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The impact of innovation dimension and marketing intelligence on the performance of small and medium enterprises in Ghana

Abstract. With small and medium-sized enterprises being vital contributors to economic growth, understanding the factors influencing their performance is crucial. The purpose of the study was to empower Ghanaian small and medium-sized enterprises with the knowledge and tools needed to effectively leverage innovation and marketing intelligence, driving sustainable growth and competitiveness in the evolving business landscape. Utilising a quantitative approach, 200 respondents were surveyed using random sampling. The study utilised dynamic capabilities to substantiate and explain the social phenomena analysed using the statistical package for Social Sciences and Structural Equation Modelling techniques. The results indicate that small and medium-sized enterprises stand to benefit from enhancing marketing, product, organisational, and process innovation to bolster their performance in the competitive landscape. Despite the acknowledged importance of innovation in small and medium-sized enterprises, empirical studies focusing on specific dimensions and their impact on performance are limited. This study fills this gap by identifying and analysing the relationships between innovation dimensions, market intelligence, and small and medium-sized enterprises performance. By providing actionable insights derived from empirical analysis, the research offers valuable guidance for small and medium-sized enterprises stakeholders, aiding strategic decision-making and competitiveness enhancement. Moreover, the study contributes to theoretical development by enriching understanding of how innovation and marketing intelligence drive small and medium-sized enterprises performance. The practical implications of the findings are significant, offering small and medium-sized enterprises a roadmap for leveraging innovation and market intelligence to thrive in dynamic

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business environments. Overall, this study enhances scholarly knowledge of the factors influencing small and medium-sized enterprises performance and provides practical guidance for small and medium-sized enterprises operators, policymakers, and other stakeholders invested in the success of small and medium-sized enterprises in Ghana

Keywords: product; process innovations; organisation; economic growth

INTRODUCTION

The study highlights the critical link between innovation dimensions and the performance of small and medium-sized enterprises (SMEs) in Ghana, with a particular focus on the mediating role of marketing intelligence. In today's dynamic business environment, innovation is a key driver of competitiveness and growth for SMEs and plays a crucial role in increasing productivity, market responsiveness, and overall performance. Although the importance of innovation to SME success is widely recognised, there remains a significant gap in understanding how different dimensions of innovation impact business outcomes, particularly in the Ghanaian SME context.

According to R. Torres *et al.* (2018), understanding the role of decision making in intelligence systems is crucial to improving enterprise performance. They identify a mediator between intelligence systems and performance and emphasise value creation. Q. Wu *et al.* (2023) focus on dynamic capabilities, especially for SMEs in rapidly changing environments, where marketing intelligence guides adaptive marketing efforts. Dynamic capabilities involve resource renewal, distinct from resource picking, enabling continual adaptation to environmental changes. Dynamic capabilities, particularly in marketing intelligence, illuminate SMEs' value creation through strategic actions in response to market dynamics. Research by A.L. Koffi *et al.* (2021) underscores the essential role of innovation in enhancing organisational, marketing, and managerial entrepreneurship, emphasising the need for SMEs to adopt innovative marketing strategies to remain competitive and improve performance. Additionally, empirical evidence confirms the association between innovation and SME performance, with product-service innovation particularly highlighted for its positive impact on performance.

M. Kuhlmann *et al.* (2023) emphasise the importance of innovativeness and intelligence in overcoming environmental uncertainties and achieving success. Innovativeness involves proactive and strategic action, enabling enterprises to adapt to changes and influence their operating environment. To withstand market turbulence, enterprises must nurture innovativeness and exploit market information. Superior market intelligence gathering techniques are crucial for enterprises to analyse, respond to, and alter the market accordingly. Studies by H. Mbaidin (2024) suggest that innovative enterprises prioritise exploring new products and market opportunities, often requiring substantial effort and expenditures, especially for small- and medium-sized enterprises with limited financial and human capital. Market intelligence is often used in decision-making processes to compensate for resource constraints. Enterprise innovativeness promotes creative behaviours, active scanning, information exchange, and increased information flows. Learning and changes facilitated through market information processing are essential for enterprises to become more innovative and adapt to dynamic market conditions. Market intelligence is crucial for enterprises to convert information into actionable insights, as demonstrated by S. Sabahi & M.M. Parast (2023). It aids in market creation, segmentation, investment decisions, and competitive advantage. In emerging economies like Malaysia and India, customer intelligence acquisition is crucial. Formal information processes enhance adaptability to uncertainties, especially in marketing (Maghsoudi & Nezafati, 2023).

