farm)			
	2016	**2018**	**2020**	**2022**
(1) 2 000 - < 8 000 EUR	3 202			

(2) 8 000 - < 25 000 EUR	13 067	15 899	10 733	25 992
(3) 25 000 - < 50 000 EUR	34 722	32 040	30 425	63 888
(4) 50 000 - < 100 000 EUR		79 779	66 972	138 467
(5) 100 000 - < 500 000 EUR	293 045	354 890	338 586	620 741
(6) >= 500 000 EUR	1 130 318	1 312 561	1 268 160	1 993 943

(1) Fieldcrops	(SE136) Total crops output (€/ha)			
	2016	**2018**	**2020**	**2022**
(1) 2 000 - < 8 000 EUR	829			
(2) 8 000 - < 25 000 EUR	701	983	718	1 497
(3) 25 000 - < 50 000 EUR	759	726	774	1 561
(4) 50 000 - < 100 000 EUR		912	787	1 675
(5) 100 000 - < 500 000 EUR	726	858	828	1 599
(6) >= 500 000 EUR	817	910	916	1 696

(1) Fieldcrops	(SE207) Total livestock output (€/LU)			
	2016	**2018**	**2020**	**2022**
(1) 2 000 - < 8 000 EUR				
(2) 8 000 - < 25 000 EUR	1 130	542	59	1 805
(3) 25 000 - < 50 000 EUR	431	-23	412	
(4) 50 000 - < 100 000 EUR		402		-120
(5) 100 000 - < 500 000 EUR	557	199	-52	1 256
(6) >= 500 000 EUR	665	914	930	922

(1) Fieldcrops	(SE415) Farm Net Value Added (€/farm)			
	2016	**2018**	**2020**	**2022**
(1) 2 000 - < 8 000 EUR	3 022			
(2) 8 000 - < 25 000 EUR	11 206	13 305	11 084	22 076
(3) 25 000 - < 50 000 EUR	16 907	26 524	22 683	49 624
(4) 50 000 - < 100 000 EUR		50 733	38 940	89 388
(5) 100 000 - < 500 000 EUR	167 614	227 496	196 269	383 981
(6) >= 500 000 EUR	565 986	722 620	709 416	1 276 454

Source: Authors' development on the base of FADN data [Accessed: Aug. 21, 2024].

Figure 5 examines the Mixed agricultural holdings – this is type of specialization which should bring better diversification opportunities thus more sustainability. The figures tell us different stories. Here we examine the same variables - Farms Represented (number), Farm Net Value Added (€/farm), Total livestock output (€/LU), Total crops output (€/ha), Total output (€/farm). The number of these farms decreased 90 percent for the period of 15 years and from 34151 farms in 2007 there are only 3517 farms left in 2022. The most significant decrease in farms was in the smallest one in stage (1). The next stages according to economic size are relatively constant with trends of increasing in (3), (4) and (6) stages. The small number at the national level leads to gaps in information for the next indicators. In total we can conclude that the better values in the rest of the indicators are mainly due to the sharp decrease in the farms in Mixed specialization. We can exclude the biggest farms from this conclusion – they really improve their economic

performance during the period, i.e. these farms should be studied more closely in the future on site research.

Figure 5. TRENDS IN MIXED MARKET-ORIENTED AGRICULTURAL HOLDINGS IN BULGARIA

(8) Mixed	(SYS02) Farms represented (nb)				
	2007	2010	2016	2020	2022
(1) 2 000 - < 8 000 EUR	32 102	23 745	11 911	1 429	1 249
(2) 8 000 - < 25 000 EUR	1 678	1 651	2 220	1 807	1 500
(3) 25 000 - < 50 000 EUR	130	200	193	304	321
(4) 50 000 - < 100 000 EUR	95	166	197	133	67
(5) 100 000 - < 500 000 EUR	96	139	182	210	297
(6) >= 500 000 EUR	49	39	51	79	83

(8) Mixed	(SE131) Total output (€/farm)				
	2007	2010	2016	2020	2022
(1) 2 000 - < 8 000 EUR	4 137	5 264	3 866	4 010	8 560
(2) 8 000 - < 25 000 EUR	8 558	15 378	13 035	10 413	12 594
(3) 25 000 - < 50 000 EUR	-	-	30 204	27 878	39 071
(4) 50 000 - < 100 000 EUR	-	-	-	-	-
(5) 100 000 - < 500 000 EUR	312 281	404 920	233 661	225 912	316 652
(6) >= 500 000 EUR	-	-	1 381 439	1 642 968	2 668 010

(8) Mixed	(SE136) Total crops output (€/ha)				
	2007	2010	2016	2020	2022
(1) 2 000 - < 8 000 EUR	494	614	729	1 093	364
(2) 8 000 - < 25 000 EUR	287	531	828	646	864
(3) 25 000 - < 50 000 EUR	-	-	739	421	672
(4) 50 000 - < 100 000 EUR	-	-	-	-	-
(5) 100 000 - < 500 000 EUR	376	415	627	488	672
(6) >= 500 000 EUR	-	-	644	684	1 418

(8) Mixed	(SE207) Total livestock output (€/LU)				
	2007	2010	2016	2020	2022
(1) 2 000 - < 8 000 EUR	617	660	556	679	3 122
(2) 8 000 - < 25 000 EUR	624	538	1 573	1 099	488
(3) 25 000 - < 50 000 EUR	-	-	500	543	563
(4) 50 000 - < 100 000 EUR	-	-	-	-	-
(5) 100 000 - < 500 000 EUR	718	861	648	913	992
(6) >= 500 000 EUR	-	-	1 019	883	1 510

(8) Mixed	(SE415) Farm Net Value Added (€/farm)				
	2007	2010	2016	2020	2022
(1) 2 000 - < 8 000 EUR	1 218	2 444	2 944	2 095	5 590
(2) 8 000 - < 25 000 EUR	2 683	7 796	10 552	7 975	12 128
(3) 25 000 - < 50 000 EUR	-	-	20 689	26 722	26 181

(4) 50 000 - < 100 000 EUR	-	-	-	-	-
(5) 100 000 - < 500 000 EUR	152 696	200 374	102 526	129 913	180 166
(6) >= 500 000 EUR	-	-	461 411	795 738	1 368 787

Source: Authors' development on the base of FADN data [Accessed: Aug. 11, 2024].

Figure Six is focused on the Mixed agricultural holdings but in Severen Tsentralen statistical region of Bulgaria, i.e. the micro level. The variables are - Farms Represented (number), Farm Net Value Added (€/farm), Total livestock output (€/LU), Total crops output (€/ha), Total output (€/farm). As we can see there are farms only in the second stage of economic size after 2016. In 2022 the number of farms represent 20% of total farms in Bulgaria in the second stage of economic size. There should be noted that in all indicators these agricultural holdings are better than on the national level. Furthermore, they are interested in a future on-site examination for their better practices which made them more competitive than average on national level.

Figure 6. TRENDS IN MIXED MARKET-ORIENTED AGRICULTURAL HOLDINGS IN SEVEREN TSENTRALEN STATISTICAL REGION OF BULGARIA

(8) Mixed	(SYS02) Farms represented (nb)			
Economic Size	2016	2018	2020	2022
(1) 2 000 - < 8 000 EUR	2 014			
(2) 8 000 - < 25 000 EUR	420	218	385	299

(8) Mixed	(SE131) Total output (€/farm)			
Economic Size	2016	2018	2020	2022
(1) 2 000 - < 8 000 EUR	2 995			
(2) 8 000 - < 25 000 EUR	12 830	11 100	9 540	17 968

(8) Mixed	(SE136) Total crops output (€/ha)			
Economic Size	2016	2018	2020	2022
(1) 2 000 - < 8 000 EUR	231			
(2) 8 000 - < 25 000 EUR	801	994	747	1 638

(8) Mixed	(SE207) Total livestock output (€/LU)			
Economic Size	2016	2018	2020	2022
(1) 2 000 - < 8 000 EUR	222			
(2) 8 000 - < 25 000 EUR		3 719	567	796

(8) Mixed	(SE415) Farm Net Value Added (€/farm)			
Economic Size	2016	2018	2020	2022
(1) 2 000 - < 8 000 EUR	3 155			
(2) 8 000 - < 25 000 EUR	13 120	11 534	9 502	16 879

Source: Authors' development on the base of FADN data [Accessed: Aug. 18, 2024].

The last market-oriented agricultural holdings for analyzing are specialized in Granivores. At the national level there is a sharp decrease in the number of these holdings – 90% in 2022 compared to 2007, i.e. 8 075 farms to 767 farms. At regional level there is increasing of these farms in 2022 compared to 2016 – from 44 to 77. Here we should say that at Severen Tsentralen statistical

region of Bulgaria these holdings are represented only in stage (6) economic size – the biggest ones, except for the last year 2022 when all represented holdings are situated in stage (5) economic size. The variables are - Farms Represented (number), Farm Net Value Added (€/farm), Total livestock output (€/LU), Total crops output (€/ha), Total output (€/farm). Each of these indicators are higher than at the national level. In 2022 these holdings are in stage (5) of economic size and represented 30% of these specialization in Bulgaria. So, we must wait for future data to see where and how they should develop to make a more general conclusion.

5. CONCLUSION

The analysis of agricultural holdings in the Severen Tsentralen region of Bulgaria reveals a complex landscape of structural change and economic performance. The results indicate significant disparities in performance among different farm types in Bulgaria, with larger farms generally showing better economic outcomes compared to smaller ones. Fieldcrop farms demonstrate steady growth in productivity, while mixed farms face challenges in maintaining both crop and livestock production. The analysis also revealed that diversification strategies, while beneficial for environmental sustainability, did not uniformly translate into higher economic returns across all farm types. This highlights the need for tailored approaches that consider the unique conditions and capabilities of each farm type to optimize both economic viability and sustainability.

While field crop farms, especially the larger ones, are currently performing well, the sector faces potential risks due to the decline of smaller farms and the challenges related to maintaining efficiency and competitiveness. The competitiveness, restructuring, and social impact of these holdings relate to the country's socio-economic context. Smallholder farms lack behind their development in Bulgaria's agriculture, emphasizing the need for a balanced approach that integrates technological innovation with ecological and social considerations. The competitiveness of these holdings should be shaped by effective management, innovation, and the integration into sustainable food supply chains. Smallholder market-oriented farms, despite facing challenges, should remain integral to Bulgaria's food security and the well-being of rural communities. The study underscores the importance of innovation in ensuring the long-term viability of these agricultural systems, particularly in the face of ongoing market fluctuations and consolidation trends.

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NAVIGATE THE MAZE: THE CONCEPTUAL FRAMEWORK OF SUSTAINABILITY ACCOUNTING

-ABSTRACT-

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Abstract

Sustainability, which encompasses environmental, social and economic well-being, has become a top priority for businesses, investors and society at large. The growing uncertainties of climate change, resource depletion and social inequality require a fundamental shift to ensure the long-term survival of our planet and its inhabitants. Businesses have a critical role to play in this transition, as their practices have a significant impact on the environment, society. In response, companies are increasingly integrating environmental, social and governance issues into their decision-making processes. This integration requires a framework and principles for measuring, reporting and disclosing a company's impact across these three aspects. Sustainability accounting is emerging as a tool to meet this need, providing a structured approach to navigating the complexities of ESG integration. It goes beyond a narrow focus on profit to a more holistic view that recognises the interlinkages between environmental, social and economic concerns.

The Current Landscape: A Maze of Information. Despite the extensive literature on sustainability accounting, there is a significant gap in the research on its theoretical and conceptual framework. The lack of a comprehensive theoretical foundation limits the understanding of a holistic approach to accounting for sustainable practices, their impacts, risks and consequences within organisations.

This research aims to clarify sustainability accounting framework by identifying key elements, exploring forms and analysing underlying concepts.

Methodology: This research adopts a holistic approach, integrating content analysis, logical deduction and thematic analysis to investigate the conceptual framework of sustainability accounting. This systematic approach ensured a comprehensive understanding and enhanced the credibility of the study.

Expected Outcomes: The paper attempts to clarify the conceptual framework as it provides a structured understanding of the conceptual framework of sustainability accounting and offers an innovative 'compass' model for the conceptual framework of sustainability accounting.

By highlighting the conceptual framework of sustainability accounting, this research provides companies with a roadmap for navigating the complexities of ESG integration. By adopting this framework, companies can achieve greater transparency and accountability for their ESG performance. Ultimately, this fosters a more sustainable business environment, benefiting not only companies but also stakeholders and society as a whole.

Keywords: *accounting, sustainability, sustainability accounting, conceptual framework*

JEL classification: M41, Q56

Introduction

At a time when the world faces increasing environmental challenges (climate change, limited natural resources, pollution) and social inequality, poverty, discrimination and conflict, the need for resilience, care and empathy has never been greater. They are the key to a better future. In

recent decades, governments, international organisations, business and society have been working together to solve social and environmental issues, and sustainability and sustainable development have become the panacea. Under social and public pressure, companies - the creators of goods and services for people and society - began to meet the needs and demands for information about their involvement in social and environmental issues by providing information about the impacts and risks associated with them and communicating it to interested parties. Thus, a revolutionary direction in accounting was formed - sustainability accounting. Sustainability accounting is in general defined as the accountability related to demonstrating the responsible attitude of companies/organisations towards the environment and society, which is implemented in their corporate governance. (Petrova, 2024, p.56). There is a growing interest among academics and practitioners alike. Despite numerous studies, articles and other publications, there is a lack of a unified approach to accounting for sustainable practices in companies, their impacts, risks and consequences. This paper aims to clarify and define the conceptual framework of sustainability accounting by outlining its key elements and their interactions. A comprehensive research approach that integrates theoretical analysis, literature review and conceptual modelling is used to: systematise existing theoretical approaches to sustainability accounting; develop a structured conceptual framework for sustainability accounting; and propose a conceptual model of sustainability accounting that can be used for better understanding and application in the business context. The systematic approach ensures a holistic study by integrating different perspectives and theoretical concepts, thus increasing the credibility and reliability of the findings and providing a comprehensive perspective on sustainability accounting and its conceptual framework.

The research is carried out in three steps: theoretical overview of sustainability accounting, literature review and the authors' conceptual approach to sustainability accounting.

The study makes a twofold contribution to the development of the theoretical foundations of sustainability accounting and encourages further research in this area, and it helps companies to understand the philosophy of sustainability accounting, which is a key factor in the preparation of sustainability reports.

Theoretical background: an overview of sustainability accounting

Sustainability accounting is a synergy of providing, measuring, disclosing and analyzing information about the impact and interaction of business with the environment and society (Petrova, 2024, p. 57). It aims to achieve: *transparency and accountability; comprehensive disclosure and decision-making.* The three objectives of sustainability accounting are as follows (a) to prepare reports that transparently communicate a company's interactions with society and the environment; (b) to disclose both financial and non-financial information about a company's sustainability performance (social and environmental); (c) to extend traditional financial accounting by considering a wider range of information, including monetized (assigned a financial value) environmental, social, and economic impacts, to support informed decision-making (Ozili, 2022, p.4). According to Ben and Richardson (2003, p.11), the key dimension of sustainability accounting are:

- **Type of impact:** Sustainability accounting categorizes impacts as environmental (e.g., carbon emissions, water use), social (e.g., labor practices, diversity, equality and inclusion), or economic (e.g., community investment, job creation).
- **Location of impact:** The analysis can focus on impacts within the company's operations (internal), such as employee well-being or waste generation. It can also address external impacts (beyond the company), such as the environmental footprint of its supply chain or its community engagement initiatives.
- **Timeframe:** Sustainability reports can serve as a snapshot in time, focusing on a specific reporting period (e.g., one year), or they can show trends over time, highlighting a company's progress or regression towards sustainability goals. (Figure 1.)

Figure 1. KEY DIMENSIONS OF SUSTAINABILITY ACCOUNTING
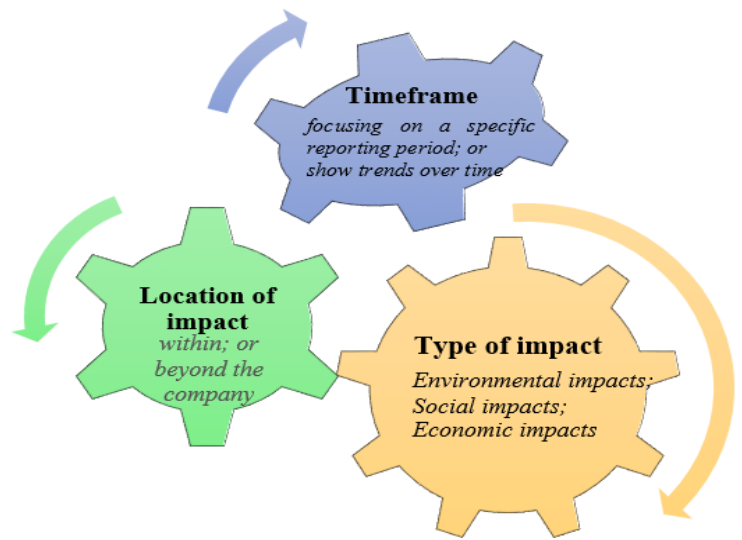
Source: Author, adapted from Ben and Richardson, 2003, p.11

Sustainability accounting is the individual approach of a company or organisation to sustainable development. It provides information on progress towards sustainable goals.

A closer look reveals that the theoretical framework of sustainable accounting is based on three concepts: the concept of sustainable development, corporate social responsibility (CSR) and the triple bottom line (TBL).
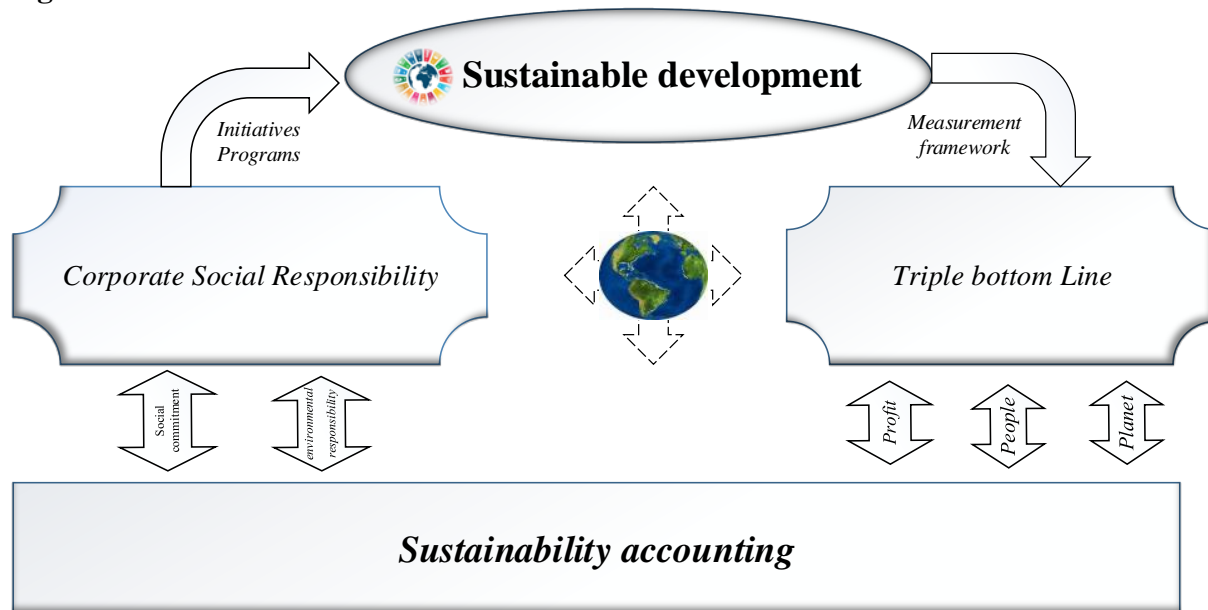
Sustainable development is a ubiquitous development paradigm (Mensah, 2019, p. 2) that outlines the concept of development, the concept of needs and the concept of future generations (Klarin, 2018, p. 76). It is a visionary approach that emphasises positive transformation that achieves a balance between economic growth, environmental protection and social equality, which are the three pillars of sustainability. (Mensah, 2019, p. 9).