The mediating role of marketing intelligence on innovation and enterprise performance has garnered considerable attention in the literature. Marketing intelligence, defined as the systematic gathering, analysis, and dissemination of information related to market dynamics and consumer behaviour, serves as a critical resource for enterprises seeking to innovate and enhance their marketing strategies (Helm *et al.*, 2020). Scholars have highlighted the importance of marketing intelligence in facilitating the identification of market opportunities, monitoring competitor actions, and understanding consumer preferences, thereby enabling enterprises to develop more effective innovation strategies (Ranjan & Foropon, 2021). Moreover, marketing intelligence acts as a catalyst for innovation by providing insights into emerging trends and customer needs, which can inform product development and marketing initiatives (Chintalapati & Pandey, 2022). As such, marketing intelligence plays a pivotal role in shaping enterprise' innovation processes and ultimately influencing their marketing performance outcomes.

Many researchers have focused their attention on the areas of marketing intelligence. Several attempts after the development of market intelligence construct have been put in place in the operationalisation of market intelligence construct. According to S.F. Ahmad *et al.* (2023), organisations cannot benefit from the information gathered unless it is utilised in the decision-making process. Small businesses prioritise marketing decisions over financial and human resource decisions. As a result, small businesses invested more time than their larger counterparts in gathering marketing intelligence.

This study seeks to fill the gap in the literature by examining the complex relationship between innovation dimensions, marketing intelligence, and SME performance in Ghana. By adopting a quantitative research approach and leveraging empirical data, the study aimed to analyse the direct and indirect effects of innovation dimensions on SME performance, mediated by marketing intelligence.

MATERIALS AND METHODS

The conceptual framework of this study evaluated the relationship between innovation dimensions, marketing intelligence and SME performance, as shown in Figure 1. The study used primary data from SMEs in Greater Kumasi. During the survey period (January 2, 2024 to February 3, 2024), 330 questionnaires were distributed to managers of various manufacturing SMEs and 240 respondents answered an online survey. After validating the responses, 200 questionnaires were selected for additional analysis, of which 40 were found to be inadequate. To ensure that each sector is adequately represented, 200 manufacturing SMEs were proportionally and randomly selected to be included in the sample. The study used structured questionnaires to collect information from owners and managers of SMEs.

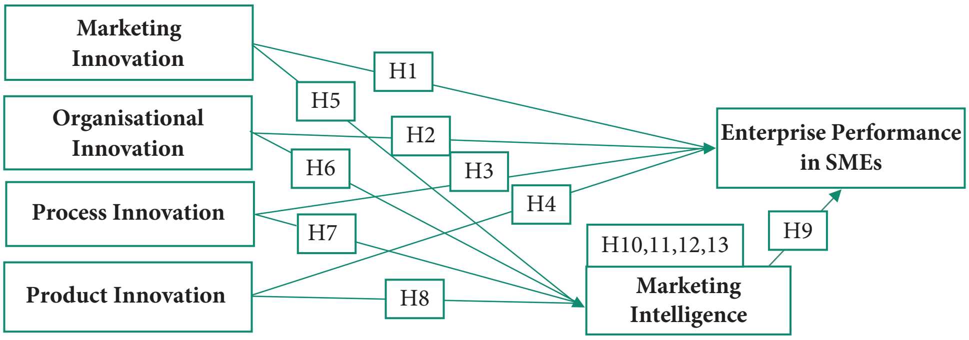

Figure 1. Research framework

Source: developed by the authors

The survey was conducted in compliance with ethical standards. All research participants provided informed consent before data collection. The consent form outlined the purpose of the research and provided assurances that all information collected would be treated confidentially and used only for scientific research. In addition, all participants agreed to have their answers published in the public domain. Questionnaires were distributed to the managers and owners of manufacturing SMEs. The questionnaire drew upon prior research conducted in a similar context to inform its development. Specifically, five items from the study by S.F. Wamba *et al.* (2017) were incorporated to assess marketing intelligence. Additionally, fifteen items sourced from M. Pancić *et al.* (2023) were utilised to gauge the four distinct dimensions of innovation: process, product, organisational, and marketing. To measure enterprise performance, four items were adapted from J.R. Hanaysha (2020). Each item in the questionnaire was assessed using a Likert scale, ranging from "strongly disagree" to "strongly agree" and can be seen in the Table 1.