Social responsibility is defined as the obligation of businesses to pursue those policies, make those decisions or follow those lines of action that are desirable in terms of the objectives and values of our society. (Bowen, 1953, p.6 cited in Asmara et. al. 2023). These are voluntary corporate initiatives that contribute to a better society and a cleaner environment. Social responsibility encompasses the expectations that society has of organisations at a given time: to be financially stable and profitable; to comply with the law; to be ethical; and to contribute to the community by participating in voluntary activities and improving the quality of life of that community. (Caroll, 1991, pp. 40-42).

The triple bottom line is a sustainability framework that examines a company's social, environmental and economic impacts. (Elkington, 2018). This framework encourages companies to consider the wider impact of their activities on society and the environment, alongside financial performance. (Jaiswal & Meena, 2024) TBL assesses a company's performance in three dimensions: social, environmental and economic, often referred to as the 3 Ps - People, Planet and Profit.

Sustainable development, corporate social responsibility, the triple bottom line and sustainability accounting are concepts that are intertwined in a dynamic system characterised by interacting and interlinking. (Figure 2)

Figure 2. LANDSCAPE OF SUSTAINABILITY ACCOUNTING: LINKAGES

Source: Developed by the author

Sustainable Development is the ultimate goal pursued by all: to achieve balanced economic, social and environmental progress by implementing sustainable practices and policies. It sets out the macro framework.

CSR and TBL are approaches that contribute to global sustainable development goals. The focus of each is different. CSR focuses on "what needs to be done to achieve the sustainability goals", while TBL is about the quantitative measurement of the results of social and environmental commitments made and their impact in the three dimensions of economic, social and environmental performance.

Sustainability accounting is a cornerstone for accountability of sustainable business practices, providing a mechanism for accountability and control over a company's social and environmental commitment through the use of financial and non-financial indicators.It represents the micro-level view by which individual business performance is monitored and assessed. In this sense, sustainable accounting can be defined as a "bridge" between sustainability concept and companies' specific practices and sustainability performance. Several theoretical approaches are also used to help understand Sustainable Accounting. Legitimacy theory, stakeholder theory and institutional theory are of key importance (Benvenuto et al., 2023; Benameur, et al., 2023).

Legitimacy theory is based on the paradigm of the 'social contract' between the company and society (Benvenuto, 2023). **This perspective suggests** that companies should strive to maintain their legitimacy by behaving according to a "socially constructed system of norms, values, beliefs and definitions" (Schuman, 1995, p. 574).

According to stakeholder theory, companies should create value for each of their stakeholders: customers, employees, suppliers, communities, investors and all groups and individuals who can affect or be affected by the company's activities (Freeman, 2010, p.9). As a result, companies have to take into account the different perspectives and expectations of each stakeholder who has an interest in the company's activities (Badia et al., 2020), as their influence and value are crucial to the company's success (Leon & Salesa, 2023, p.21435).

Institutional theory provides a relevant perspective on how organisational survival is influenced by the need to comply with social norms. (Andrades, et al, 2024). It recognises that organisations are economic entities that operate in an environment that contains institutions that influence their behaviour and expectations (Benvenuto et al., 2023). . In this context, companies

have to behave in a socially acceptable way and follow certain norms and values that are imposed by laws, policies and regulations (Andrades, et al., 2024).

Each of these theories helps to reveal the reasons why companies engage in sustainable practices, while also illuminating different aspects of the nature and functions of sustainable accounting. (Table 1)

TABLE 1. THEORETICAL PERSPECTIVES AND THEIR CONTRIBUTION TO SUSTAINABILITY ACCOUNTING

Theoretical perspectives	Value added to sustainabilty accounting	
Legitimacy theory	Links sustainability reporting to societal expectations and emphasises the role of accountability as a means of demonstrating compliance with standards and regulations.	Explains why companies publish non-financial information: to maintain their legitimacy in society;
		Links sustainability acounting to public expectations
		Emphasises the role of sustainability reports as a means of demonstrating compliance with standards and regulations
Stakeholder theory	Argues for the need for transparency and accountability, taking into account the interests of all stakeholders	Expands the focus of reporting: adds non-financial reporting of social and environmental concerns and risks
		Requires transparency and accountability
Institutional theory	Explains how the adoption of sustainable practices in organisations is driven by regulatory or other standards.	Highlights the role of regulation and standardisation
		Reveal how and why companies adopt sustainable practices under external pressure (regulatory or other requirements)

Source: Authors' elaboration

The theories discussed above highlight the different approaches and motivational factors that may encourage or compel companies to adopt sustainability accounting as a practice. They thus contribute to understanding the core of sustainability accounting.

In order to provide a complete theoretical framework for sustainable accounting, it is necessary to integrate ESG (environment, society, governance). ESG is a holistic approach to measuring sustainability in three main areas: social responsibility, environmental management and corporate ethics. To be effectively implemented, ESG requires a structured approach to measuring and reporting, which is provided by sustainability accounting. The two approaches are complementary: ESG sets the guidelines and criteria for sustainable development, while sustainable accounting provides the framework for their implementation, monitoring and reporting.

The analysis conducted revealed that:

• Sustainability accounting is a holistic concept, formed by the interaction of different theoretical approaches and concepts;

• Sustainability accounting integrates sustainability into the practices of the company;

- Sustainability accounting provides information in four areas: wealth, environment, social responsibility and ethical norms. Taken together, these four form the 4Ps model of sustainable accounting: Prosperity, People, Planet and Principles (Figure 3).

Figure 3. THE 4s OF SUSTAINABILITY ACCOUNTING
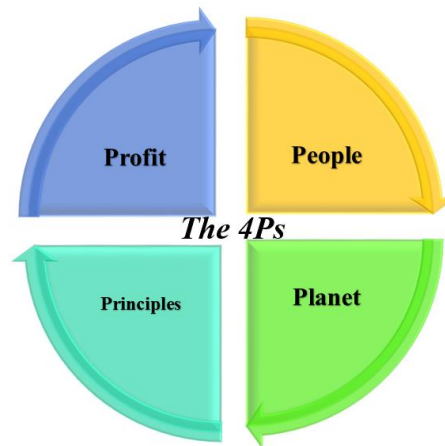
Source: Developed by the author

The 4Ps Model is a framework designed to help achieve long-term sustainability and create value for all stakeholders involved.

In summary, sustainability accounting provides a holistic view of business by integrating the different dimensions - economic, social, environmental and ethical. As well as improving transparency and accountability, it supports the long-term sustainability of companies through the creation of value for all stakeholders.

Literature review

Sustainability accounting has received significant research attention in recent years (Vysochan et al., 2021, pp. 97-101; Zyznarska-Dworczak, 2020, pp. 4-5). This growing interest is driven by: the relevance and importance of sustainability and sustainable development issues; the demonstration of commitment to and implementation of sustainable business models; and proactive communication between companies and stakeholders. Furthermore, unexplored areas of sustainability accounting continue to emerge, creating new spaces for exploring how knowledge is created, validated, and translated (or not) alongside policy and practice (Bebbington & Larrinaga, 2014, p. 395). Furthermore, unexplored areas of sustainability accounting continue to emerge, creating new spaces for exploring how knowledge is created, validated, and translated (or not) alongside policy and practice (Bebbington & Larrinaga, 2014, p. 395). Despite the increasing number of studies, however, there is still a relative lack of research on the theoretical underpinnings of sustainability accounting.

The literature review showed that one of the pioneers in developing a conceptual framework for sustainability accounting is **Robert Gray**, who identified three distinct methods for accounting for sustainability: sustainable costs, natural capital accounting, and input-output analysis (Gray, 1994, pp. 33-37).

Only *Lamberton* (2005) has developed a conceptual framework for sustainability accounting. His framework consists of five components: (1) objective(s) of the sustainability accounting framework; (2) principles, which underpin application of the framework; (3) data capture tools, accounting records, and measurement techniques; (4) reports used to present information to stakeholders; and (5) qualitative attributes of information reported using the framework. (Lamberton, 2005, pp. 16-18). (Figure 4, Figure 5)

Figure 4. COMPONENTS OF SUSTAINABILITY ACCOUNTING FRAMEWORK
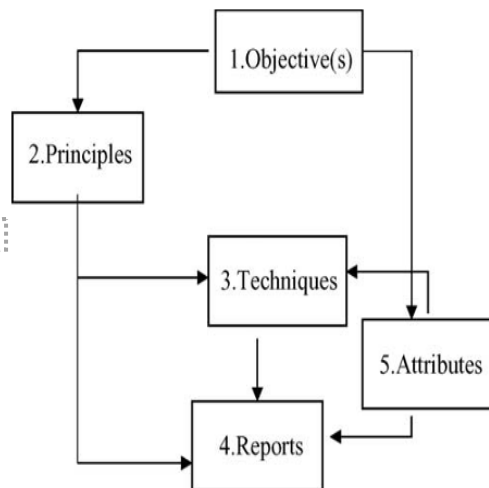
Source: Lamberton, 2005, c. 16

Figure 5. COMPREHENSIVE SUSTAINABILITY ACCOUNTING FRAMEWORK

Source: Lamberton, 2005, c. 17

Another contribution is the **Sustainability Accounting Framework Model,** proposed by *Zyznarska-Dworczak* **(2020).** This model is based on an innovative holistic approach to sustainability accounting. It positions sustainability accounting as a normative framework for understanding its meaning, scope and functions. The elements of the framework for sustainability accounting are: **(i)** sustainability accounting purpose, (ii) the users of sustainability information, (iii) the qualitative characteristics of useful sustainability accounting information, (iv) the subjective scope of

Research by scholars such as M.Milne, R. Gray, Schaltegger and Burritt, Bebbington and Larrinaga, and Ozili explores nuance in the conceptual framework of sustainability accounting from different perspectives, contributing to a deeper understanding of its nature and potential.

Milne (1996) argues that in order to ensure a more comprehensive and accurate assessment of a company's activities, sustainability accounting should adopt a systems-based approach that considers both the environmental and social systems in which the company operates.

Gray (2010) emphasises the need for a more nuanced and entity-specific approach to sustainability accounting, based on an in-depth analysis that highlights the shortcomings and limitations of existing sustainability measurement and reporting methodologies. Rather than a one-size-fits-all model, he argues for an individualised approach to sustainability reporting, tailored to the specific characteristics of each reporting entity. This perspective .

Schaltegger and Burritt (2010) extend the discussion by highlighting the dual nature of sustainability accounting - both as a philosophical concept and as a practical management tool, focusing on its practical applications.

Bebbington and Larrinaga (2014) propose a broader, integrated approach to sustainability accounting, drawing on sustainability science and exploring the interaction between accounting and sustainable development.

Ozili (2021) examines the role of accounting in assessing social and environmental outcomes that concern both organisations and society. He discusses its objectives and motivations, and provides conceptual insights into how companies can effectively use sustainability accounting.

The analysis of the existing research on the conceptual framework of sustainability accounting has found that scholars take a holistic approach that is individualised according to their specific perspective. Their focus is primarily on the conceptual framework for sustainability reporting. This approach: (a) prioritises sustainability accounting as a process for measuring, reporting and disclosing the environmental, social and economic performance of organisations, with an emphasis on the regulatory framework of sustainability accounting (reporting); and (b) neglects the broader aspects of sustainability as a system of interrelated elements and as a management tool and their reflection in accounting practice, thus limiting the ability to assess the comprehensive framework of sustainability accounting.

Rethinking Sustainability Accounting: Conceptual Perspective

The sustainability accounting framework is the blueprint for sustainability accounting. It is essential for understanding the complex nature of sustainability accounting and its application in organisations/ companies. Similar to sustainability accounting, which is an information system composed of various subsystems with specific focus, objectives and scope (such as social accounting, environmental accounting, sustainability reporting), each subsystem has its own conceptual framework. These frameworks provide guidance on how to identify measure and report on the relevant aspects of sustainability performance within that particular field. Emphasis is placed on the conceptual framework, which provides the basic guidelines for the entire sustainability accounting system and sets the parameters within which its sub-systems function.

Two approaches, systemic and functional, can be used to develop a conceptual framework for sustainability accounting. The systemic approach allows for a clear distinction between individual elements and their interrelationships, making it ideal for extracting fundamental, theoretical knowledge. In contrast, the functional approach focuses on the processes and actions involved and provides a detailed description of the sequence of steps within these processes. While the systemic approach provides a broader 'big picture' perspective, the functional approach is more practice-oriented and process-driven. In the context of sustainability accounting, the systemic

approach is well suited to deriving theoretical insights, while the functional approach[9] effectively characterises sustainability accounting as a dynamic activity involving the identification, measurement, reporting, disclosure and analysis of the interactions and impacts between environmental, social and economic factors.

A systemic approach to the conceptual framework of sustainability accounting is essential for understanding the multiple factors that influence its development and application. This approach highlights the dynamic and evolving nature of sustainability accounting and the interrelationships between stakeholder expectations[10], management motivations[11], constraints and limitations[12]. By recognising these interdependencies, organisations are able to develop a conceptual framework for sustainability accounting that is both comprehensive and flexible. This balance ensures that sustainability accounting practices are not only aligned with stakeholder interests, but are also feasible and effective within the organisation's operational context.

The conceptual framework for sustainability accounting sets out a system of interrelated elements designed to ensure that sustainability accounting effectively addresses the information needs of stakeholders in relation to environmental and social issues. These core elements include the ***purpose, subject matter, scope and principles of sustainability accounting***.

In the context of sustainability science and the interaction between sustainability accounting and sustainable development (according to Bebbington and Larrinaga, 2014, p. 405), the **purpose** of sustainability accounting is to achieve sustainability in the organisation/company. This is achieved through several key objectives: ensuring transparency, managing sustainability, informing stakeholders and supporting strategic decision-making. These objectives are interrelated and contribute to sustainability in the following ways

Providing transparency: Transparency enables stakeholders to assess the organisation's (company's) impact on the environment and society, which is essential for building trust and promoting responsible practices.

Sustainability management: Sustainability accounting provides information to help organisations identify, measure and manage sustainability impacts and risks, leading to resource efficiency and mitigation of negative impacts.

Providing information to stakeholders: Access to reliable information enables stakeholders to make informed decisions about their relationship with the organisation.

Supporting strategic decision-making: Sustainable accounting provides managers with key information on sustainability impacts and risks, enabling them to develop more effective strategies and make informed decisions that ensure the resilience of the business .

The **subject** of sustainability accounting encompasses the two-way interaction between an organisation and its environment, society and corporate governance, both in monetary terms and in non-monetary units. It defines the boundaries of scientific inquiry and directs researchers towards specific phenomena, processes or objects.

The **scope** of sustainability accounting encompasses the identification, assessment and management of sustainability impacts, risks and opportunities. It includes objects such as:

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[9] The conceptual framework of sustainability accounting developed under the functional approach is beyond the scope of this study.

[10] Stakeholders, encompassing investors, customers, employees, local and international communities, organizations, regulators, and internal management, have diverse expectations regarding sustainability performance.

[11] Managers are driven by various motivations to implement sustainability accounting systems, including: greenwashing, industry mimicry and pressure, self-regulation and ethical consideration, ect. (Schaltegger and Burritt, 2010, pp. 375 - 384). These motivations influence how sustainability accounting is structured and prioritized within an organization.

[12] The constraints and limitations are characterised by the difficulties and challenges of sustainability accounting: difficulties in collecting data on sustainability indicators, lack of assessment of non-financial information, etc. Addressing these constraints is crucial for the effective integration of sustainability accounting practices.

Natural capital: All renewable and non-renewable environmental resources and processes that provide goods or services that support the past, current or future prosperity of an organisation (IFRS, 2021 p.19).

Sustainable investments: Investments that prioritise people and nature, lead to improved sustainability or solve social or environmental problems, such as investments in environmentally friendly technologies; investments in the training and development of workers and employees.

Environmental and social revenues and expenses: The financial consequences of activities that have an environmental and social impact, for example: expenditure on social programmes and initiatives, expenditure on improving working conditions, expenditure on repairing environmental damage, costs of waste management and pollution, etc.

Non-financial indicators (ESG factors): Metrics used to assess the sustainability of an organisation, including greenhouse gas emissions, waste generation, water and energy consumption, labour conditions, safety standards, human rights practices, ethical policies, and other environmental, social, and governance (ESG) factors.

The principles of sustainability accounting[13] are

Accountability: the right to receive information about the social and environmental interactions, impacts, risks and opportunities for the enterprise and the duty to supply it. (Grey, 1992 p.413)

Transparency: willingness to share true, accurate, relevant and timely information with stakeholders on social and environmental issues.

Proactivity: focus on long-term environmental and societal impacts, opportunities and risks, i.e. in perspective.

Multidimensionality: comprehensiveness of all aspects of the activity, including financial, social and environmental; perspectives and viewpoints.

Flexibility and adaptability: the ability to change and adapt to a changing environment, taking advantage of opportunities and avoiding risks.

The principles of sustainability accounting are closely interrelated and mutually enhancing. Understanding their nature requires a holistic view. Accountability provides transparency, while proactivity requires multidimensionality, flexibility and adaptability in assessing future opportunities and risks.

The interaction between the elements of the conceptual framework of accounting: purpose, subject, object and principles of sustainability accounting is fundamental to understanding sustainability accounting as both theoretical knowledge and activity. It can be depicted as follows: (Figure 6.)

**Figure 6**. ELEMENTS OF CONCEPTUAL FRAMEWORK OF SUSTAINABILITY ACCOUNTING

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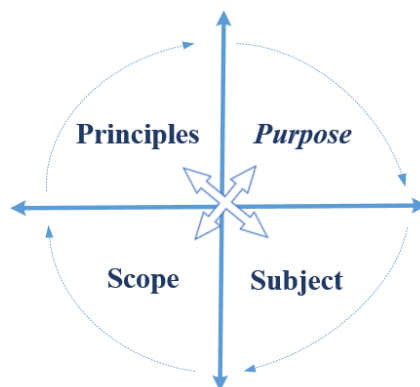
[13] The principles of sustainability accounting are different from the principles of sustainability information. The latter are subject to regulations, accounting standards and guidelines for sustainability reporting by the company.

In this diagram, each element plays a critical role in navigating the complexities of sustainability accounting. The purpose sets the foundation, the subject defines the scope, the object identifies the focus, and the principles ensure the integrity and reliability of the accounting process.

Beyond these core elements, the conceptual framework of sustainability accounting can be further illustrated through a conceptual model, specifically one that embodies the idea of a compass. (Figure 7).

Figure 7. COMPASS MODEL OF SUSUTAINBILITY FRAMEWORK
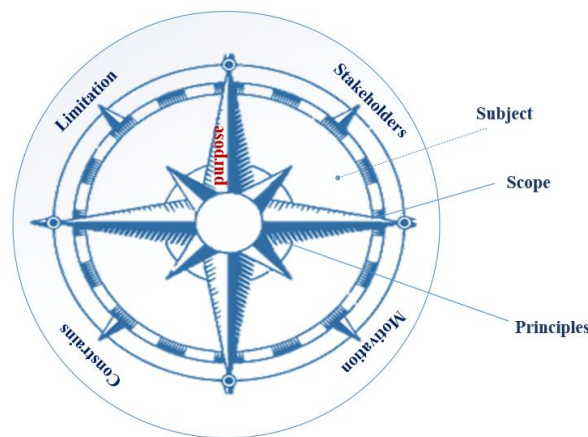
This compass visualisation serves as a practical tool for understanding the interrelationships between the elements and their application in business scenarios.

Features of the compass model are:

- The Needle (purpose): Pointing organisations towards sustainable practices.
- The dial (subject): Defining the interactions between the organisation, environment, society and governance.
- The Cardinal Directions (scope): Specifying the focus on natural capital, social and environmental income and expenditure, ESG factors and etc.
- The Internal Mechanism (principles): Ensuring the reliability of the accounting process through accountability, transparency, proactivity, multidimensionality, flexibility and adaptability.

This model not only highlights the interconnectedness of these core elements, but also integrates the influence of factors such as stakeholder expectations, management motivations, limitations and constraints. By incorporating these dynamics, the Compass model provides a comprehensive and dynamic representation of the conceptual framework of sustainability accounting. This visualisation helps to understand how the framework translates into actionable practices, thereby enhancing the effectiveness of sustainability accounting in organisational decision making.

To summarise, sustainability accounting is a dynamic, developing area which requires a holistic approach. The conceptual framework of sustainability accounting provides a basis for effectively integrating sustainability into business practices and achieving long-term goals.

Conclusion

The paper outlines the significance of sustainability accounting in contemporary global business world. It emphasizes the imperative for corporations to seamlessly integrate Environmental, Social, and Governance (ESG) factors into their strategic decision-making and operational activities, As businesses face increasing pressure to align with sustainability goals, sustainability accounting

emerges as a critical tool for assessing and managing sustainability-related risks and opportunities. Examining the nature of sustainable accounting and its links to sustainable development, this study focuses on the conceptual framework as a comprehensive model of their interaction.

Key findings of this research include:

Integrates core elements and ensures coherence through a systemic approach, providing a holistic theoretical and conceptual framework for sustainability accounting.

Introduces an innovative compass model that visually illustrates the interrelationships within the sustainability accounting framework, incorporating stakeholder expectations, managerial motivations and operational constraints.

This paper makes a valuable contribution to the field of sustainability accounting by providing a structured and comprehensive understanding of its conceptual framework. By bridging theoretical foundations with practical insights, the study provides a foundation for further academic exploration and business implementation. The proposed framework and compass model serve as useful tools for companies, researchers and policymakers to help integrate sustainability into accounting practices. This study supports the transition to a more sustainable business environment by enhancing transparency, accountability and strategic decision-making.

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DIGITALLY EMPOWERED: UNVEILING THE IMPACT OF DIGITAL LITERACY ON EMPLOYEE PERFORMANCE IN EMERGING ECONOMIES

─ ABSTRACT ─

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Abstract

Small and medium-sized enterprises (SMEs) in emerging economies significantly contribute to job creation and inclusive economic growth but face challenges such as limited digital literacy among employees. This study examines the impact of digital literacy on employee performance in SMEs in Bosnia and Herzegovina (BiH), employing the TOE (Technological, Organizational, and Environmental) model. The study finds that digital literacy acts as a catalyst for tech proficiency, enhancing employee performance. Employees often have limited understanding of how their managers communicate the digital agenda, which hampers their acceptance of new technologies and affects the resilience and adaptability of SMEs in the digital landscape.

Research shows that digital literacy is crucial for productivity, competitiveness, innovation, risk management, employee satisfaction, and social inclusion. The study aims to provide practical guidance for enhancing digital literacy among SME employees to foster improved performance and successful digital transformation. The main hypothesis is that digital literacy among employees in SMEs in BiH contributes to their performance, with auxiliary hypotheses exploring sectoral, age, and educational differences in digital literacy levels.

Using a quantitative approach, data was collected from 281 employees in SMEs across BiH. The results indicate that digital literacy positively impacts employee performance, with environmental factors having the most significant influence, followed by organizational and technological factors. The findings reveal that while employees possess basic digital skills, there is a lack of strategic direction and understanding of digital agendas.

The study concludes that enhancing digital literacy is essential for the successful digital transformation of SMEs in BiH. This requires addressing barriers such as resistance to new

technologies and improving communication of digital agendas by managers. The COVID-19 pandemic has accelerated the need for digital skills, but there is still much work required to fully leverage digital literacy for meaningful transformation.

Key recommendations include targeted training programs to improve digital literacy and better communication strategies to align employees with organizational digital goals. Government support in the form of training and resources is also vital. Future research should include a more diverse sample to understand the broader impact of digital literacy on SME performance in different contexts. Additionally, focusing on long-term digital literacy initiatives can ensure sustained growth and adaptability in an ever-evolving digital landscape.

Key words: Digital Literacy; Digital Transformation; Small and Medium-sized Enterprises; Employee Performance; TOE Model

JEL classfication: O33, J24, I21

1. Introduction

Digital transformation, although there is no single definition, represents a significant organizational change built on digital technology, leading to modifications in previous business practices (Osmundsen et al., 2018). Such changes lead to anxiety and uncertainty. When these changes occur within enterprises, all employees are affected. As a result, employee resistance often arises (Basyal et al., 2017). One way to reduce resistance and ensure that set goals are achieved in the process of digital transformation is to invest in digital literacy among employees. Digital literacy is the ability to succeed in interacting with electronic infrastructure and tools that are integral to life in the twenty-first century (Martin, 2005). It encompasses a set of competencies necessary for engagement in the knowledge society. It includes knowledge, skills, and behaviors essential for the effective use of digital devices such as smartphones, tablets, laptops, and desktop computers for collaboration and communication (Abas, Ros and Mogd, 2019). Previous research shows that a higher level of digital literacy among employees leads to better workplace productivity (Jose, 2016), improved performance (Marsh, 2018), and easier acceptance of the digital transformation process when faced with it (Basyal et al., 2017). Understanding the current level of digital literacy as one of the prerequisites for implementing the process of digital business transformation (Pirzada and Khan, 2013) is essential for increasing employee productivity. Given that businesses can more easily address internal rather than external barriers, and that these barriers are mostly directed towards employees and applied technologies, this suggests the need for digital business transformation. Even when financial barriers are overcome and decisions are made to introduce new and more modern business technologies, which require equipment procurement, company directors need to invest additional resources and efforts to successfully implement the digital transformation process and ultimately achieve increased productivity, reduced operating costs, and better competitiveness in the market.

The importance of employees who are users of the introduced technology is often overlooked in the process of digital business transformation (Osmundsen et al., 2018). Adopting new knowledge and accepting new technologies can create particular obstacles in small and medium-sized enterprises with long-standing traditional business practices. This may also depend on previously acquired knowledge, as well as the age of the employees. Therefore, understanding the extent to which the current level of digital literacy among employees affects the process of digital transformation is important for assessing the possibilities for its successful implementation. Small and medium-sized

enterprises (SMEs) are integral to Bosnia and Herzegovina's (BiH) economy, contributing significantly to job creation and inclusive economic growth. They account for over 60% of total employment and generate more than 60% of the gross domestic product (GDP) (BHAS, 2019). In fact, SMEs make up an overwhelming 98.9% of all enterprises in BiH, with micro-enterprises comprising the largest share at 72.8%, followed by small (19.7%), medium-sized (6.4%), and large enterprises (1.1%) (BHAS, 2019). Despite their significance, SMEs in BiH encounter various challenges that impede their competitiveness in the global market. These challenges include complex administrative procedures, a weak legal system, and internal barriers such as low levels of knowledge and skills in new technologies, outdated technology, and a focus on traditional production and local markets (Hasić, 2006). Given these challenges, there is an urgent need to explore avenues for enhancing employee productivity within SMEs to drive economic growth and development in the country. Limited adoption of information and communication technologies (ICT) and a lack of digital literacy among employees are identified as major barriers to SME advancement in BiH. Therefore, this study aims to investigate the current level of digital literacy among employees and its impact on their performance. The findings will provide valuable insights for company directors and policymakers, underscoring the importance of investing in employee skill development, particularly in the context of SMEs striving to compete globally and establish a presence in international markets.

This study has two main research objectives: (i)To comprehensively understand the role and impact of digital literacy within small and medium-sized enterprises (SMEs), including its influence on employee performance, digital transformation processes, and overall competitiveness; (ii) To provide practical guidance and recommendations for directors of SMEs, particularly in Bosnia and Herzegovina, aimed at enhancing digital literacy among employees to foster improved performance, successful digital transformation, and enhanced competitiveness in the global market. Within the framework of the described research problem, the main hypothesis is proposed:

H1: Digital literacy among employees in small and medium-sized enterprises in BiH contributes to their performance.

In addition to the main hypothesis, the following auxiliary hypotheses are formulated:
> H1a: There are statistically significant differences in the level of digital literacy among employees in small and medium-sized enterprises in BiH operating in different sectors.
> H1b: There are statistically significant differences in the level of digital literacy between younger (18-30) and older (31-65) employees in small and medium-sized enterprises in BiH.
> H1c: There are statistically significant differences in the level of digital literacy among employees in small and medium-sized enterprises in BiH based on their level of prior education.

This paper is structured into five main sections. The section that follows the introductiory part, defines the process of digital transformation and basic concepts related to this process in enterprises, with a specific focus on the characteristics of the digital transformation process in SMEs. The third sectionc os dedicated to digital literacy among employees, starting with the definition of the concept and basic concepts, followed by elements and factors that may influence the level of digital literacy. The fourth part presents the results of a quantitative research conducted in SMEs in BiH, starting with the presentation of the applied methodological framework, descriptive analysis of the sample, and results of the applied methods and tests, along with an explanation of the limitations of the conducted research. In the laste section, conclusions based on a systematic review of literature and research conducted in BiH are presented, along with recommendations aimed at the broader community and suggestions for further research in this area.

2. Literature review

2.1. Digital transformation and small and medium enterprises

The digital transformation or its early forms emerged as early as the beginning of the 20th century. The first use of the term digitalization can be traced back to an essay from 1971 published in the North American Review (Brennan and Kreiss, 2014). Although currently a popular point of discussion, the concepts of digital products, services, and media were already well understood in the 1990s and 2000s (Auriga, 2016). Examples can be found in the retail industry, where mass media advertising campaigns were considered important digital channels for reaching customers in the 1990s and 2000s, despite most purchases still being made in physical stores, often with cash payments. From 2000 to 2015, increased use of smart devices and social media platforms led to a drastic change in how customers communicated with businesses, as well as their expectations regarding response time and the availability of multiple communication channels. As a result, businesses began to realize that they could now digitally communicate with their customers on an individual basis, often in real-time. The increasing variety of digital payment options, such as PayPal, also contributed to the growing number of online stores and available options on web-based platforms. Today, the focus is on mobile devices and creating value for customers by leveraging personalized customer data that mobile technologies can generate to a large extent. Businesses leverage the benefits of this personalized data to better tailor their products, communication, and interaction to meet specific customer needs (Schallmo and Williams, 2018).

Currently, there is no single, universally accepted definition of the term digital transformation; in fact, the terms digitization, digitalization, and digital age are often used interchangeably (BDI and Roland Berger, 2015). To understand the concept of digital transformation of business models, it is important to understand what "digital" means in digital transformation. Several definitions of "digital" exist (Berman, 2012; Auriga, 2016), but here we present the definition developed by McKinsey, which defines digital less as a process and more as how businesses conduct their operations (Dorner and Edelman, 2015).

McKinsey's definition of "digital" can be divided into three primary areas (Schallmo and Williams, 2018):
- Creating value at new frontiers of the business world
- Optimizing processes that directly impact customer experience
- Building foundational capabilities that support the overall business initiative.

The concept of digital transformation revolves around the process of reshaping business models through the integration of new technologies, transitioning manual operations into (semi)automated processes. Understanding this process necessitates a grasp of what constitutes a business model. Schallmo (2013) defines the business model as the fundamental logic of a company, outlining the benefits it provides to customers and partners and how these returns translate into revenue. This approach enables differentiation from competitors, strengthens customer relationships, and fosters competitive advantages. The ultimate objective for any company is to synergize elements of the business model to facilitate growth in a manner that is challenging for competitors to replicate (Schallmo and Williams, 2018). Implementing digital transformation requires strategic investment of time to forge new business models and practices. This entails leveraging technologies such as the web across various functions including design, production, marketing, sales, promotion, and data-driven management models. By embracing digital transformation, companies enhance their capabilities and refine their business processes, leading to overall improvements (Ulas, 2019). It's

crucial to distinguish digital transformation from business process reengineering (BPR). While there are similarities between the two, BPR primarily focuses on automating rule-based processes, whereas digital transformation aims to acquire new data and utilize them to restructure old rule-based processes (Proctor, 2017; Schallmo and Williams, 2018).

In recent years, industries have witnessed significant technological shifts, driven by market volatility and the necessity for enhanced responsiveness to demand. This has prompted companies to seek optimization of business performance through digital transformation, aiming to enable business agility and adapt to evolving work methods (Henriette, Mondher, Boughzala, 2015). While large enterprises hold an advantage due to greater financial resources, their size can complicate the transformation process. Often, companies view technology investments as routine, failing to explore its potential for innovative business practices (Fitzgerald et al., 2014). Managers across companies recognize the transformative potential of digital technologies but struggle with implementation strategies, particularly in small and medium-sized enterprises (SMEs) that seek to emulate successful digital adoption by larger counterparts (Fitzgerald et al., 2014).

Digital transformation is a continuous process aimed at elevating digital maturity through the integration of digital technologies and organizational practices to foster a digital culture. Successful adoption of digital transformation yields better returns on investment, increased profitability, and improved competitive advantage by enhancing service delivery and responsiveness in complex environments (Westerman et al., 2011). Thus, the primary goal of digital transformation is to revamp organizational operations with digital technologies to achieve benefits such as productivity enhancement, cost reduction, and innovation. However, barriers to digital transformation persist, including SMEs' limitations in making substantial investments, lack of internet technology understanding, sector-specific challenges, data security concerns, and insufficient information on digital standards, among others (Ulas, 2019).

Before embarking on the digital transformation journey, it is crucial for SMEs to acquaint themselves with available programs and software that facilitate the transition between transformation phases. Understanding the prerequisites for digital transformation, including employees' digital literacy level, is paramount for successful implementation (Henriette, Mondher, Boughzala, 2015). Therefore, given the challenges and potential benefits, further examination of how to facilitate the digital transformation process in SMEs is of utmost importance.

2.2. Digital literacy and employee performance

The concept of digital literacy is relatively newer compared to related concepts such as computer, media, information, or technological literacy, which were recognized in literature and practice earlier. Computer literacy emerged as a need from the late 1960s. According to Martin and Grudziecki (2006), the concept of computer literacy went through three developmental phases: the mastery phase (until the mid-1980s), the application phase (from the mid-1980s to the late 1990s), and the reflective phase (late 1990s onwards). Technological literacy emerged in the 1970s in response to two concerns: growing awareness of the potential environmental and human hazards of technological development, and increasing fears that ignorance of developing technologies would jeopardize the workforce, particularly in countries sensitive to competition from more technologically aware countries (Waks, 2006, as cited in Martin and Grudziecki, 2006). Information literacy developed in the United States from the late 1980s in academic circles, in light of the trend towards student-centered learning, and largely explains the pre-digital context. With the increasing presence of the World Wide Web as a seemingly endless source of information, the information literacy movement gained more prominence (Martin and Grudziecki, 2006).

Collard states that the nature, scope, purpose, and methods of developing media literacy have been, and still are, the subject of debate in the media and academic community (Collard et al., 2017). There are many similarities between definitions of media literacy and information literacy, suggesting that generic competencies are very similar. Media literacy focuses more on the nature of different media genres and how messages are constructed and interpreted - in this perspective, the characteristics of the author/sender and receiver are key to understanding the meaning and content of the message. In contrast to media literacy, information literacy has been focused on ways to access information and evaluate content (Martin and Grudziecki, 2006). The digital shift in society is changing all means of information and communication, requiring new competencies for information retrieval and sharing or for maintaining and developing social interactions (Collard et al., 2017). Communication literacy emphasizes the importance of communication as a human activity, actually, as the foundation of social interaction, and is considered a fundamental personal attribute, regardless of whether it is realized orally or digitally. However, the advent of the digital era, which has enabled communication with one or more persons remotely from the previously exclusive face-to-face communication, requires users to be more aware of the nature and implications of the media (Martin and Grudziecki, 2006).

Before defining the concept of digital literacy, it is necessary to understand the concept of literacy itself. Literacy is traditionally characterized as a set of skills related to reading and writing (Nikou et al., 2019). However, similar to modern or technologically driven society, the essence of literacy has undergone its own evolutionary sense. Today, it is true that in much of Europe and many other parts of the world, we live in a digital society where our actions are often mediated by digital tools, and the objects we encounter are often shaped by digital intervention (Martin and Grudziecki, 2006).