Table 1. Example of the questionnaire

Please indicate the extent to which you agree with the following statements using the assigned, likely scale ratings of 1-7, where: 1 = strongly disagree, 7 = strongly agree								
	Factor 1: Marketing Innovation	1	2	3	4	5	6	7
MI 1	Our enterprise renews the product promotion techniques employed for the promotion of the current and/or new products							
MI 2	Our enterprise renews the distribution channels without changing the logistics processes related to the delivery of the product							
MI 3	Our enterprise renews the product pricing techniques employed for the pricing of the current and/or new products							
MI 4	Our enterprise renews the design of the current and/or new products through changes such as in appearance, packaging, shape, and volume without changing their basic technical and functional features							
	Factor 2: Product Innovation	1	2	3	4	5	6	7
PI 1	Our enterprise develops new products with technical specifications and functionalities totally differing from the current ones							
PI 2	Our enterprise develops novelty for current products leading to improved ease of use for customers and to improved customer satisfaction							
PI 3	Our enterprise develops new products with components and materials totally differing from the current ones							
PI 4	Our enterprise develops manufacturing cost in components and materials of current products							
	Factor 3: Organisational Innovation	1	2	3	4	5	6	7
OI 1	Our enterprise renews the organisational structure to facilitate teamwork							
OI 2	Our enterprise renews the production and quality management systems							

Table 1. Continued

Please indicate the extent to which you agree with the following statements using the assigned, likely scale ratings of 1-7, where: 1 = strongly disagree, 7 = strongly agree								
OI 3	Our enterprise renews the organisational structure to facilitate coordination between different functions such as marketing and manufacturing							
OI 4	Our enterprise renews the routines, procedures and processes employed to execute enterprise activities in innovative manner							
	Factor 4: Process Innovation	1	2	3	4	5	6	7
PRI 1	Our enterprise determines and eliminate non value adding activities in delivery related processes							
PRI 2	Our enterprise decreases variable cost and/or increasing delivery speed in delivery related logistics processes							
PRI 3	Our enterprise increases output quality in manufacturing processes, techniques, machinery and software							
PRI 4	Our enterprise decreases variable cost components in manufacturing processes, techniques, machinery and software							
	Factor 5: Marketing Intelligence	1	2	3	4	5	6	7
MIN 1	The enterprise has the ability to learn quickly about changes in regulations of its markets							
MIN 2	The enterprise has the ability to learn quickly about changes in customers' preferences							
MIN 3	The enterprise has the ability to learn quickly about changes in competitors' strategies							
MIN 4	The enterprise has the ability to learn quickly about changes in distribution channels							
MIN 5	The enterprise has the ability to quickly learn about changes in demand and tastes in its markets							
	Factor 6: Enterprise Performance	1	2	3	4	5	6	7
EP 1	My enterprise is stronger growth in sales revenue							
EP 2	My enterprise has a greater market share							
EP 3	My enterprise is more profitable							
EP 4	Our enterprise has improved its overall product quality							

Source: developed by the authors

In this study, inferential statistics was provided by Smart-PLS, which used statistical analysis as the research method. Because Smart-PLS can be used on any data scale, requires few assumptions, and tests the relationship without a strong theoretical basis, it is a very useful statistical tool (Avkiran, 2018). Structural models and measurement models are evaluated simultaneously in the Smart-PLS analysis. Based on the model measurements, convergent validity (loading factor and average variance), discriminant validity, and internal consistency reliability (composite reliability) were assessed. Comparing Smart-PLS with alternative methods results in more robust structural model estimation, especially in cases where assumptions are broken. The sample size does not have to be very large, which is another advantage.

The theoretical model was tested using structural equation modelling (SEM), employing the two-stage approach recommended by J.C. Anderson & D.W. Gerbing (1988) to accurately represent each construct's reliability in separate stages, thereby preventing interference between the measurement and structural models. A reliability test was conducted to ensure consistent measurement of the intended latent constructs, with Cronbach's alpha used to evaluate reliability. The outcomes surpassed the satisfactory level of >0.70, indicating a high level of reliability for the instruments used (Nunnally, 1978).