Digital skills and digital literacy have emerged as crucial concepts in contemporary society, impacting social inclusion, employment, and economic growth (European Commission, 2010, 2016a, 2016b; Ferrari, 2012; Gallardo-Echenique et al., 2015). Definitions of digital literacy have evolved over time, initially focusing on computer proficiency and later expanding to encompass broader digital competencies (Fraillon, J. et al., 2019; Lavin and Kralik, 2009; Ala-Mutka, 2011). The European e-Skills Forum and subsequent European Commission initiatives have emphasized the importance of e-Skills and digital competence in responding to societal and economic needs (European Commission, 2007; Gallardo-Echenique et al., 2015). Digital competence, defined by European institutions in 2006, emphasizes the safe and critical use of ICT for various purposes, recognizing it as essential for lifelong learning (European Council, 2006). However, the concept of digital competence remains fluid and subject to ongoing debate (Ferrari, 2012; Ferrari, Punie, and Redecker, 2012; Ilomäki, Kantosalo, and Lakkala, 2011).

Digital literacy encompasses a range of skills related to digital technology, including ICT literacy, information literacy, media literacy, and visual literacy (Curtarelli, 2014; Martin, 2006). Martin (2005) defines digital literacy as the ability to effectively navigate digital tools and resources in various life situations, emphasizing its dynamic nature and integration of multiple literacy skills. Gilster (1997) similarly highlights the importance of understanding and utilizing digital information from diverse sources. Recent research has explored the relationship between digital literacy and technology adoption, organizational capabilities, and social inclusion (Aavakare, 2019; Bayrakdaroglu and Bayrakdaroglu, 2017; Nikou et al., 2018; Cetindamar Kozanoglu, and Abedin, 2021). Additionally, related concepts such as digital media literacy have emerged as crucial components of social participation (Fastrez, 2010; Basyal and Seo, 2017). In summary, digital literacy is a multifaceted skill set that plays a vital role in contemporary society, influencing

individuals' abilities to navigate digital environments effectively and participate fully in social, economic, and cultural activities.

3. Results of research on the impact of digital literacy on performance

3.1. Model and Research Methodology

Various methods have been used in studies examining the impact of digital literacy on employee performance, including quantitative and qualitative techniques or their combination (Pirzada and Khan, 2013; Basyal and Seo, 2017; Osmundsen et al., 2018; Cherry, 2016; Marsh, 2018; Collard et al., 2017; Jose, 2016; Ivančić, Vukšić and Spremić, 2019). These studies have explored the concept of digital literacy in different contexts, examining factors, influences, and the relationship of digital literacy to the digital transformation process, productivity, and employee performance. In relation to the research questions and the defined research objectives, the relationship of digital literacy to company performance will be examined through the TOE model, which has been previously used to investigate this impact in the oil and gas industry in Malaysia (Abas, Ros and Mogd, 2019). TOE stands for Technological, Organizational, and Environmental factors, representing the components of digital literacy.

To examine the TOE model in SMEs in Bosnia and Herzegovina, we will conduct quantitative research by collecting data from a sample of employees working in SMEs in Bosnia and Herzegovina. A modified questionnaire from the study by Abas, Ros and Mogd (2019) will be used to collect data, where the introductory part of the questionnaire includes questions about the demographic characteristics of employees and the size of the company to identify small and medium-sized enterprises by the number of employees. The introductory section of the questionnaire also includes questions about gender, age, level of education, field of education, and the sector in which the company operates where the respondents are employed. These questions will be used to test auxiliary hypotheses. The survey will be conducted on a representative sample of employees in small and medium-sized enterprises in Bosnia and Herzegovina, randomly selected through an online survey. To confirm or reject the auxiliary hypotheses, ANOVA test will be used, assuming normal distribution of responses to the questions.

In the process of confirming or rejecting the main hypothesis, following the methodological approach in the mentioned study (Abas, Ros and Mogd, 2019), we first conducted a factor analysis, which initially used default settings (Principal Component Analysis - PCA) and rotated the loading matrix to obtain orthogonal (independent) factors (Varimax rotation with Kaiser normalization). The criterion for grouping components within one factor is based on the approach from Igbaria and Iivari (1995), where loadings greater than 0.60 under one component and loadings less than 0.35 under other components should be grouped into the same components. After grouping the components and conducting additional diagnostic tests (Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity) to test the direction, strength, and interdependence of independent T, O, and E variables and the dependent variable (employee performance), multiple regression analysis will be used. Based on the coefficients obtained in the regression model and the level of statistical significance in relation to the defined error level of 5%, it will be examined whether digital literacy in SMEs in Bosnia and Herzegovina contributes to the performance of employees employed in these companies. In the continuation of the work, we first present the basic descriptive analysis of the sample, followed by the results of the procedures conducted in the statistical program Stata 14.2.

3.2. Data and sample

Collecting primary data for the research on the impact of digital literacy on employee performance in SMEs in Bosnia and Herzegovina was conducted from July to August 2021 by distributing the questionnaire via email. An online survey was sent to a total of 1,500 email addresses using the LimeSurvey response collection program. The total number of responses received was 346, which corresponds to a response rate of 23.07%. Respondents who answered that they are currently unemployed and employees of large companies were excluded from the total number of responses. All analyses were conducted on the final sample of 281 respondents. Table below provides a detailed overview of the main characteristics of the sample.

Table 1: Overview of basic characteristics of the sample

Characteristic		Frequency	%
Size of the company	0-9 employees	77	27.40
	10-49 employees	122	43.42
	50 – 249 employees	82	29.18
	Total	281	100
Gender	Male	126	44.84
	Female	155	55.16
	Total	281	100
Level of education	Completed doctoral studies	11	3.91
	Completed university or academy	136	48.40
	Completed master's studies	67	23.84
	Completed specialization after high school	6	2.14
	Completed high school lasting 4 or 5 years	40	14.23
	Completed high school lasting 3 years	3	1.07
	Completed vocational school	18	6.41
	Total	281	100
Age	≤ 30	69	24.82
	30+	209	75.18
	Total	278	100

Source: Authors's work

3.3. Results

The descriptive analysis of responses provided by employees of SMEs in Bosnia and Herzegovina regarding their level of digital literacy and perception of performance shows high average values with low standard deviation. In the section concerning questions related to the technological context, the highest average value of 4.29 (with a standard deviation of 0.85) is in response to the question about using scanning/processing techniques for quick access to key relevant information on the website. In the dimension of questions related to the organizational context, the highest average in the given responses is for the question about communicating with others online (via

forums, blogs, social media websites, audio, video, etc.), where the average is 4.44 with a standard deviation of 0.77.

In the environmental context, the highest average in the collected responses, amounting to 4.46 with a standard deviation of 0.66, was obtained for the question about understanding the concept of digital literacy, which includes learning, critical thinking, and interpretive skills beyond professional boundaries. The second-highest average within this dimension relates to the question about using reliable social networks to find information relevant to work (average of 4.33 with a standard deviation of 0.73).

In the section concerning employees' perception of their performance, the highest average in responses was recorded for the question about understanding the need for department members to be digitally literate and contribute to the value of the economy. The overall average response to this question is 4.56 with a standard deviation of 0.58.

The lowest recorded averages are for the question about applying search strategy and strategic analysis based on big data (average of 3.72 with a standard deviation of 1.02), the question about leaders (managers) communicating their digital agenda and how employees contribute to its development (average of 3.75 with a standard deviation of 1.00), and the question about determining the ownership of data and ideas found online and how to legally use them (average of 3.88 with a standard deviation of 1.00). The presented analysis actually shows that in most cases, employees know how to use tools for website search and online communication via social networks, as well as how to use data found through social networks for their own work. On the other hand, the least developed elements of digital literacy relate to strategic factors and understanding the digital agenda, as well as the culture of using others' data and ideas found online. This actually shows that on average, most employees in SMEs have developed basic digital literacy skills, and companies are caught between the conservative and modernist phases, with a lack of strategic direction indicating that SMEs lag behind their digital role models.

After analyzing the responses to the questions within the TOE dimensions, we conducted a factor analysis to confirm that the questions were properly distributed within the specified dimensions. We used default principal component analysis (PCA) settings and rotated the loadings matrix to obtain orthogonal (independent) factors (Varimax rotation with Kaiser normalization). The results of the factor analysis are presented in Table 2.

Table 2: Results of factor analysis

	Variable	Factor 1	Factor 2	Factor 3	Factor 4
Technological	P1	0,6646	0,1994	0,1801	0,2016
	P2	0,7502	0,2111	0,1785	0,2188
	P3	0,7620	0,2218	0,1681	0,2418
	P4	0,7479	0,2813	0,1174	0,2742
	P5	0,6908	0,1415	0,2539	0,2119
	P6	0,6057	0,2396	0,2679	0,3475
	P7	0,6390	0,1931	0,2840	0,2235
	P8	0,6862	0,2007	0,2542	0,1850
	P9	0,5555	0,1487	0,3672	0,1558
	P10	0,5475	0,4542	0,1391	0,1077
	P11	0,2117	0,1220	0,7137	0,3720

	P12	0,0432	0,2484	0,7063	0,0416
	P13	0,1746	0,2059	0,7967	0,2187
	P14	0,1950	0,3451	0,6296	0,1786
	P15	0,3340	0,2616	0,6680	0,3270
	P16	0,3257	0,2728	0,6225	0,2869
	P17	0,4146	0,2997	0,6359	0,1815
	P18	0,3731	0,1667	0,5352	0,3771
Enivornmental	P19	0,2996	0,2577	0,2888	0,5462
	P20	0,3280	0,4181	0,2105	0,4240
	P21	0,3233	0,2447	0,2665	0,6203
	P22	0,2808	0,2889	0,1150	0,7139
	P23	0,2738	0,1881	0,3604	0,6875
	P24	0,2500	0,2347	0,2400	0,7591
	P25	0,2449	0,2615	0,2990	0,6642
	P26	0,1388	0,4141	0,3536	0,4713
Employee performance	P27	0,0990	0,6276	0,2130	0,2515
	P28	0,1310	0,7857	0,1817	0,1455
	P29	0,2089	0,7948	0,1751	0,1539
	P30	0,3692	0,6911	0,2535	0,2057
	P31	0,2154	0,6307	0,2967	0,3128
	P32	0,2631	0,7130	0,1912	0,2070
	P33	0,2536	0,6444	0,2125	0,2888
	P34	0,2162	0,7215	0,2226	0,2184
	Bartlett's test of sphericity	P-value : 0,000			
	The Kaiser-Mayer-Olkin measure of sampling adequacy	KMO: 0,952			

Source: Authors's work

Igbaria and Iivari (1995) states that items with loadings greater than 0.60 under one factor and loadings less than 0.35 under other factors should be grouped into the same factors. The results from Table 5 confirm that the items have been correctly grouped into the appropriate factors, where Factor 1 represents the technological context, Factor 3 represents the organizational context, while Factor 4 represents the environmental context. Factor 2 comprises a group of items describing employees' own perception of performance. After conducting the factor analysis, the results were further confirmed through the Bartlett's test of sphericity (with a p-value of 0.000) and the Kaiser-Meyer-Olkin measure of sampling adequacy, which yielded a result of 0.952, indicating that conducting the factor analysis was an appropriate method.

To test the measure of internal consistency within the defined factors (components) of the questionnaire used, Cronbach's alpha measure was calculated. Cronbach's alpha measurement is used as a popular measure for reliability, where a result of 0.60 or higher for a component reveals that the measurement items under that specific component provide a reliable measure of internal consistency. The results of Cronbach's alpha measured for the 4 defined factors (components) are presented in Table 6, from which we can see that all results are above 0.9, indicating a high degree of internal consistency of the scales.

Table 3: Results of scale reliability measure (Cronbach's alpha)

Dimension	Average inter-item covariance	Number of items in the scale	Coefficient of scale reliability (Cronbach's alpha)
Technological context	0,4544	10	0,9229
Organizational context	0,4618	8	0,9117
Environmental context	0,3794	8	0,9025
Employee performance	0,3129	8	0,9211

Source: Authors's work

After familiarizing ourselves with the responses to the questionnaire through descriptive and factor analysis, following the described methodological approach, we use a multiple regression analysis model to confirm the main hypothesis. Let's remind ourselves of the main hypothesis: The digital literacy of employees in small and medium-sized enterprises in Bosnia and Herzegovina contributes to their performance.

The responses to questions in the respective dimensions have been aggregated, thus obtaining the values of individual dimensions which were used as independent variables in the specified regression model:

$$EP = \alpha_1 + \beta_1 TC + \beta_2 OC + \beta_3 EC$$

Where:

EP – Employee performance
TC – Technological context
OC – Organizational context
EC – Environmental context

In the defined model, the dependent variable is the assessed perception of employee performance, while the independent variables are factors of digital literacy defined through technological, organizational, and environmental context.

Table 4: Results of the multiple regression model

Variable	Coefficient	Standard error	t	Significane
TC	0,1436	0,0404	3,55	0,000
OC	0,1770	0,0512	3,46	0,001
EC	0,3556	0,0594	5,98	0,000
EP	10,9726	1,2614	8,70	0,000

Source: Authors's work

The results of the multiple regression model in Table 7 show that all three defined factors have a significantly positive impact on employee performance. Among the analysed factors, employee performance is most influenced by digital literacy defined within the environmental factor (EF), where an increase of 1 unit within these factors contributes to a performance increase of 0.3556

units. Following these factors, organizational factors of digital literacy have the most impact, while technological factors have the least. The coefficient of determination, at 56.57%, indicates that more than half of the variation in employee performance is explained by the three defined factors of digital literacy, while the remaining 43.43% represents other factors not defined in the tested regression model.

In the conducted research, we sought to test the following auxiliary hypotheses:
H1a: There are statistically significant differences in the level of digital literacy among employees in small and medium-sized enterprises (SMEs) in Bosnia and Herzegovina operating in different sectors. H1b: There are statistically significant differences in the level of digital literacy between younger (18-30) and older (31-65) employees in SMEs in Bosnia and Herzegovina. H1c: There are statistically significant differences in the level of digital literacy among employees in SMEs in Bosnia and Herzegovina based on the level of previously acquired education.

In testing the auxiliary hypotheses, an ANOVA test was used assuming normal distribution, and no statistically significant results were obtained in the conducted tests. Therefore, we cannot claim that there are statistically significant differences in the level of digital literacy among employees in SMEs considering the sector of operation, age, and level of education. Part of the reason for these results lies in the structure of the analysed sample, where, as seen in the descriptive analysis section, there was no significant dispersion in most responses (lower standard deviation values), and the sample mostly consisted of younger employees and individuals with higher education levels.

4. Conclusion

Business operations on a global scale have undergone significantly different formats and outlines in recent decades compared to the time before the Fifth Industrial Revolution. New technologies, particularly AI, the increasing use of the internet in both personal and professional life, have altered the functioning of many businesses. However, these changes, albeit rapid, have occurred gradually, requiring a paradigm shift that we witness today. The processes initiated by the Fourth Industrial Revolution continue to unfold and are increasingly present in Bosnia and Herzegovina (BiH). It's already evident that for small and medium-sized enterprises (SMEs), these are distinct challenges, considering the general economic situation and post-war development period. Hence, it is crucial to examine all factors that can contribute to a smoother convergence of our traditional business management approaches towards those more acceptable and competitive in the global market.

While various approaches have been used in previous research to examine how digital literacy affects employees and companies, viewing it both as a consequence and a catalyst of the digital transformation process, one of the most prevalent models is the TOE model. Technological, organizational, and environmental factors (TOE) within this model demonstrate how the contexts, culture, and environment in which employees' digital skills develop influence their performance perception. Conducted research has shown a positive and significant relationship between these factors and employee performance, allowing, based on the results of these studies in various industrial sectors, an understanding of the importance of digital literacy and its impact on employee performance. The application of the TOE model to a sample of employees from SMEs in BiH aimed to explore the current level of digital literacy, which factors are more prevalent and have a greater impact, and which areas require further work. The study also sought to confirm whether the elements identified within the TOE model were correctly identified, which was confirmed in the research results through factor analysis and relevant tests. The TOE model encompasses elements that, when examined, can determine the connection between digital literacy in the specified contexts and employees' performance perception. Additionally, the goal was to examine whether the results of previous TOE model research could be applied to a sample of companies in BiH.

The research conducted on a sample of employees from MSPs in BiH, distributed through an email questionnaire, confirmed the main hypothesis of this study. We can conclude that digital literacy among employees in SMEs in BiH contributes to their performance. The research results show that environmental factors contribute the most, followed by organizational factors, while technological factors contribute the least. This is consistent with the observation that MSPs in BiH are in the phase of conservatives, where digital technologies have been acquired or purchased, and there is management with a vision for their use, yet there is still resistance to using these technologies in the process of digital business transformation. Resistance to the introduction of new technologies is a common occurrence, and understanding how to reduce this resistance and transition to the modernist phase is essential for SMEs in BiH. Previous research has shown that digital literacy enables employees to better understand and use technologies in their daily work. Unfortunately, the results of the research conducted in BiH indicate that, although digital literacy contributes to employee performance, it is still at a low level of development. Results show that employees best understand online work, internet searching, and the use of data found online. One of the reasons for these results is the COVID-19 pandemic, which has changed the ways businesses, societies, and communities operate, somewhat compelling even staunch traditionalists to use new technologies to operate and function.

In summary, while there have been initial strides, there is still much work required to harness employees' digital literacy in SMEs and leverage its positive impact on performance for a meaningful digital business transformation. The research highlights that employees struggle the most with understanding managers' digital agendas, a critical aspect during transitions in digital transformation phases. Additionally, the study aimed to explore if demographic characteristics like business sector, age, and education influence digital literacy levels. However, no significant differences were found among these groups in the sample analysed. While this suggests a consistent yet low level of digital literacy across SME employees, it also indicates the need for further investigation into individual causes. Considering the support needed for SMEs in Bosnia and Herzegovina (BiH), the research underscores the significant role of environmental factors, such as competitive pressure, government support, and consumer readiness for new technologies. Identified areas for improvement include transitioning employees from basic digital literacy to practical usage and training SME managers to understand and effectively communicate digital agendas. Government organizations can play a pivotal role by offering support beyond financial aid, ensuring proper training and cultural integration. Understanding the dynamic interactions among stakeholders amidst global changes is paramount, and it is hoped that the study's findings will propel SMEs in BiH towards a more comprehensive digital transformation, aligning them with global standards.

The results were obtained based on the analysis of responses to the questionnaire distributed via email lists, following the described methodological procedure. This represents one of the major limitations of the conducted research, as due to the social distancing measures caused by the COVID-19 pandemic, alternative data collection methods were not feasible. In this way, a portion of the sample without an email address or internet access was excluded from the analysis, with the assumption that the perception and responses of this segment of the population may differ from the participants included in the analysis. Although the questionnaire was distributed to a large number of addresses targeting a highly diversified sample, the structure of the sample shows that the majority consists of highly educated individuals of younger age. Given such a sample structure and the fact that the auxiliary hypotheses aimed to determine how demographic characteristics influence the level of digital literacy, we assume that part of the reason for not confirming the stated assumptions lies in the sample structure. We propose that the analysis be repeated, including respondents who do not use the internet, and that the sample be larger with potentially different structure in future research.

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DO EXPORT, FORMAL PARTNERSHIPS WITH FOREIGN COMPANIES AND FOREIGN OWNERSHIP CONTRIBUTE TO THE BETTER ENVIRONMENT PERFORMANCE OF COMPANIES IN TRANSITION COUNTRIES - THE CASE OF BOSNIA AND HERZEGOVINA

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Abstract

Trade and foreign direct investment (FDI) have been associated with positive spillover effects by transferring technology and knowledge from developed countries with stricter environmental regulations to developing countries with more lenient regulations. While theory suggests trade and FDI can improve environmental performance, empirical evidence shows they aren't consistently linked to such gains, highlighting the need to further consider specific circumstances and factors shaping this relationship. Essentially, empirical studies with microeconomic foundations, in particular in transition countries, have observed conflicting but interesting results related to the effects of trade and capital flows on the environmental performance of local companies and industries.

Given the assigned ambiguous role of trade and FDI in relation to environmental performance in the literature, this research attempts to provide new insights with respect to the specific factors that determine companies' environmental performance, and the role played by knowledge and technology transfer. Using company-level data from pollution-intensive manufacturing sectors in Bosnia and Herzegovina, logistic regression is employed to investigate the impact of export, foreign ownership, and foreign market linkages on environmental management performance. The findings reveal a strong relationship between market liberalisation and environmental protection. Particularly, the obtained results highlight the importance of exports to the EU as companies with stronger market ties to the EU are more likely to adopt international environmental standards. Further, the research embarks from previous literature in that it sheds light on the role of formal partnerships with foreign companies in influencing companies' behaviour. Specifically, the results of empirical models reveal a somewhat controversial outcome, i.e., that formal partnership is negatively associated with environmental management performance. Contrary to the assumption that foreign partnerships would improve environmental standards, these results suggest a trend of relocating pollution-intensive production to regions with more lenient regulations, such as Bosnia and Herzegovina. Furthermore, despite the relatively small sample of foreign-owned companies, the study indicates that these companies often lack international environmental standards. Therefore, foreign investments in pollution-intensive industries appear driven by cost efficiency and lenient environmental regulations, as documented in existing literature.

The results of econometric analysis thus provide a novel insight into determinants of environmental management practices of companies in the specific context of less developed

transition economy. Further, this research adds to recent literature by relaying on company level data, analysis of which are scarce especially considering Western Balkan economies including Bosnia and Herzegovina. The findings of the study offer valuable insights for policymakers and businesses.

Keywords: firm environmental management performance, market liberalisation, knowledge transfer, transition countries

JEL classification: O44, P28, Q56

Introduction

The expansion of economic development and activity has increasingly impacted the environment, leading to significant degradation of natural resources and adverse effects on human well-being. This has prompted the implementation of stricter environmental regulations. As regulatory frameworks continue to evolve, discussions around the interplay between economic growth, environmental policies, and environmental health have become more complex, especially in light of growing market liberalization.

Driven by a desire to understand the effects of market liberalization and global interdependencies on the environment, researchers are increasingly examining how global trade and capital flows contribute to the state of environment. Critics argue that key aspects of market liberalization, such as deregulation, privatization, and the reduction of trade barriers, can lead to significant environmental challenges. As countries adopt these measures to boost competition and attract foreign investment, they may prioritize economic growth over ecological sustainability. For instance, the ease of moving goods and capital across borders can encourage "dirty industries" to relocate to countries with weaker environmental regulations, known as the Pollution Haven Hypothesis (PHH).

Proponents of market liberalization, however, often emphasize the positive environmental impacts of international competition and global capital flows, aligning with the Porter Hypothesis (PH). This view argues that the pressure of global competition and the desire to attract foreign investment can drive companies to become more efficient and adopt cleaner technologies. Firms may be incentivized to comply with higher international environmental standards, which are increasingly demanded by global markets and investors.

Although the PHH and the PH represent two opposing perspectives, the examination of firm-level incentives and behaviours is fundamental to both frameworks. Recognizing this connection and considering the nuanced and complex circumstances that shape the overall impact of trade and capital flows on environmental conditions, researchers are increasingly directing their attention toward the analysis of behaviour of companies. Researchers are exploring both external and internal factors, including trade and FDI, that influence this behaviour, aiming to understand the elements that contribute to higher environmental management performance within firms. Empirical studies examining the influence of trade and FDI on companies' environmental management performance have yielded largely inconclusive and mixed findings (Albornoz, Cole, Elliott & Ercolani, 2007; Bluffstone & Sterner, 2006; Dasgupta, Hettige & Wheeler, 1998; Eskeland & Harrisson, 1997; Hartman, Huq & Wheeler, 1997; Henriques & Sadorsky, 2006; Pargal & Wheeler, 1996). The findings suggest that, while trade and FDI can have a positive influence on companies' environmental performance, this effect is not consistent and can, at times, yield contrary outcomes.

This paper aims to contribute to the recent literature on environmental management performance by examining the external and internal factors, motives, and barriers influencing companies' environmental behaviours. It specifically looks into the effects of technology and knowledge transfer on environmental performance of companies. By focusing on the manufacturing polluting industries in Bosnia and Herzegovina, this study explores the impact of FDI, export, and

formal linkages with foreign companies on companies' environmental performance. As a developing transition country recognized by the EU as a candidate for membership, Bosnia and Herzegovina provides a unique business environment for companies and their environmental management efforts. The environmental impacts of market liberalization should be especially pronounced in transitional economies. While increased foreign investment offers opportunities to introduce advanced environmental technologies and stricter standards, these economies also face challenges, as their evolving regulatory frameworks and limited institutional capacity can attract industries looking to exploit weaker environmental regulations.

The remainder of the paper is organized as follows: Section 2 reviews the theoretical and empirical literature; Section 3 outlines empirical analysis including conceptual framework, data description, methods of investigation and the results; Section 4 concludes.

Theoretical and Literature Review

The environmental impacts of market liberalization, shaped by growing trade and capital flows, remain a point of ongoing discussion. The two main theories, the Pollution Haven Hypothesis (PHH) and the Porter Hypothesis (PH), offer different perspectives on how market liberalization impacts environmental outcomes. PHH suggests that strict environmental regulations in one country may reduce the competitiveness of its companies by increasing their production costs. When trade barriers are lowered, these companies might relocate their pollution-intensive activities to countries with weaker environmental regulations. Conversely, PH proposes that strict environmental regulations can boost competitiveness by driving innovation and efficiency. Additionally, global competition and liberalized markets may encourage firms to transfer environmentally friendly technologies to other countries, which can help lower emissions and improve environmental quality in those countries.

Research on the PHH and the PH has produced largely inconclusive findings, highlighting an ongoing gap in understanding the complex relationship between environmental regulations, trade, FDI, and their environmental impacts (Cole & Elliott, 2003; Grossman & Krueger, 1993; Javorcik & Wei, 2003; Mani & Wheeler, 1997; Xu, 2000). While studies generally offer limited support for the PHH, authors emphasize that this does not entirely refute the existence of pollution havens or diminish the relevance of pollution concerns. Further, even though factors like labor costs and resource availability tend to drive industrial location decisions, lenient environmental regulations can still influence these choices (Cole & Elliott, 2003; Grossman & Krueger, 1993; Kheder & Zugravu, 2012). On the other hand, some research demonstrates that trade and FDI can have beneficial effects on the environment in developing countries, promoting clean technology and knowledge transfer (Kheder & Zugravu, 2012; Xu, 2000). Findings reveal that trade and FDI's environmental impacts are shaped by diverse factors, underscoring the importance of understanding firm-level behaviour and environmental management performance.

From a company perspective, trade facilitates the exchange of environmentally friendly goods and services, allowing companies to import advanced technologies and practices from nations with stricter environmental standards. Additionally, trade stimulates competition among firms, driving them to adopt more efficient and sustainable production methods to meet the demands of global markets. In their efforts to maintain competitiveness, companies are often incentivized to integrate cleaner technologies and align with higher environmental standards.

Furthermore, it is assumed that multinational corporations (MNCs) benefit when keeping advanced, cleaner technologies and practices. MNCs typically aim to establish consistent environmental standards across their global operations, often adhering to the higher standards set by their home countries. MNCs can also benefit from transferring or "exporting" their superior environmental management practices and standards to the countries in which they operate, thereby enhancing their global reputation, improving operational efficiency, and potentially reducing long-term costs associated with environmental damage or regulatory changes in the host country.

Accordingly, researchers are increasingly prioritizing the role of corporate dynamics in driving environmental performance, alongside a greater emphasis on understanding knowledge and technology transfer. These studies focus on environmental management performance as various practices companies use to reduce their environmental footprint, such as adopting clean technologies, obtaining environmental certifications, implementing waste reduction measures, and developing environmental strategies. Specifically, authors are aiming to identify what contributes to more effective environmental management within firms by examining both external factors and internal factors that influence a company's environmental performance.

Empirical studies examining the influence of trade and FDI on companies' environmental management performance have yielded largely inconclusive and mixed findings. The substantive line of microeconomic research support theoretical conceptualizations that trade and capital flows are factors possible of increasing environmental performance of companies. However, as is to be seen from the postulated literature review below, trade openness per se, and exports explicitly have not always been associated with improved environmental performance of local companies and industries.

Although it is often hypothesized that companies engaged in international trade adopt higher environmental standards to gain access to foreign markets and meet regulatory requirements, a significant body of research challenges this assumption. Studies by Bu, Liu, & Gao (2011), Hartman, Huq and Wheeler (1997), Henriques & Sadorsky (2006) and Luken, Van Rompaey & Zigova (2008) found no evidence to suggest that exporting to OECD countries leads to significant improvements in environmental performance or encourages the adoption of cleaner technologies in companies in developing countries. This limited impact may be attributed to various factors, including the nature of trade relationships, the composition of export markets, and insufficient regulatory pressure from international buyers indicating importance of various factors on determining the effect of export.

On the other hand, numerous studies confirm the positive influence of export on the environmental performance of companies. This is evident in the faster adoption of clean technologies (Andanova, 2003); improvements in environmental performance indicators and employee training (Henriques & Sadorsky, 2006); the implementation of audit, waste minimisation, and pollution prevention measures, as well as the establishment of environmental departments (Bluffstone & Sterner, 2009); and ISO 14001 certification (Bellesi, Lehrer & Tal, 2005; Bluffstone & Sterner, 2009; Christmann & Taylor, 2001; Qi et al., 2011). Authors do, however, highlight importance of other factors such as significance of enforcement institutions (Andonova, 2003) and firm size (Bluffstone and Sterner, 2006) for example.

Furthermore, the evaluation of how trade liberalisation influences the environmental performance of companies is often intertwined with the examination of foreign direct investments. Similar to the analysis of exports, several studies suggest that specific environmental practices, such as reduced energy consumption, environmental audits, ISO 14000 certification, and the adoption of environmentally friendly technologies, tend to benefit from FDI under certain conditions (Andonova, 2003; Albornoz et al., 2009; Bluffstone & Sterner, 2006; Bu, Liu & Gao, 2011; Christmann & Taylor, 2001; Eskeland & Harrisson, 1997; Henriques & Sadorsky, 2006). However, some research also suggests that in certain instances, FDI may not have a discernible impact on enhancing environmental performance (Andonova, 2003; Cole, Elliott & Strobl, 2008; Garcia, Bluffstone & Sterner, 2009; Gallagher, 2006; Qi et al., 2011).

As mentioned, transition countries offer an interesting context for studying the impact of market liberalization on environmental outcomes, particularly regarding firm-level environmental management practices, often yielding mixed results. Andonova's (2003) study, one of the first of its kind, used firm-level data from 1990 and 1997 on companies in Bulgaria, Hungary, Lithuania, Poland, and Slovakia and found that increased openness via international trade and capital positively influenced environmental management in Central and Eastern European firms, though not as strongly as theory might predict. While international trade pressures encourage cleaner

technologies, the relationship between exports and environmental performance weakens when accounting for country-specific factors, emphasizing enforcement institutions' role in driving sustainable practices. Additionally, although multinational firms often excel in formal environmental practices like ISO 14000 certification, the study questions assumptions that foreign capital consistently drives cleaner technology adoption. Similar microlevel research by Bluffstone and Sterner (2006), Henriques and Sadorsky (2006), and Garcia, Bluffstone & Sterner (2009) also report nuanced outcomes. Overall, research on market liberalization and environmental outcomes in transition countries indicates that while openness positively affects firm-level environmental practices, this relationship is complex, underscoring the importance of regulatory enforcement and domestic institutional stability in motivating firms to adopt sustainable practices.

While all these empirical studies offer valuable insights into the factors influencing the environmental management performance of companies, it is essential to highlight the diverse range of indicators used by authors to assess this performance. Depending on the regional and country context, prevailing trends, and available data, researchers utilize various metrics, including pollution levels, self-reported environmental performance, electricity use, energy efficiency, compliance with environmental regulations, ISO certification, clean technology adoption, et. Such variations in indicators can significantly contribute to disparities in research findings.

Additionally, there is a notable absence of examination regarding formal linkages with foreign companies, which can play a crucial role in shaping a company's environmental management performance. These partnerships may involve joint ventures, alliances, original equipment manufacturing, etc. that can facilitate knowledge transfer, resource sharing, and access to advanced technologies. Understanding these dynamics is essential, as they can, similar to trade and FDI, reveal pathways for companies to leverage external expertise and support in their environmental initiatives.

Furthermore, current research lacks in-depth observations of the concrete motives and barriers that influence the environmental actions of these companies. Identifying the specific reasons companies choose to pursue or neglect environmental management practices is vital for several reasons. It helps clarify whether firms are motivated by regulatory compliance, market demand, competitive advantage, or ethical considerations. Moreover, understanding the barriers that hinder effective environmental action, such as financial constraints, lack of knowledge, or insufficient regulatory support, can inform about the challenges companies face in implementing sustainable practices.

Empirical Analysis

Conceptual framework

This study aims to contribute to the discussion on the effects of market liberalization on the environmental management performance of companies. We focus on how technology and knowledge transfer, facilitated by market liberalization, affect environmental management performance of companies. Specifically, we explore the relationship between a company's environmental performance and its export orientation, as well as the role of technology transfer through FDI and formal partnerships. Additionally, the research seeks to address gaps in existing studies by examining barriers to adopting environmentally friendly practices and how formal partnerships, beyond just trade and FDI, affect companies' environmental management performance.

Building on existing firm-level research that investigates environmental management practices and their link to foreign markets, our study zeroes in on manufacturing companies in environmentally impactful industries in Bosnia and Herzegovina. Research uses company level data on ownership, exports levels and destinations as well as existence of other formal linkages with foreign markets to determine the type and level of relationship with foreign markets. This data is

analysed alongside company-specific information on environmental management practices, including motivations and barriers to adopting these practices, in order to identify patterns and relationships between foreign market integration and environmental management performance. Such analysis is expected to provide deeper understanding if and how links with foreign markets affect environmental performance of companies in Bosnia and Herzegovina and how certain social, economic and business factors (motives and barriers) affect companies' environmental performance.

This research poses two main questions:

1. What external and internal factors influence environmental performance of companies in polluting sectors in Bosnia and Herzegovina?

2. Are export, foreign direct investment and formal linkages to foreign markets linked to higher probability of companies possessing environmental certification (ISO or EMAS)[14] of companies in polluting sectors in Bosnia and Herzegovina?

The Sample and Data

Questionnaire

The research data for this study were collected using a questionnaire specifically designed for this analysis. The development of the questionnaire was guided by the conceptual framework of the research, ensuring a coherent alignment with our research objectives. We built upon earlier studies that investigated environmental management practices, and foreign linkages through comprehensive company-level surveys. Specifically, we rely on environmental management practices concepts and measurement constructs developed by Sroufe, Montabon, Narasimhan and Wang (2002), measurement of foreign linkages used in Silajdzic (2011:2014) empirical study, while assessment of social, economic and business factors (motives and barriers) that affect companies' environmental performance builds on list of motivators and barriers identified through literature review conducted by Singh, Singh and Dhingra (2012).

In line with the research conceptual framework, the questionnaire contains question on environmental performance measured through environmental management practices, company profile and linkages with foreign markets as well as social, economic, and business impact factors (motives and barriers)[15].

Sampling Method

Data was collected from manufacturing companies in pollution heavy industries in Bosnia and Herzegovina (metal, rubber and plastic production, textile and leather production, paper and paper products and chemical industry). The selection of companies was randomized from those classified under NACE rev-2 in the mentioned manufacturing sectors. List of companies engaged in these fields in Bosnia and Herzegovina were obtained from Agency for Intermediary, IT and Financial Services of Republika Srpska and Tax Administration of Federation of Bosnia and Herzegovina. Total of 101 companies provided their answers to the questionnaire through an online survey, telephone interviews or in person interviews.

The Data

The collected data contains information on:

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[14] ISO 14001 and EMAS are globally recognized environmental management and certification systems. ISO 14001, established in 1996 by the International Organization of Standards, seeks to standardize and promote environmental practices to facilitate international trade. It encompasses aspects such as environmental management systems, audits, performance assessment, labelling, life cycle assessment, and product standards (Tibor and Feldman, 1996). On the other hand, the EU Eco-Management and Audit Scheme (EMAS) is an environmental management program developed and endorsed by the EU. Like ISO 14001, EMAS aims to assist companies in enhancing their environmental performance through systematic data collection, assessment, and reporting.

[15] The full questionnaire is available upon request.

- company profile and linkages with foreign markets (overall profile of the company such as industry branch, legal status, age, size, ownership type, export, formal partnerships and structure),
- environmental management practices (existence of environmental objectives, audits, monitoring, certification, environmental departments, waste management practices, energy efficiency, introduction of cleaner technologies, etc.) and how much predefined motives and barriers influenced introduction of environmental management practices.
- basic quantitative indicators of the company (data on revenues for the past three years and the last year as well as source of the revenues and investment expenses).

Total of 101 companies provided answers. The percentages of participating companies per industrial sector as well as size is presented in Table 1.

Table 1 Percentages of Participating Companies per Industrial Sector and Size

	metal	rubber & plastic	textile & leather	paper	chemical	Total per size
micro ($<$ 10 employees)	9/101	5/101	4/101	3/101	2/101	**23**/101
small ($<$ 50 employees)	28/101	16/101	6/101	4/101	3/101	**57**/101
medium($<$250employees)	11/101	8/101			1/101	**20**/101
large ($>$ 250employees)	1/101					**1**/101
Total per industry	**49**/101	**29**/101	**10**/101	**7**/101	**6**/101	

In our sample majority of companies are locally owned and only 10 out of 101 companies are foreign owned. Metal sector stands out with 7 out of 10 foreign owned companies. Foreign owned companies in our sample show close links with foreign markets also thought exports (7 of these companies export more than 50% of their main product to EU) as well as formal cooperation with foreign companies (7 have some form of formal cooperation with foreign companies).