In Ghana, small and medium-sized enterprises (SMEs) are classified based on criteria such as the number of employees and asset base (Offei *et al.*, 2019). The National Board for Small Scale Industries (n.d.) defines small enterprises as those with fewer than nine workers and assets valued at less than GHS 10 million, while the Ghana Statistical Service categorises small enterprises as having less than ten employees (Krakah *et al.*, 2015). The Ministry of Trade and Industry (n.d.) provides further classification, defining micro enterprises as those employing up to five individuals, small enterprises as having 6-29 employees, and medium enterprises as employing 30-99 employees, with corresponding asset values. SMEs in Ghana, predominantly situated in the informal sector, encompass various associations like the Ghana Private Road Transport Union and Hairdressers Association, serving as significant sources of labour and income. This study focuses on SMEs within the service sector, adhering to the Ministry of Trade and Industry's classification.

RESULTS AND DISCUSSION

The results show that out of the 200 (100%) respondents, 84 respondents, i.e. 42%, were male and 116 respondents, i.e. 58%, were female. This shows that the majority of respondents were female. The results also showed that 36 (18%) respondents were up to 30 years old, 109 (54.5%) were between 31 and 40 years old, 42 (21%) respondents were between 41 and 50 years old, and 13 (6.5%) respondents were 51 years and older. The majority of respondents were between 31 and 40 years old, while very few were 51 years old and older. Regarding the educational level of the respondents, it can be seen that those with MSLC/JHS as their highest level of education were 18 years old, which corresponds to 9%.

The SHS education level was 20 (10%). Of the respondents with diplomas, 69 (34.5%) were Undergraduates, 89 (44.5%) were Graduates, and 4 (2%) were Postgraduates. In addition, retail has the most respondents, amounting to 45 (22.5%), manufacturing – 12 (6%), education – 20 (10%), media – 18 (9%), services – 27 (13.5%), imports and exports – 9 (4.5%), supermarkets – 30 (15%), cars – 10 (5%), printing – 11 (5.5%), and others – 18 (9%). Additionally, the results showed that 48 (24% of respondents) have been with the company for less than a year, 51 (25.5%) have been with the company for 1 to 3 years, and 90 (45%) have been with the company between 4- and 6-years years with the company, and 11 (5.5%) have been with the company for more than 6 years. This shows that most of them have been with the company for 4 to 6 years. It can also be deduced that 114 respondents (57), the highest number, are owners of the company; 72 respondents (36) said they were managers; and 14 respondents (7%) held other positions within the company. In addition, 58 respondents with a share of 29% confirmed that it was a family business; However, 142 (71%) stated that it was not a family business. The number of employees in the different companies in the table shows that 165 respondents, representing 82.5%, have less than five (5) employees; 33 respondents, with a share of 16.5%, have 6-29 employees; only 2 respondents with a share of 1% have 30-99 employees; and there were no respondents who reported having a hundred or more employees.

The average variance extracted (>0.50) and composite reliability (CR) values (>0.80) demonstrated satisfactory internal consistency of the constructs and convergent validity, indicating agreement among multiple items measuring a single concept. Detailed information regarding reliability, factor loadings, and average variance extracted from the constructs can be found in Table 2. To assess the measurement model's construct validity and distinguish between constructs derived from redundant items, discriminant validity was employed. Discriminant validity is established when items within a construct correlate more strongly with each other than with items from other constructs. This criterion suggests that the square root of the average variance extracted (AVE) should exceed the correlation between the construct and other constructs (Fornell & Larcker, 1981). The study adhered to this criterion, as all constructs demonstrated discriminant validity, with each construct's AVE surpassing the squared correlation with other constructs, as detailed in Table 3. The correlation matrix between constructs corroborates these findings.

Additionally, cross-loadings revealed that items predominantly loaded higher on their respective constructs rather than on other constructs, with loadings above 0.60 (Table 4). All elements had robust loadings above 0.60, substantiating their retention. The overall effect is shown in Table 5. The results of the hypothesis tests regarding the relationships between these components are explained in Tables 6 and 7, and in Figure 2.

Table 2. Validity and reliability results

Research constructs	Cronbach's alpha	Rho_A	CR	AVE	Loadings
Enterprise Performance	0.980	0.980	0.985	0.943	
EP 1					0.967
EP 2					0.977
EP 3					0.981
EP 4					0.959
Marketing Innovation	0.994	0.994	0.996	0.983	
MI 1					0.994
MI 2					0.992
MI 3					0.992
MI 4					0.988
Marketing Intelligence	0.977	0.982	0.982	0.918	
MIN 1					0.985
MIN 2					0.984
MIN 3					0.989
MIN 4					0.983
MIN 5					0.841
Organisational Innovation	0.945	1.014	0.964	0.899	
OI 1					0.885
OI 2					0.983
OI 3					0.972
Process Innovation	0.871	0.896	0.912	0.722	
PRI 1					0.870
PRI 2					0.793
PRI 3					0.799
PRI 4					0.929
Product Innovation	0.982	0.982	0.987	0.949	

Table 2. Continued

Research constructs	Cronbach's alpha	Rho_A	CR	AVE	Loadings
PI 1					0.969
PI 2					0.979
PI 3					0.985
PI 4					0.964

Source: developed by the authors

Table 3. Discriminant validity

	EP	MI	MIN	OI	PRI	PI
Enterprise Performance	0.971					
Marketing Innovation	0.089	0.991				
Marketing Intelligence	0.157	0.942	0.958			
Organisational Innovation	0.167	0.062	0.099	0.948		
Process Innovation	0.078	0.927	0.884	0.022	0.850	
Product Innovation	0.960	0.143	0.215	0.135	0.135	0.974

Source: developed by the authors

Table 4. Cross-loadings

	EP	MI	MIN	OI	PRI	PI
EP 1	0.967	0.080	0.148	0.168	0.064	0.932
EP 2	0.977	0.080	0.147	0.176	0.076	0.938
EP 3	0.981	0.094	0.154	0.170	0.081	0.940
EP 4	0.959	0.091	0.162	0.136	0.083	0.918
MI 1	0.083	0.994	0.936	0.069	0.922	0.137
MI 2	0.095	0.992	0.932	0.070	0.923	0.148
MI 3	0.075	0.992	0.934	0.046	0.921	0.129
MI 4	0.100	0.988	0.935	0.061	0.912	0.155
MIN 1	0.111	0.944	0.985	0.077	0.882	0.168
MIN 2	0.120	0.941	0.984	0.090	0.887	0.177
MIN 3	0.108	0.945	0.989	0.085	0.886	0.165
MIN 4	0.132	0.935	0.983	0.100	0.866	0.189
MIN 5	0.310	0.729	0.841	0.132	0.700	0.360
OI 1	0.111	0.017	0.055	0.885	-0.024	0.080
OI 2	0.150	0.077	0.109	0.983	0.034	0.119
OI 3	0.196	0.067	0.106	0.972	0.035	0.164
PI 1	0.931	0.134	0.204	0.137	0.118	0.969
PI 2	0.939	0.132	0.203	0.140	0.128	0.979
PI 3	0.946	0.149	0.212	0.130	0.137	0.985
PI 4	0.925	0.145	0.220	0.118	0.141	0.964
PRI 1	0.144	0.783	0.754	0.019	0.870	0.188
PRI 2	0.034	0.672	0.660	0.039	0.793	0.078
PRI 3	0.002	0.690	0.638	-0.026	0.799	0.050
PRI 4	0.071	0.964	0.912	0.035	0.929	0.126

Source: developed by the authors

Table 5. Total effects

	EP	MI	MIN	OI	PRI	PI
Enterprise Performance						
Marketing Innovation	-0.023		0.852			
Marketing Intelligence	-0.048					
Organisational Innovation	0.040		0.035			
Process Innovation	-0.031		0.083			
Product Innovation	0.962		0.077			

Source: developed by the authors

Table 6. Structural analysis

Study's hypothesis	Hypothesis	Path coefficients	t-Statistics	p-Values	Supported/Rejected
MI -> EP	H1	0.018	0.279	**0.780**	Rejected
OI -> EP	H2	0.041	2.230	**0.026**	Supported
PRI -> EP	H3	-0.027	0.456	**0.649**	Rejected
PI -> EP	H4	0.966	51.943	**0.000**	Supported
MI -> MIN	H5	0.852	14.435	**0.000**	Supported
OI -> MIN	H6	0.035	1.311	**0.190**	Rejected
PRI -> MIN	H7	0.083	2.033	**0.043**	Supported
PI -> MIN	H8	0.077	2.331	**0.020**	Supported
MIN -> EP	H9	-0.048	0.861	**0.390**	Rejected

Source: developed by the authors

Table 7. Indirect effects

Study's hypothesis	Hypothesis	Path coefficients	t-Statistics	p-Values	Supported/Rejected
MI -> MIN -> EP	H10	-0.041	0.847	**0.397**	Rejected
OI -> MIN -> EP	H11	-0.002	0.754	**0.451**	Rejected
PRI -> MIN -> EP	H12	-0.004	0.719	**0.472**	Rejected
PI -> MIN -> EP	H13	-0.004	0.817	**0.414**	Rejected