Furthermore, companies in our sample carry out noticeable export to EU. There are 33% of companies that export more than 50% to the EU and additionally 41% that export between 5% and 50%. There are 56 companies that have some form of formal cooperation with foreign companies. As expected, companies mainly engage in original equipment manufacturing and subcontracting. Low representation of strategic alliance, joint ventures and licensing was observed in other research done at company level in Bosnia and Herzegovina (Silajdzic, 2011:2014) where it was assumed that lack of such more sophisticated partnerships is a result of deficient competences of Bosnia and Herzegovina's enterprises.

List of variables and descriptive statistics can be found in Tables 2, 3 and 4 below.

Table 2: Definition of Variables

Label	Description
ISO_EMAS	International environmental certificate is a dummy variable taking the value of 1 if the company has ISO or EMAS certificate; 0 otherwise.
Size	Company size defined as the total number of employees.
Industry	Data integrates 5 dummy variables distinguishing 5 pollution-intensive industries, namely metal, rubber and plastic, textile and leather , paper and paper products, and the chemical industry
lIncome_employee	Productivity of the company defined through average income of the company for the last three years per employee expressed in BAM (convertible mark) (in logarithms)
Foreign	Foreign is a dummy variable taking the value of 1 if the controlling owner of the company is either a foreign individual,

	or foreign industrial company; 0 otherwise.
OEM	Original equipment manufacturing or subcontracting is a dummy variable taking the value of 1 if a company engages in original equipment manufacturing or subcontracting; 0 otherwise.
EXP_EU	Export to EU defined as the percentage of exports of the company to the European Union over a three-year period.
EMP1	Waste management and clean technology operational management practices is a dummy variable taking the value of 1 if a company is using waste management and clean technology operational management practices; 0 otherwise.
Barrier_high_expenses	Barrier high expenses is a dummy variable taking the value of 1 if a company sees high expenses as a very important or important, and 0 if the company considers the high expenses as moderately important, slightly important, or not important barrier to the introduction of environmental management practices.
Barrier_HR,	Barrier lack of human resources is a dummy variable taking the value of 1 if a company sees lack of human resources as a very important or important, and 0 if the company considers the lack of human resources as moderately important, slightly important, or not important barrier to the introduction of environmental management practices.

Table 3: Descriptive Statistics (continuous variables)

Variable	Obs	Mean	Std. dev.	Min	Max
Size	100	41.75	65.00744	2	500
lIncome_employee	81	255098.2	787446.1	200	5E+06
EXP_EU	100	0.3313	0.3530292	0	0.96

Table 4: Descriptive Statistics (binary variables)

Variable	Frequency 0	Frequency 1	Percentage 1	Percentage 0
ISO_EMAS	75	26	74.26	25.74
Metal	52	49	51.49	48.51
Chemical	95	6	94.06	5.97
Foreign	91	10	90.10	9.90
EMP1	78	22	78.00	22.00
Barrier_high_expenses	69	32	68.32	31.68
Barrier_HR	73	28	72.28	27.72

Model - Determinants of Environmental Performance

The absence of precise emissions data has led to the widespread use of environmental management practices (such as ISO certification, audits, environmental policies, dedicated departments for cleaner technology adoption, training programs, etc.) as proxies on environmental performance in empirical research. Environmental management systems (EMS), such as ISO 14001 or EMAS are frequently regarded as the most relevant practices for assessing environmental management (Andonova, 2003; Bellesi, Lehrer & Tal, 2005; Bluffstone & Sterner, 2006; Christmann & Taylor, 2001). The EMS are standardized frameworks that incorporate key aspects of environmental

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management (such as monitoring and reporting, audits, and identification), thereby establishing EMS as credible reference points in environmental management research.

In this model, we lean on the above-mentioned research and use ISO and EMAS as the most suitable proxy for the environmental performance of companies. Our model adds to earlier literature through an integrated and comprehensive approach to the modelling of environmental performance factors by extending the existing analyses with the formal linkages with foreign companies as well as external barriers. Our analysis explains the environmental management practices of firms in the framework of the following model:

Model - Determinants of environmental performance

$$ISO/EMAS_i = \beta_1 Size_i + \beta_2 Industry_i + \beta_3 Income/employee_i + \beta_4 Foreign_i$$
$$+ \beta_5 FormalCooperation_i + \beta_6 EXP/EU_i + \beta_7 EMP1_i + \beta_8 Barriers_i$$

In our model, the dependent variable (*ISO_EMAS*) is a dummy variable taking the value of 1 if the company has the ISO 14001 certificate and/or the EU Eco-Management and Audit Scheme (EMAS); otherwise, the value is 0. We control for company characteristics through the *Size* variable, which represents the number of employees, and control for the industry sector[16] (if a company is from the metal, chemical, rubber and plastic, textile and leather, or paper and paper products sector) through dummy variables. Further, we control for productivity through the *Income_employee* variable, which represents the average income of the company for the last three years per employee in BAM (convertible mark). *Foreign* is a dummy variable having the value of 1 if the controlling owner of the firm is either a foreign individual or foreign industrial firm and 0 otherwise. *Formal Cooperation*[17] is also a dummy variable representing formal cooperation with foreign companies. The *EXP_EU variable* is defined as the percentage of exports of the company to the European Union over a three-year period. In our research, we examined operational EMPs, which are tangible activities companies take directly to improve environmental performance (waste management, energy efficiency, and clean technology). The *EMP1*[18] variable is a dummy variable taking 1 if the company is using waste management and clean technology operational management practices and 0 otherwise.

Our model integrates barriers to the introduction of environmental management practices that were usually not taken into consideration in earlier studies. This is expected to provide additional insights, as barriers are presumed additionally to impact the environmental performance of companies. In our research we have collected data for the following barriers: lack of financial resources, lack of human resources, lack of understanding and perception (lack of understanding of benefits, excessive paperwork, doubts about efficiency, unclear standards, etc.), inconsistent management support and resistance to change, high expenses of introducing environmental management practices, active involvement of employees but too much dependence on individual knowledge, and dependence on external knowledge (consultants, etc.). As suggested by literature, two barriers are notably significant for companies. Specifically, the high expenses associated with introducing environmental management practices and the lack of human resources are viewed as important barriers. Other obstacles did not demonstrate comparable significance.

Consequently, in our model these two barriers have been separately incorporated to mitigate the issue of multicollinearity. In "Model a: Determinants of environmental performance," we assess whether the high expenses associated with the introduction of environmental management practices

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[16] In our analysis we control for those industry sectors that were found to be significant, namely metal and chemical sectors

[17] Although we collected data for several types of formal cooperation (joint ventures, original equipment manufacturing, subcontracting, licensing, strategic alliances, and secondments) we control for the cooperation that was found to be significant, namely original equipment manufacturing.

[18] In our analysis we control for those operational environmental management practices that were found to be significant, namely waste management and clean technology

act as hindrances (*Barrier_high_expenses*). In "Model b: Determinants of environmental performance," we investigate whether the lack of human resources hampers the implementation of environmental management practices (*Barrier_HR*). Both variables are represented as dummy variables, taking the value of 1 if a firm perceives the barrier as very important or important and 0 if the firm considers the barrier as moderately important, slightly important, or not important.

Methods of investigation

Given the nature of our dependant variable (dummy variable) we chose logistic regression as a most suitable method of investigation. In the realm of economics, Logit models play a pivotal role in understanding and modelling discrete choices like in our research where companies are choosing or not to introduce ISO or EMAS. The Logit model, with its logistic link function, effectively captures the probability of an event occurring, ensuring predictions lie within the bounded range of 0 to 1. This is particularly valuable when dealing with economic decisions that inherently have binary outcomes such as our Model. Further, the coefficients estimated through Logit regression provide insights into the impact of various factors on the odds of the event, facilitating the identification of key determinants in economic decision-making.

Results

The results of the analysis are presented in Table 5 below showing marginal coefficients. As mentioned, to avoid multicollinearity, we distinguish model a and b by examining the same set of predictors in both models, except for barriers to the introduction of environmental management practices. Here we distinguish between financial barriers, which indicate high expenses of the introduction of environmental management practices (model a), and lack of human resources (model b). All the presented results are, on average, *ceteris paribus*. In our model, we control for the size of the company and the industry sector.

Table 5: Determinants of Environmental Performance of Companies (Model a and Model b) (Marginal Coefficients)

Determinants of environmental performance of companies		
	model a	**model b**
Number of observations	*81*	*81*
Dependant variable	*Possession of ISO and/or*	*Possession of ISO and/or*
Method of investigation	*Logistic regression*	*Logistic regression*
Independent variables	**Coefficient (z-stat.)**	**Coefficient (z-stat.)**
ISO_EMAS	-2.71 (0.199)	-3.78* (0.09)
Environmental management practices		
EMP1	1.142* (0.092)	.596 (0.368)
Link to foreign markets		
EXP_EU	2.06** (0.038)	2.12** (0.032)
Foreign	-2.03* (0.104)	-2.31* (0.064)
OEM	-1.38** (0.040)	-1.38** (0.040)
Barriers for introduction of environmental management practices		
Barrier_high_expenses	-1.156* (0.091)	
Barrier_HR		-1.55* (0.057)
Firm characteristics		
Size	.001 (0.728)	.001 (0.789)
Metal	1.106* (0.100)	1.301* (0.057)
Chemical	4.654*** (0.003)	5.030*** (0.002)
lIncome_employee	.075 (0.675)	.172 (0.362)

Notes. [1] **Significance level=0.10. **Significance level=0.05. ***Significance level=0.0*

The results show that companies that export to the EU are more likely to possess an ISO or EMAS certificate (coefficient significant at the 5% level for both models). Further, the findings indicate that companies that have foreign ownership (coefficient significant at the 10% level for both models) or are engaged in original equipment manufacturing or subcontracting with foreign companies (coefficient significant at the 5% level for both models) are more likely not to possess an

ISO or EMAS certificate. Important to emphasise is that out of six means of formal cooperation that we researched (joint venture, original equipment manufacturing, subcontracting, licensing, strategic alliance, and secondments), only original equipment manufacturing was taken into the final model. This is because only original equipment manufacturing was significant, which is not surprising given that companies in Bosnia and Herzegovina mainly engage in original equipment manufacturing and subcontracting as opposed to other forms of formal cooperation, as discussed earlier. In each model, the findings show that companies facing significant barriers, such as high expenses of the introduction of environmental management practices (coefficient significant at the 10% level) and a lack of human resources (coefficient significant at the 10% level), are less likely to obtain ISO or EMAS certification.

The only difference between the models is in the effect of operational environmental practices (if company is practicing waste management practices and if company introduced clean technology practices). In model a, with the barrier of high expenses of the introduction of the environmental management practices, companies that practice waste management and use clean technologies are more likely to possess ISO and EMAS certificates (coefficient significant at the 10% level). In model b, with the barrier of a lack of human resources, no such significance was measured.

The importance of the company's internal capacities

Our findings indicate that neither firm size nor productivity has a significant impact on the adoption of international environmental standards among companies. This challenges the conventional belief that larger firms are more inclined to implement advanced environmental management practices, a hypothesis that has been supported by prior research (Harangzó et al., 2010; Singh, Jain & Sharma, 2014).

One plausible explanation for the lack of significance in firm size and productivity as determinants of possession of ISO or EMAS lies in the role of exports in shaping environmental performance. Exporting firms, regardless of their size, must comply with environmental standards imposed by their target markets, particularly in regions like the European Union, where such standards are stringent. Moreover, while it is commonly assumed that larger firms have more financial resources to invest in environmental certifications, the process can become increasingly resource-intensive as the firm's size grows. Larger companies often face higher costs due to the need to certify multiple production lines, technologies, and facilities, as well as ongoing renewal fees.

When examining the relationship between companies that implement operational management practices, such as cleaner technology and waste management, and their likelihood of holding international environmental certifications like ISO or EMAS, the results are not consistently statistically significant across model a and model b. However, a clear positive association persists. This positive correlation reflects a broader pattern that environmentally proactive companies tend to pursue formal certifications. This finding is consistent with previous research (Bluffstone & Sterner, 2006), which also highlights the tendency of environmentally proactive firms to seek and obtain international certifications.

Although our findings suggest that size and productivity do not significantly influence the likelihood of obtaining ISO or EMAS certifications, these factors should not be considered unimportant. Instead, other drivers appear to play a more critical role in the environmental certification of pollution-intensive companies in Bosnia and Herzegovina as presented below.

The importance of market linkages through exports

The findings from our econometric analysis on factors influencing the environmental performance practices of companies underscore the pivotal role that market connections, through exports, play in driving environmental improvements in manufacturing firms. Specifically, our results reveal that companies exporting to the EU are significantly more likely to hold international environmental

certifications such as ISO or EMAS. Our results align with previous studies (Bluffstone & Sterner, 2006; Qi et al., 2011), which suggest that access to international markets with advanced environmental regulations, like the EU, serves as a powerful motivator for firms to enhance their environmental practices. This is likely driven by a combination of EU consumer expectations for sustainability and the regulatory frameworks in place within those markets.

This finding carries considerable weight, as it illustrates how trade dynamics can promote better environmental stewardship among companies in developing regions. By entering markets with advanced environmental regulations, pollution-intensive companies face increased pressure to align with international norms, which, in turn, propels them toward adopting more sustainable practices. This dynamic highlight the potential of trade as a tool for promoting global environmental standards, especially in regions with weaker domestic regulations.

The importance of FDI and formal linkages

Although formal partnerships are often believed to improve environmental practices, our findings show the opposite. Similar outcomes have been observed in the existing limited research analysing impact of formal cooperation of companies on environmental performance (Gallagher, 2006). Specifically, our results suggest that vertically integrated firms, those engaged in original equipment manufacturing or subcontracting in pollution-intensive sectors, are less likely to adopt international environmental standards. This outcome indicates that formal partnerships do not necessarily lead to knowledge spillover and improved environmental management practices through backward linkages in the supply chain. Moreover, these partnerships may contribute to the relocation of pollution-intensive production processes to regions with less stringent environmental regulations, such as Bosnia and Herzegovina, further complicating the environmental implications of such collaborations.

Further our analysis shows that companies with foreign ownership are less likely to possess ISO or EMAS environmental certifications, which challenges the common expectation in transition countries that foreign investment would drive advanced environmental practices. Although the sample of foreign-owned companies is small and we do not investigate the origin of FDI, the findings provide important insights, suggesting that these companies might not be focused on their environmental impact. This raises concerns about their commitment to environmental protection. Previous studies (Pargal & Wheeler, 1996; Hartman, Huq & Wheeler, 1997) have already shown that foreign ownership does not always lead to improved environmental performance, reinforcing the idea that foreign capital in pollution-heavy industries may be motivated by cost-efficiency or lax environmental regulations rather than environmental protection.

Our results underscore the complex relationship between market connections and environmental performance in Bosnia and Herzegovina's pollution-intensive manufacturing sectors. While export activities to the EU, clearly incentivize the adoption of international environmental standards such as ISO and EMAS, formal partnerships with foreign companies and foreign ownership tell a more nuanced story. The results indicate that foreign ownership and formal partnerships, especially in vertically integrated OEM or subcontracting firms, do not always lead to better environmental management practices and may even contribute to the relocation of pollution-intensive activities to regions with weaker environmental regulations supporting the PHH.

Our analysis challenges the widespread expectation in transition economies that foreign investment and formal cooperation with foreign companies automatically foster modernization, knowledge and technology spillover and better environmental performance. Instead, it highlights the need for a more critical evaluation of the environmental impact of foreign capital and formal cooperation with foreign companies particularly in pollution intensive industries.

The importance of external barriers

The results further suggests that high costs associated with the adoption of international environmental standards as well as a lack of human capital present important barriers to improved

environmental management, as expected. This highlights that the financial burden of compliance with environmental regulations can be overwhelming for many firms, particularly those operating in pollution-intensive industries. Furthermore, the absence of skilled personnel capable of implementing and maintaining effective environmental management systems exacerbates these challenges. Effective environmental management often requires a workforce equipped with specialized knowledge and skills, which may be lacking in many organizations.

Conclusion

Our study brings forth several notable contributions. Our conceptual framework lies on the foundations of the comprehensive review of existing literature that informed the development of each of its components, namely, links with foreign markets, environmental management performance, and the associated motives and barriers. This conceptual framework subsequently guided the creation of a targeted questionnaire for collecting firm-level data from manufacturing companies in Bosnia and Herzegovina. Given the scarcity of firm-level data in this region, particularly in Bosnia and Herzegovina and the broader Western Balkans, this represents a significant contribution to the field.

Further, our research is built upon established macroeconomic theories linking these broader economic concepts to the behaviour and environmental performance of individual companies. By grounding the conceptual framework in macroeconomic theory, the research provides a robust theoretical basis for understanding the environmental management performance of firms and offers means for a comprehensive examination of how macroeconomic factors, such as trade and foreign direct investment, shape the environmental performance of businesses.

The results of econometric analysis provide a novel insight into determinants of environmental management practices in the specific context of less developed transition economy. Notably by examining the relevance of foreign market linkages in determining environmental management practices of pollution intensive enterprises in an integrated framework, the results of this dissertation contribute to understanding the importance of trade effects, relative to foreign partnership and foreign ownership in acquiring international environmental standards. The results show that exporting to the EU positively influences the environmental management performance of pollution-intensive manufacturing firms, supporting existing research that finds access to markets with stringent environmental standards incentivizes firms to improve their practices. Such dynamics illuminate the importance of robust regulatory frameworks in fostering demand for sustainable practices, thereby suggesting that trade mechanisms can act as a powerful impetus for elevating global environmental standards, especially in regions characterized by less stringent domestic regulations.

In contrast, formal linkages with foreign companies measured through original equipment manufacturing and substitution as well as foreign ownership, show that they have a negative effect on environmental standardisation practices of companies. Contrary to expectations, rather than fostering improved environmental practices, the data suggests that FDI and vertically integrated companies are less likely to possess international environmental standards, indicating that these forms of formal partnership are not conditional to improved environmental management of collaborating partners through backward linkages. The absence of spillover of knowledge and technology transfer underscores the fact that such collaborations may primarily serve the interests of foreign investors looking to reduce costs without bearing the environmental responsibilities typical in their home countries. This dynamic suggests that Bosnia and Herzegovina may serve as a pollution haven, where foreign investments in high-pollution industries continue unsustainable practices without sufficient regulatory oversight, raising critical implications for policymakers. The implications highlight the necessity for more robust environmental policies and enforcement

mechanisms in Bosnia and Herzegovina to counter the adverse environmental impacts of foreign investments focused on low-cost, high-pollution production.

Important to highlight is that, while our findings suggest that firm size and productivity do not significantly affect the likelihood of obtaining ISO or EMAS certifications, these factors remain relevant as the lack of significance could be explained by the role of export. The firms engaged in export activities, regardless of the size, must comply with environmental standards.