Source: developed by the authors

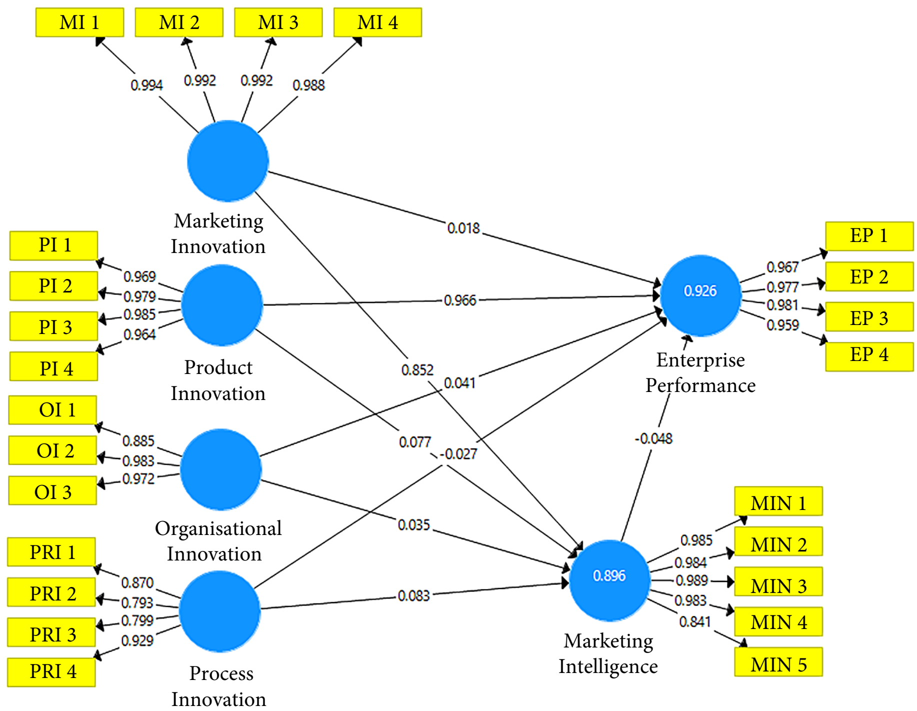

Figure 2. Structural model

Source: developed by the authors

The study assesses the relationship between the dimensions of innovation orientation and performance of SMEs. This leads to four hypotheses: (H1) Marketing innovation is positively and significantly related to the performance of SMEs, (H2) Organisational innovation is positively and significantly related to the business performance of SMEs, (H3) Process innovation is positively and significantly related to Zu. For this purpose, the criteria "Business performance of SMEs" and (H4) "Product innovation is positively and significantly related to the business performance of SMEs" were formulated. The results of the structural model showed that marketing innovation (β = 0.018, t = 0.279, p = 0.780), organisational innovation (β = 0.041, t = 2.230, p = 0.026), process innovation (β = -0.027, t = 0.456, p = 0.649), and product innovation (β = 0.966, t = 51.943, p = 0.000) each played a significant role in determining enterprise performance. The results suggest that improvements in marketing, organisation, processes and product innovation would lead to increased performance. This was the reason for the positive and significant relationship between the four constructs and performance. Thus, H1 and H3 have a negative relationship, while H2 and H4 were supported. The positive relationship between the above constructs is the recognition of their importance for SMEs, even though the relationship between marketing and process innovation and enterprise performance was insignificant and the relationship between organisational and product innovation and enterprise performance was significant. The type and structure of SMEs may have had an influence on the results. Because promoting innovation requires the entire organisation. Therefore, when the organisational structures of SMEs prevent their members from communicating and collaborating effectively, this can lead to process and product innovation. Although the result is significant, it is satisfactory as it confirms the positive relationship found in the literature. The study is timely and significant as it expands SMEs' understanding of how implementing dimensions of innovation orientation can improve their performance, which is crucial given the fierce competition that SMEs face. SMEs must support the four innovation activities, even though there is a strong correlation between the constructs and performance. This is because P. De Giovanni & A. Cariola (2021) and S. Hanif *et al.* (2023) showed how process innovation increase a company's competitiveness, profits and performance by reducing waste. According to the researchers, implementing process innovation is a necessary endeavour because they help companies to increase productivity, remain competitive, and produce high-quality goods. L. Qiu *et al.* (2020) also found that dynamic companies can benefit from being first to meet customer needs through product innovation. J. Andersén (2021) argued that companies can use product innovation to gain a competitive advantage. This is because product innovation can improve product quality, which increases a company's performance and competitive advantage.

Furthermore, the study assesses the relationship between the dimensions of innovation orientation and marketing intelligence of SMEs. This leads to four hypotheses: (H5) Marketing innovation is positively and significantly related to the marketing intelligence of SMEs, (H6) Organisational innovation is negatively and insignificantly related to the marketing intelligence of SMEs, (H7) Process innovation is positively and significant relationship with for this purpose, marketing intelligence of SMEs, and (H8) product innovation was formulated, which is positively and significantly related to marketing intelligence of SMEs. The results of the structural model showed that marketing innovation ($\beta = 0.852$, $t = 14.435$, $p = 0.000$), organisational innovation ($\beta = 0.035$, $t = 1.311$, $p = 0.190$), process innovation ($\beta = 0.083$, $t = 2.033$, $p = 0.043$), and product innovation ($\beta = 0.077$, $t = 2.331$, $p = 0.020$) each played an important role in determining marketing intelligence. The results suggest that although product innovation is not positively correlated with marketing intelligence, marketing, organisational, and process innovation activities do have an impact on marketing intelligence. This means that SMEs should increase the level of marketing intelligence in their product innovation. According to this study, corporate innovation has a significant and positive impact on market intelligence practices, both in terms of procurement and use of market intelligence. The results provided further evidence in favour of the relevant literature (Jaradat *et al.*, 2024). Although enterprises with higher levels of innovativeness may acquire more market information, they may not always use it to the same extent. This is because there is a stronger correlation between corporate innovation and the acquisition of market information than between the ability of companies to innovate and the use of market information. Furthermore, a positive and significant relationship between the acquisition and use of market information was discovered, which correlates with the study by G. Dash *et al.* (2021).

In addition, the study investigates the relationship between marketing intelligence and business performance of SMEs. The results show that marketing intelligence has a positive and significant relationship with the business performance of SMEs (H9). The results of the structural model showed that marketing intelligence ($\beta = -0.048$, $t = 0.861$, $p = 0.390$) does not play a significant role in determining the business performance of SMEs. The results contradict previous research by A. Khaddam *et al.* (2023), indicating a positive and significant relationship between market intelligence practices and enterprise performance, both in terms of customer perspective and market performance.

Ultimately, the study analysed the mediating effect of marketing intelligence on the dimensions of innovation and business performance of SMEs. The mediation test suggests that marketing information does not mediate the relationship between innovation dimensions and enterprise performance. The results of the structural model showed that marketing innovation ($\beta = -0.041$, $t = 0.847$, $p = 0.397$), organisational innovation ($\beta = -0.002$, $t = 0.754$, $p = 0.451$, process innovation ($\beta = -0.004$, $t = 0.719$, $p = 0.472$), and product innovation ($\beta = -0.004$, $t = 0.817$, $p = 0.414$). This indicates that marketing intelligence is not a partial mediator in the relationship between innovation dimensions and performance, nor can it be an alternative to increasing enterprise performance. Therefore, H10, 11, 12 and 13 were rejected in this study. The outcome variables are consistent with some existing literature in the field of innovation and marketing. While innovation is generally considered important in driving various outcomes, the specific relationships between different types of innovation and specific constructs can vary based on the context and industry. For instance, F.D. Yadete *et al.* (2023) explored the impact of marketing innovation on brand satisfaction in the technology sector, and the results indicated a non-significant relationship. Similarly, N.K. Mai *et al.* (2022) investigated the influence of organisational innovation on customer loyalty in the retail industry, also finding a non-significant effect. These studies provide additional support for the non-significant relationships between different types of innovation and the outcome variables.

Despite the lack of direct mediation, marketing intelligence remains crucial in facilitating innovation processes within SMEs. It provides valuable insights into market trends, competitor strategies, and consumer behaviour, aiding enterprises in identifying unmet needs and assessing market demand. Although not directly mediating enterprise performance, marketing intelligence helps enterprises track innovation performance, gather customer feedback, and adapt strategies accordingly. Previous empirical studies have highlighted the positive relationship between marketing intelligence and innovation performance, emphasising its role in supporting knowledge transfer, decision-making, and strategic planning. Thus, while marketing intelligence may not directly influence enterprise performance through innovation, its impact on innovation processes remains vital for SMEs striving to stay competitive in dynamic market environments.