Limitations of this analysis are mainly associated with the small sample size, which prevented us from drawing strong conclusions when it comes to the relevance of foreign ownership in enhancing EMPs, given the limited number of foreign owned companies in the sample. Small sample size inhibited deeper analysis of industry specific determinants of EMP. In view of this, it is worth mentioning that the methods of investigation used in this analysis are suitable for small sample sizes which allow for interpretation of the obtained results and present important contribution to knowledge. The results need be interpreted with cautiousness and while paying attention to the context of investigation that is country and industry-content specific. Further research may explore the comprehensive data sat on environmental management obtained by the survey.

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SUSTAINABLE CONSUMPTION BEHAVIOR AMONG GENERATION Z IN CROATIA: UNDERSTANDING ACTIONS AND ATTITUDES IN THE CONTEXT OF GLOBAL ECOLOGICAL CHALLENGES

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Abstract

Amid the escalating global ecological crises, both the public and the business sector are under increasing pressure to adopt environmentally sustainable practices. In this context, studying the behavior of young consumers is particularly significant, as they not only constitute a substantial portion of the world's population but are also on the brink of becoming the primary drivers of the global economy. This research focuses on analyzing the sustainable consumption behavior of young consumers, exploring how their environmentally sustainable actions are reflected through various aspects of consumer behavior.

The primary objective of the study was to assess and analyze sustainable consumption behaviors among young consumers, with a specific emphasis on identifying prevailing patterns within this targeted demographic group. The analysis included a sample of 125 young consumers, specifically Generation Z in Croatia. Correlation analysis methods were used to explore the relationships between environmental sustainability behavior (ESB) and three key variables: unneeded consumption, saving orientation, and product reusability. These variables were measured using the four-dimensional Sustainable Consumption Behavior scale.

The research findings indicated that while unneeded consumption was not significantly related to ESB, there was a moderate but significantly positive correlation with saving orientation and product reusability. The results suggest that despite the presence of sustainable practices, there is considerable room for aligning the actual behavior of young people in Croatia with their environmental attitudes. This discrepancy highlights the need for further research to investigate the deeper causes and potential strategies for encouraging more consistent environmentally sustainable behavior.

The importance of the research is particularly grounded in the context of the current economic climate, marked by climate change and geopolitical situations that further strain economies worldwide. Such an environment negatively impacts the prices of eco-friendly products, which are traditionally more expensive than conventional ones. Therefore, understanding how to motivate young consumers towards more consistent sustainable practices is crucial for developing

effective strategies that could increase their engagement in environmentally sustainable consumption. These initiatives are essential for achieving sustainability goals at the European Union level and contributing to global sustainability objectives. The conclusions of the research can serve as a basis for shaping policies and interventions aimed at young people, ensuring a long-term sustainable future.

Keywords: sustainable consumption, Generation Z, attitude-behavior gap, product reusability, unneeded consumption, saving orientation

JEL classification:

1. Introduction

In the contemporary era, humanity faces an array of profound challenges that impact the economy and business sectors. These challenges include environmental degradation, public health crises, demographic shifts, and other significant global issues. As these factors intertwine, they pose a complex influence on economic stability and business operations worldwide, necessitating a strategic response that aligns with sustainable development principles.

The United Nations' Sustainable Development Goals (SDGs) emphasize the urgent need to address global challenges, with almost half out of the 17 goals directly related to environmental sustainability. These goals call for a systemic transformation in resource consumption and production, highlighting the broader imperative of aligning economic growth with environmental stewardship (UN, 2015). In this context, the European Union has embraced global sustainability initiatives. The European Green Deal, which sets ambitious targets for climate neutrality by 2050, underscores the importance of creating a framework that supports a sustainable transition across all member states, aligning with the UN SDGs on environmental sustainability and beyond (European Commision, 2024). Croatia, as an EU member, has implemented a range of sustainability measures aligned with EU and UN initiatives, focusing on renewable energy, energy efficiency, and waste management, while also enhancing sustainable across all sectors of economy to mitigate climate change (Knez, Štrbac & Podbregar, 2022).

To achieve the ambitious goals set forth by the UN and the EU, it is imperative that all segments of society, including the economy, public institutions, and the general population, actively participate in sustainability efforts. Engaging a broad spectrum of stakeholders, from businesses to individuals, is essential for fostering a culture of sustainability that supports long-term environmental and economic resilience. The involvement of young consumers is particularly crucial, as their choices and behaviors can significantly influence the success of sustainability initiatives (Aceleanu, Serban & Burghelea, 2015; Gajović, Bjelica, Pavlović & Vukmirović, 2023; Tewari, Mathur, Srivastava & Gangwar, 2022). This influence is particularly salient given that younger generations of consumers have the potential to shape the pro-environmental behaviors of their peers and family members, thereby amplifying the impact of sustainability efforts across broader social networks (Muralidharan & Xue, 2016).

Generation Z constitutes 40% of the global population (Andruszkiewicz, Grzybowska-Brzezińska, Grzywińska-Rąpca & Wiśniewski, 2023), and as they increasingly enter the workforce and assume specialist, expert, and leadership roles within the business sector, they are poised to become a pivotal force in driving the global economy. Compared to previous generations, Generation Z's technological savviness makes them more inclined toward ethical consumerism, showing a stronger preference for green products and a deeper commitment to environmental sustainability (Djafarova & Foots, 2022; Francis & Hoefel, 2018; Lavuri, Jusuf & Gunardi, 2021; Robichaud & Yu, 2021). However, despite their stated environmental values, there is often a discrepancy between their expressed attitudes and actual behaviors regarding sustainability (Aschemann-Witzel & Niebuhr Aagaard, 2014; Nguyen et al., 2018; Lisboa, Vitorino & Antunes,

2022), also observed when comparing Generation Z to older generations (Ham, Chung, Kim, Lee & Oh, 2022).

This phenomenon aligns with research identifying five consumer segments based on attitudes and actions toward ethical issues (Cowe & Williams, 2000): even though 30% of consumers express the intention to buy ethical products, only a small fraction (3%) actually follows through with such purchases - a widely recognized issue known as the 'attitude-behavior gap' (Campbell, 1963; Wiegel, 1983). Research further suggests that the alignment between attitudes and behaviors is stronger when individuals hold specific attitudes toward engaging in particular environmentally friendly actions, such as recycling, rather than toward general environmental concerns (Gupta, 2021). This attitude-behavior gap highlights the need for further research into strategies for promoting consistent eco-friendly behavior among young people, especially in today's challenging economic context where motivating sustainable consumption is crucial.

1.1. Research goal

The primary objective of the research was to assess and explore sustainable consumption behaviors among young consumers. The analysis is based on a sample of 125 Generation Z consumers in Croatia. Correlation analysis methods were used to examine the relationships between environmental sustainability behavior (ESB) and three key variables: unneeded consumption, saving orientation, and product reusability. The variables were measured using a four-dimensional Sustainable Consumption Behavior scale (Doğan, Bulut & Kökalan Çımrin, 2015).

Given the importance of aligning Croatia's practices with the European Union's sustainability goals, understanding the sustainable consumption patterns of young consumes, Generation Z, is essential for shaping effective strategies (Fischer, Böhme & Geiger, 2017; Ziesemer, Hüttel & Balderjahn, 2021) at both national and EU levels. As this demographic group is poised to drive future economic trends, their consumption habits and the potential alignment, or discrepancy, between their attitudes and behaviors are critical areas of investigation. Therefore, this study not only contributes to a more comprehensive understanding of sustainable consumption within the Croatian context but also provides valuable insights for broader sustainability initiatives aimed at fostering long-term environmental and economic resilience.

2. Theoretical framework and research hypothesis

2.1. The Multi-Faceted Nature of Sustainability and Sustainable Consumption

The concept of sustainability is broad and evolving, defined across various fields in ways that reflect its multi-dimensional nature. The most widely recognized definition, introduced by the Brundtland Report in 1987, emphasizes intergenerational equity in resource use, describing it as a development approach that meets current needs without compromising the ability of future generations to fulfill their own (Hajian & Kashani, 2021). Sustainability is also viewed as a balance encompassing environmental, health-related, ethical, and economic dimensions (Reisch, Eberle & Lorek, 2013).

Furthermore, the concept is increasingly approached through systems thinking, focusing on maintaining the resilience and health of ecological and social systems amid growing pressures from human activities (Olsson, Galaz & Boonstra, 2014). From a business perspective, sustainability involves practices that promote long-term economic growth while preserving natural resources and avoiding irreversible environmental damage, thereby aligning profitability with ethical responsibility (Rausch, Baier & Wening, 2021). These perspectives converge on a core principle: achieving development that harmonizes environmental, social, and economic goals to secure well-being now and in the future (Booi-Chen & Teck-Chai, 2009), while also encompassing the

continuous delivery of adaptable programs, interventions, and behaviors that maintain benefits over time (Moore, Mascarenhas & Straus, 2017).

When it comes to consumer behavior, sustainable practices involve consumption patterns that minimize negative environmental, social, and economic impacts while still satisfying personal needs and desires. According to Carrero et al. (2020), sustainable consumption includes purchasing environmentally friendly products, reducing consumption by simplifying lifestyles, and engaging in activism to promote societal change. Such behavior is influenced by intrinsic factors like personal values and ethics, as well as extrinsic factors such as social norms, available infrastructure, and economic incentives (Lisboa et al., 2022), and it can also result from anti-consumption practices, where intentionally limiting or avoiding consumption reduces environmental impact (Ziesemer, Hüttel & Balderjahn, 2021).

Despite the increasing awareness and intentions of consumers to act sustainably, there remains a significant gap between these attitudes and actual behaviors, often driven by perceived trade-offs in convenience, cost, and product quality (Rausch et al., 2021). Addressing this gap necessitates effective interventions like improved education, transparent labeling, and incentive structures to better align consumer choices with sustainable outcomes.

2.2. Sustainability Perceptions and Behavioral Patterns of Generation Z

Generation Z, born roughly between the mid-1990s and early 2010s, is recognized as a cohort of digital natives who are highly informed about global issues and deeply aware of the importance of sustainability (Chen, Yan & Liew, 2023; Ewe & Tjiptono, 2023). As tech-savvy individuals with constant access to digital platforms (Ninan, Roy & Cheriyan, 2020), they are particularly engaged with environmental and social issues through digital channels, which significantly shape their attitudes and expectations toward sustainability (Silveira, Sandes, Xara-Brasil & Menezes, 2024). Their relationship with sustainability is driven by a mix of personal values, social influences, and growing demands for companies to adopt ethical practices. This is reflected in their support for brands that prioritize corporate social responsibility (CSR), with many actively rewarding such companies through their purchasing choices (Narayanan, 2022; Wang, Liao, Wu & Lee, 2021). The consumer behavior of this cohort signals a shift toward more value-driven and ethical consumption patterns, influencing both market trends and societal norms (Bogueva & Marinova, 2022).

While this generation expresses a strong preference for eco-friendly products and sustainable practices, factors such as convenience, cost, and the availability of green alternatives continue to pose significant barriers (Liang, Li & Lei, 2022; Ziesemer et al., 2021). Research also indicates that many young consumers have a limited understanding of broader sustainability concepts like the circular economy, which restricts their ability to fully engage in sustainable consumption (Gazzola, Pavione, Pezzetti & Grechi, 2020).

In Croatia, these global trends are similarly observed. Croatian Generation Z consumers are digitally savvy and active online (Perić, Mamula & Delić, 2020). While they acknowledge the significance of sustainability, they often prioritize career growth in the early stages of their professional development, viewing sustainability more as a responsibility of those in leadership positions (Krstinić Nižić & Butković, 2023). Financial constraints, limited information, and perceived inconveniences related to sustainable choices are among the significant barriers to sustainable consumption (Nikolić, Paunović, Milovanović, Lozović & Đurović, 2022; Šebek, Sarajlić & Jurković, 2022), aligning with global research findings (Dąbrowski, Środa-Murawska, Smoliński & Biegańska, 2022; Sheoran & Kumar, 2020).

2.3. Expanded Theoretical Framework and Research Hypotheses

The relationship between consumer behavior and environmental sustainability has been extensively studied across various dimensions. This study further explores these dynamics by focusing on three

key aspects: unneeded consumption, saving orientation, and product reusability within the context of ESB.

Unneeded consumption and ESB. Unneeded consumption, characterized by impulsive or excessive purchasing, often contradicts sustainable behavior. This phenomenon is well-documented in studies highlighting the negative environmental impact of overconsumption. Consumers engaging in unneeded consumption prioritize immediate gratification over long-term sustainability, resulting in higher levels of waste and resource depletion (Klug & Niemand, 2021). Research reveals that younger generations, particularly Generation Z, generally show lower tendencies toward unneeded consumption compared to older generations, as they are more attuned to sustainability concerns (Bulut, Kökalan Çımrin & Doğan, 2017). However, other studies indicate that Generation Z's strong online presence makes them susceptible to impulsive purchasing behaviors driven by digital platforms, leading to overconsumption (Ah Fook & McNeill, 2020). The ease of access to online shopping options and tailored marketing strategies significantly influence their impulsive buying behavior (Xiong, 2020; Yusak, Mohd & Yusran, 2022). This duality within Generation Z highlights the complexity of their consumption habits and the tension between their sustainability aspirations and behaviors influenced by digital convenience. In this study, we lean toward the perspective that their strong online orientation makes them more prone to unneeded consumption, driven by the convenience and incentives offered through digital platforms. The concept of unneeded consumption is thus essential in understanding the barriers to sustainable consumer behavior, therefore the following hypothesis is proposed:

H1: ESB is negatively correlated with unneeded consumption.

Saving orientation and ESB. A saving mindset is closely linked to optimizing resource use, aligning with sustainability goals by promoting behaviors like purchasing energy-efficient products and effectively managing electricity consumption (Bulut, Kökalan Çımrin & Doğan, 2017). Future-oriented consumers are especially inclined to prioritize long-term savings by investing in pro-environment products like energy-efficient appliances, recognizing that these choices benefit both financial savings and pro-environmental goals (Tangari & Smith, 2012). This suggests a strong correlation between saving orientation and environmentally sustainable behavior, with those who are saving-oriented more likely to adopt sustainable practices focused on resource management and energy-saving devices (Chiu, Kuo & Liao, 2020; Gadenne, Sharma, Kerr & Smith, 2011; Shrestha, Tiwari, Bajracharya, Keitsch & Rijal, 2021; Tan, Ooi & Goh, 2017). Based on this reasoning, the following hypothesis is proposed:

H2: ESB is positively correlated with saving orientation.

Product reusability and ESB. Product reusability is a key component of sustainability, emphasizing the importance of extending product lifecycles and reducing waste. In the context of this research, product reusability encompasses both the reuse of products or their components after their originally intended lifecycle and the practice of borrowing instead of purchasing new products. Consumers who prioritize reusability are more likely to adopt sustainable practices, seeking to maximize the value of products while minimizing environmental impact (Muranko, Tassell, Zeeuw van der Laan & Aurisicchio, 2021). Additionally, there is broad consumer support for product reuse, with second-hand products generally being well-accepted (Cao, Lu & Zhu, 2022). This is particularly relevant for Generation Z, who are increasingly aware of the environmental consequences of disposable products but still consume fewer sustainable goods compared to other generations (Park & Lin, 2018), therefore encouraging greater engagement in reuse practices among this cohort is critical. By focusing on product reusability, consumers can significantly reduce resource consumption and environmental degradation, thereby aligning their behavior with broader sustainability goals (Narayanan, 2022). Given this connection between reusability and sustainable practices, H2 is as follows:

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H3: ESB is positively correlated with product reusability.

In the following section, the research methods used in the study are presented, as well as the statistical analyses that were used to test the aforementioned hypotheses.

3. Data and methodology

Quantitative research was used to collect the data from respondents regarding their attitudes about environmental sustainability behavior and how this behavior is correlated with unneeded consumption, saving orientation, and product reusability. The questionnaire was distributed in the period from July 28th to August 11th 2023 through various channels, including WhatsApp, Instagram Story, Reddit, Discord, and Facebook groups. Snowball sample was used for data collection, which refers to a non-probability sampling technique in which participants are initially selected based on specific criteria, and then additional participants are recruited through referrals from the initial participants. Parallel to this, initial base was also selected from graduate students of digital marketing at the Algebra University College. The snowball distribution method was used on WhatsApp, where the participants were requested to forward the questionnaire to their own contacts.

Sample size was 125 respondents, age 18-24. Questionnaire had 17 questions about ESB based on the Sustainable Consumption Behavior Scale (SCBS) developed by Doğan et al. (2015). The SCBS is a tool for assessing sustainable consumption practices across four dimensions: ESB, unneeded consumption, saving, and reusability. It consists of 17 items, rated on a five-point Likert scale (1 = never, 5 = always). Higher scores in ESB, saving, and reusability reflect stronger sustainable consumption behavior, while unneeded consumption functions inversely, requiring reverse coding for overall scoring. Each dimension captures a specific aspect of consumption behavior: ESB assesses eco-conscious purchasing, unneeded consumption reflects impulsive or excessive shopping, saving measures resource conservation efforts (e.g., energy efficiency), and reusability evaluates the tendency to reuse products rather than discard them. The validity and reliability of the scale were confirmed through both exploratory and confirmatory factor analysis, while Cronbach's Alpha values above 0.70 indicated high internal consistency. The findings confirmed that the scale reliably measures different aspects of sustainable consumption behavior and can serve as a relevant tool for future research on sustainable consumption.

Before the hypothesis testing, Cronbach's Alpha coefficients were checked for each scale used in the analysis (Table 1).

Table 1: Cronbach's Alpha coefficients

| Composite Variables	Cronbach Alpha	Number of Questions
ESB	0,668	5
Unneeded consumption	0,820	5
Saving orientation	0,774	4
Product reusability	0,555	3

Source: Quantitative Research

All variables were measured on a five-point Likert scale, and value for each composite variable was calculated as a means of all questions for that variable. All scales have acceptable Cronbach's alpha values. The "weakest" scale is the Product reusability scale, which has three

items/questions and a Cronbach's alpha of 0.55, which is on the borderline of acceptability (Table 1).

Before calculating the correlation coefficients, scatter plots were constructed for pairs of variables. The diagrams suggest that the relationship between certain variables is not nonlinear, which is an important prerequisite for conducting correlation analysis that is met here.

The diagrams also show a large dispersion around the interpolated line for all pairs of variables, indicating that the correlations will be relatively low (Picture 1).

Picture 1: Scatter plot diagrams
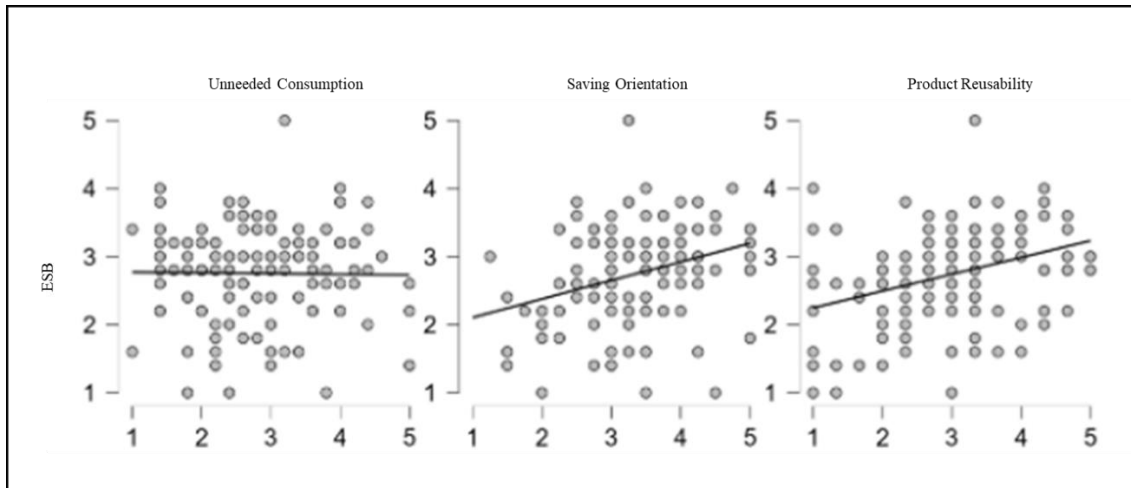
Source: Quantitative Research

The line for the combination of ESB and unneeded consumption is almost nonexistent, indicating that there will be no correlation between these two variables. Between ESB and both saving orientation and product reusability, the line is sloped in a positive direction (higher values in one variable relate to higher values in the other) which means that correlation will be positive.

Table 2: Variable loadings

Standardized loadings for ESB	
Item	Standardized loading
I buy cleaning products that do not harm the environment.	0.303
I buy clothes made from natural materials.	0.286
I buy products from companies that support ecological responsibility.	0.280
I do not buy single-use packaged products.	0.273
I encourage my family and friends not to buy products that harm the environment.	0.351
Standardized loadings for Unneeded consumption	
Item	Standardized loading
I replace technological devices like phones even when unnecessary.	0.263
I buy new clothes even when I do not need them.	0.268
I buy products without prior thought or when they are unnecessary.	0.247

I buy new products even when I already have similar ones.	0.249
I buy food and drinks even when they are not necessary.	0.260
Standardized loadings for Saving orientation	
Item	Standardized loading
In my household, we buy energy-efficient appliances.	0.306
In my household, we buy electronic devices that consume less energy.	0.297
In my household, we are mindful of electricity consumption.	0.324
In my household, we use energy-saving bulbs.	0.300
Standardized loadings for Product reusability	
Item	Standardized loading
I reuse product packaging like glass or cardboard instead of throwing it away.	0.415
I borrow or rent products instead of purchasing them.	0.445
I reuse paper for taking notes or other purposes.	0.455

The standardized loadings for individual items within each composite variable were calculated to ensure construct validity. All loadings were significant and above the acceptable threshold of 0.2, indicating that each item contributes meaningfully to its corresponding latent variable. These findings support the usage of the measurement model. The calculation of standardized loadings for individual items on their corresponding composite variables was conducted using multiple linear regression analysis. This involved generating regression coefficients for each item and testing their statistical significance. VIF values were calculated to detect potential multicollinearity issues, and they are in range from 1,039 to 1,785. The significance of each item's loading was tested using p-values, with all reported loadings being statistically significant ($p < 0.05$).

4. Results

For hypothesis testing Pearson correlation analysis was used. It is a statistical method used to measure the strength and direction of the linear relationship between two continuous variables. The Pearson correlation is sensitive to outliers and assumes that the variables are normally distributed and have a linear relationship (Newbold, Carlson & Thorne, 2013). The following correlation matrix was obtained through correlation analysis (Table 3).

Table 3: Pearson correlation matrix

		Unneeded consumption	Saving orientation	Product reusability	Hypothesis
ESB	Pearson Correlation	-0,014	0,325	0,361	
	Sig. (2-tailed)	0,878	0,000	0,000	Not accepted
	n	125	125	125	
Unneeded consumption	Pearson Correlation		-0,155	-0,211	
	Sig. (2-tailed)		0,084	0,018	Accepted
	n		125	125	
Saving orientation	Pearson Correlation			0,357	
	Sig. (2-tailed)			0,000	Accepted
	n			125	

Source: Quantitative Research

ESB is not associated with unneeded consumption, meaning that respondents show different patterns of this kind of consumption, regardless of their ESB. On the other hand, there is a slight association between ESB and saving and the tendency to reuse. The correlations are statistically significant and positive but low (0.32 and 0.36). The coefficients of determination show an overlap in variances of 11% and 13% (Table 4). As can also be seen from the scatter plots, despite the general trend of association, there are significant deviations from the correlation line for individual responses (which makes the correlation relatively low).

Table 4: Correlation coefficients, coefficients of determination with the variable ESB, and % of shared variance

Variables	r	r^2	% of shared variances
H1: Unneeded consumption	-0,014	0,0002	0,02
H2: Saving orientation	0,325	0,106	10,6
H3: Product reusability	0,361	0,130	13,0

Source: Quantitative Research

Since there are statistically significant correlations between the variables product reusability and unneeded consumption and product reusability and saving orientation, it is that these inter-correlations between the variables have influenced the correlation with ESB. Although the correlations are low, they are statistically significant, and a partial correlation analysis was also conducted.

Table 5: Summary of partial correlation coefficients

Variables	Zero correlation	Partial correlation	Difference
H1: Unneeded consumption	-0,014	0,091	0,11
H2: Saving orientation	0,325	0,232	-0,09
H3: Product reusability	0,361	0,289	-0,07

Source: Quantitative Research

The partial correlation analysis did not significantly change the correlation coefficients, and the conclusion of the hypothesis testing remains the same. Since the inter-correlations between the variables are relatively low, a significant change in the partial correlations was not expected (Table 5). Based on hypothesis testing, the following conclusions can be drawn.

H1: ESB is negatively correlated with unneeded consumption.

Pearson coefficient of correlation is r=-0,014 and p=0,878 which indicates that Unneeded Consumption is not connected to ESB. Research has identified a phenomenon known as the Green Consumption Paradox, where individuals who engage in environmentally friendly behaviors in some contexts do not necessarily reduce their overall consumption or may even engage in more unnecessary consumption in other contexts (Longoni, Gollwitzer & Oettingen, 2014; Gupta, 2021; Ham et al., 2022). This difference in motivation can mean that a person might engage in both behaviors independently - someone might frequently buy unnecessary items due to social pressure while still recycling or conserving energy because of environmental awareness.

H2: ESB is positively correlated with saving orientation.

For this hypothesis coefficient of correlation is r= 0,325 and it is significant on p<0,05. It means that in their daily life respondents try to reduce unnecessary consumption, and consume less by purchasing only what they need, thus reducing the demand for new products and the resources required to produce them.

It involves choosing products that are energy-efficient, durable, and made from sustainable materials. It can also include behaviors like turning off lights when not in use, reducing water usage, and choosing modes of transportation that use less fuel (Bulut et al. 2017). One of the reasons why saving orientation is connected with ESB and unneeded consumption is that saving is a behavior that is more widely accepted and practiced across various cultures and social groups. This social acceptance makes people feel more comfortable adopting saving-oriented behaviors compared to reducing unneeded consumption, which might be perceived as restrictive or counter to mainstream consumer culture, especially among Gen Z (Ewe & Tjiptono, 2023).

H3: ESB is positively correlated with product reusability

Pearsons' coefficient of correlation for ESB and reusability is r=0,361 with p<0,05 and the hypothesis can be accepted. Product reusability focuses on extending the life of a product by using it more than once.

This can include simple practices like using a glass bottle or jar multiple times, or more complex behaviors like repurposing old clothing into rags or upcycling furniture. By reusing products, consumers reduce the need to manufacture new items, which in turn decreases resource extraction, energy consumption, and waste generation. There are five main models of reusability (Muranko et. al, 2021.). This variable has the highest correlation with ESB, perhaps because of

familiarity and convenience of these activities, but cost saving and feel-good-factor should be considered as well.

5. Discussion

Altering individuals' consumption habits, such as selecting, purchasing, and using products in environmentally friendly ways, is regarded as a crucial requirement for achieving environmental sustainability. Consequently, over the past few decades, fostering ESB has become a significant focus, gaining growing interest both in the consumer market and in academic research (Hopper & Nielsen, 1991; Schutte & Bhullar, 2017; Yusak et al., 2022). Quantitative research was done on 125 Gen Z respondents using snowball sampling methods in social media. They were asked to answer on seventeen questions about ESB and their behavior about unneeded consumption, saving orientation and product reusability.

This study offers insights into environmentally sustainable consumption behavior among Generation Z in Croatia, positioning its findings within the broader context of existing research. The results indicate that while young consumers demonstrate a certain level of environmental awareness, this awareness does not always translate into concrete actions. This observation is consistent with prior research emphasizing the attitude-behavior gap in sustainability, where individuals express environmental concern but do not necessarily alter their consumption patterns accordingly (Aschemann-Witzel & Niebuhr Aagaard, 2014; Nguyen et al., 2018). The finding that unneeded consumption does not significantly correlate with ESB further supports the notion that sustainable and unsustainable behaviors often coexist, reinforcing the Green Consumption Paradox (Ham et al., 2022). Identification of saving orientation and product reusability as strong predictors of ESB is in line with research suggesting that financial considerations play a crucial role in driving ESB (Bulut et al. 2017; Chiu, Kuo & Liao, 2020). It highlights an important distinction: while sustainable behaviors that provide financial savings (such as reusing products or reducing energy consumption) are more readily adopted, those requiring behavioral restraint, such as limiting unnecessary purchases, present a greater challenge. This distinction carries significant practical implications, suggesting that sustainability initiatives focusing on economic benefits rather than purely environmental motivations may be more effective in fostering behavioral change.

By providing empirical evidence from a Croatian context, the study contributes to the growing body of literature on ESB among young consumers, a demographic that, despite existing research, still offers significant opportunities for further exploration in sustainability studies. Moreover, the findings suggest that financial incentives may be a more influential factor than environmental concern in shaping consumption behavior, underscoring the need for further research into digital consumerism and its impact on environmental sustainability practices. Given Generation Z's strong reliance on e-commerce and social media-driven shopping, future research should explore how digital consumption habits interact with sustainability decision-making and whether digital environments encourage or hinder responsible consumption.

While the study provides valuable insights for Generation Z in Croatia, it is not without its limitations. The reliance on self-reported data introduces the potential for social desirability bias, as respondents may have over-reported their engagement in ESB. Also, the sample does not fully represent the broader demographic landscape. Future research should aim to increase the sample size and explore additional demographic and psychographic factors such as gender, income, region, and environmental attitudes to better understand their influence on ESB.

6. Conclusion

The study examined ESB among Generation Z in Croatia, focusing on the key factors that shape their purchasing decisions. The findings indicate that environmental awareness alone is not sufficient to drive consistent ESB, as young consumers often engage in both sustainable and unsustainable consumption patterns simultaneously. Notably, unneeded consumption did not show a significant correlation with ESB, reinforcing previous research on the attitude-behavior gap in sustainability. However, the study confirms that saving orientation and product reusability are positively linked to ESB, suggesting that financial incentives may be a stronger motivator for sustainability than environmental concerns alone. These results are consistent with prior studies emphasizing the role of economic benefits in shaping consumer choices. The lack of correlation between unneeded consumption and sustainability highlights the persistent challenge of reducing overall consumption among young consumers.

The study's findings have important implications for sustainability initiatives and consumer education. The results suggest that economic incentives and targeted awareness campaigns that highlight the financial advantages of sustainable consumption could be more effective than purely environmental messaging. Additionally, given the increasing influence of digital commerce and social media on consumer behavior, further research is needed to explore how online shopping habits shape sustainable decision-making among young consumers.

By providing empirical insights into the ESB of Croatian Generation Z consumers, this study contributes to the growing body of literature on consumer sustainability. The findings offer valuable perspectives for policymakers, businesses, and educators seeking to design effective strategies that bridge the gap between sustainability awareness and action among younger generations.

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A REVIEW OF EFFECTIVE COMMUNICATION AND RESOLUTION OF CONFLICTS IN KOSOVO'S HOTEL INDUSTRY

─ ABSTRACT ─

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This study aimed to assess the relationship between conflict management and effective communication. Communication is the most important element for promotion and human development and success Much of job satisfaction depends on the quality of the relationship with others. Without effective communication and personal interaction, one cannot achieve optimal personality growth and prosperity, and any denial of proper and logical relationships with others and staying away from dynamic social life. In order to factually present the relationship between personality, effective communication and performance at work, we surveyed 344 respondents, the sample was selected randomly. The research method is the quantitative method. The results of this study show a positive and statistically significant relationship between conflict management and effective communication, as well as a positive relationship between conflict management and the overall performance of the hotel organization. However, an unexpected finding is the negative correlation between effective communication and employee satisfaction. These results emphasize the importance of conflict management and effective communication for improving organizational performance, while the unexpected link between communication and employee satisfaction requires further analysis to better understand the internal dynamics in hotel organizations. This study provides an important contribution to the literature on conflict management and communication in the context of the hospitality industry and can serve as a basis for further research on similar topics.

Key words: conflict management, effective communication, work performance, hotel business, employee, manager.

Jel classification: **M1, M12, Z3**

HOW GENERATION Z STUDENTS VALUE JOB ATTRIBUTES: A CONJOINT ANALYSIS

─ ABSTRACT ─

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The study examines the relative importance of job attributes for Generation Z students when making job selection decisions. Previous literature has measured the preferences of potential employees in various contexts, regions, and target groups (Jinadasa et al., 2021; Peters, 2017; Yasmin et al., 2016). A larger number of scientific research papers have focused on the comparative measurement of job preferences and satisfaction, mostly using isolated assessment methods. This study focuses on students from the School of Economics and Business at the University of Sarajevo, measuring five relevant job attributes (salary and material benefits, person-job fit, work-life balance, job security, and opportunities for growth and development) and their impact on deciding to choose an appropriate job. Through market segmentation, the study evaluates the preferences of Generation Z members who are currently entering or are already engaged in the labor market. By applying adaptive conjoint analysis, the relative utilities and utility matrices of various job attributes are presented, comparing fourteen different levels of the five individual attributes. Finally, a questionnaire design proposal is provided for measuring the preferences for hypothetical job offers among potential employees. This research is important for the academic community as it demonstrates the application of a new technique, of a marketing nature, in human resource management. For managers and practitioners, this research can be useful for examining the preferences of potential employees to design job positions and work environments that will attract, engage, and retain talented individuals from Generation Z.

Keywords: job evaluation, Generation Z, job attributes, conjoint analysis

ECONOMY OF WELL-BEING: ANALYSIS OF THE IMPACT OF EXCESSIVE CREDIT INDEBTEDNESS ON THE REDUCTION OF THE QUALITY OF LIFE OF THE CITIZENS OF THE REPUBLIC OF CROATIA

─ ABSTRACT ─

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Purpose: Modern lifestyles often put careless and reckless financial management at risk, which can lead to over-indebtedness, default, and bankruptcy. The inability of natural persons to manage their own finances is accompanied by numerous business, social, and family negative implications that are manifested through financial stress, limited spending opportunities, which are directly related to quality of life, and an increase in inequality. In the paper, the authors investigate the phenomenon of excessive borrowing in Croatia with the aim of improving the quality of life and artificially raising the standard of living, which limits the future plans of Croatian residents. The main goal of this paper is to point out the fact that the welfare economy is a continuation of the development of the capitalist system, in which the quality of life of citizens is not questioned, nor is it correlated with greater credit indebtedness.

Results: The key to achieving a welfare economy is to balance the benefit of credit with a reasonable level of indebtedness that is sustainable for individuals. In accordance with the above, research was conducted on a deliberate sample of 782 respondents who have experienced the loss of sovereignty or autonomy over their own economic policies and decisions.

Conclusion: Through the synthesis of empirical research conducted on 782 respondents, it was concluded that the availability of financial resources significantly affects the objective and subjective perception of the quality of life. The approach is based on auto-regressive models with a time lag of thirty years, when citizens did not go into debt and when the desire to buy was not as pronounced as it is today. Debts also have psychological effects, such as a feeling of helplessness, depression or a feeling of isolation due to financial problems, which makes it impossible to actively participate in the creation of a state of welfare economy.

Keywords: welfare economy, credit indebtedness, quality of life, financial literacy, debts

JEL classification: E0, E7, G4, E03

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NAVIGATING DIGITAL TRUST: GEN Z'S PERCEPTIONS OF BRAND AND USER-GENERATED CONTENT

─ ABSTRACT ─

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The advent of digital media has revolutionized the marketing landscape, leading to significant changes in how brands engage with consumers. In particular, brand-generated content (BGC) and user-generated content (UGC) have emerged as pivotal elements in digital marketing strategies. This study aims to compare the perceptions of Generation Z (Gen Z) regarding these two content types, focusing on trust, perceived usefulness, and purchase intentions. Given Gen Z's substantial presence online and their distinct consumption habits, understanding their preferences is crucial for brands seeking to effectively reach this demographic.

Gen Z, characterized by their digital nativity, spends a significant amount of time on the internet, making them a vital audience. Previous research clearly shows that Gen Z has considerable influence on online spending, often relying on digital content for information and purchase decisions. This generation's behavior and preferences necessitate a closer examination of how they interact with BGC and UGC, especially in an era where vast quantities of information have diminished brands' control over consumer perceptions. Technological advancements have facilitated more interactive and engaging promotional tactics, with both marketers and consumers playing active roles in content creation and dissemination.

This research employs a qualitative methodology, utilizing two focus groups of Gen Z participants to explore their perceptions of BGC and UGC. The discussions were aimed at understanding the nuances of trust, informational utility, and the impact on purchase intentions. The theoretical framework guiding this study includes social proof theory and source credibility theory, which help elucidate the factors influencing trust and credibility in digital content.

Preliminary findings indicate distinct differences in how Gen Z perceives BGC and UGC. Trust levels lean toward the UGC, attributed to its perceived authenticity and relatability. In contrast, BGC is often viewed with skepticism due to its promotional nature. UGC is also seen as more

useful for providing relevant information and solving consumer problems, with participants valuing real-life experiences shared by peers over polished brand messages.

In conclusion, this study highlights the critical need for brands to adapt their content strategies to resonate with Gen Z. By prioritizing authenticity and leveraging the power of UGC, brands can build trust and ultimately influence purchase decisions. The implications of this research are significant for marketers aiming to connect with the digitally-savvy Gen Z, offering valuable insights for optimizing content strategies in the evolving digital landscape.

Keywords: User-Generated Content (UGC), Brand-Generated Content (BGC), Gen Z, Trust

JEL classification: M310 Marketing