CONCLUSIONS

This study highlights the critical role of innovation in shaping the performance of SMEs, particularly in the manufacturing sector in Ghana. The results highlight the positive influence of marketing, organisational, process, and product innovation on company performance and underline the importance of promoting a culture of innovation in SMEs. While marketing, organisational, and product innovation were found to significantly increase enterprise performance, the relationship between process innovation and enterprise performance was less pronounced, suggesting the need to further examine the nuanced dynamics of innovation in different organisational contexts. These insights provide valuable guidance for SMEs seeking to strengthen their competitive position and adapt to changing market demands by strategically integrating innovation into their business strategies.

In addition, this study sheds light on the connection between innovation orientation and marketing intelligence in SMEs. While marketing, organisational and process innovation were found to positively influence marketing intelligence, the relationship between product innovation and marketing intelligence was not statistically significant. This highlights the importance of integrating innovation activities into marketing strategies to improve market intelligence practices in SMEs. However, the study did not find support for the mediating role of marketing intelligence in the relationship between innovation dimensions and enterprise performance, suggesting the presence of other influencing factors. These results provide valuable insights for SMEs that want to improve their innovation practices and market intelligence capabilities, ultimately contributing to their sustainable growth and competitiveness in the market.

The study emphasises the importance of innovation in management practices for SME managers, especially in developing countries like Ghana. It suggests that managers should prioritise innovation across marketing, organisational, process, and product dimensions. This involves investing resources, optimising processes, and introducing new marketing strategies. The study also suggests that policymakers and industry stakeholders should support SMEs in their innovation efforts by providing finance, resources, and supportive frameworks. This fosters an enabling ecosystem for economic growth and sustainable development.

The study suggests several recommendations to improve the performance of SMEs. These include prioritising innovation, establishing accessible funding mechanisms, and creating platforms to raise awareness about the importance of innovation. These measures will enable SMEs to invest in new technologies, acquire innovative equipment, and capitalise on emerging opportunities. Governments should also provide financial support to SMEs, empowering them to compete effectively in the global marketplace. These recommendations underscore the critical role of innovation in driving SME performance.

The study explored the relationship between innovation and SME performance in Ghana, focusing on SMEs in Kumasi. However, its constraints include a limited generalisability to all businesses in Ghana. Future research should include a diverse sample and consider additional variables like market dynamics, regulatory environment, and socioeconomic conditions. The study also failed to distinguish small manufacturing companies from medium-sized ones, requiring further research to collect more detailed data and explore disaggregation. These suggestions can improve understanding of innovation and SME performance in Ghana, enabling more effective strategies for SMEs' growth and sustainability.

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CONFLICT OF INTEREST

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Вплив інноваційного виміру та маркетингової аналітики на діяльність малих та середніх підприємств у Гані

Анотація. Оскільки малі та середні підприємства відіграють важливу роль в економічному зростанні, розуміння факторів, що впливають на їхню діяльність, має вирішальне значення. Метою дослідження було надати ганським малим і середнім підприємствам знання та інструменти, необхідні для ефективного використання інновацій та маркетингової аналітики, що сприятиме сталому зростанню та конкурентоспроможності в умовах мінливого бізнес-ландшафту. Використовуючи кількісний підхід, методом випадкової вибірки було опитано 200 респондентів. Дослідження використовувало динамічні можливості для обґрунтування та пояснення соціальних явищ, проаналізованих за допомогою статистичного пакету для соціальних наук та методів моделювання структурних рівнянь. Результати дослідження свідчать про те, що малі та середні підприємства виграють від впровадження маркетингових, продуктових, організаційних та технологічних інновацій для підвищення своєї ефективності в конкурентному середовищі. Незважаючи на загальновизнану важливість інновацій для малих та середніх підприємств, емпіричні дослідження, що фокусуються на конкретних аспектах та їхньому впливі на результати діяльності, є обмеженими. Це дослідження заповнює цю прогалину, визначаючи та аналізуючи взаємозв'язки між інноваційними аспектами, ринковою аналітикою та результатами діяльності малих і середніх підприємств. Надаючи практичні висновки, отримані на основі емпіричного аналізу, дослідження пропонує цінні рекомендації для зацікавлених сторін малих та середніх підприємств, допомагаючи їм у прийнятті стратегічних рішень та підвищенні конкурентоспроможності. Крім того, дослідження робить внесок у теоретичний розвиток, поглиблюючи розуміння того, як інновації та маркетингова аналітика впливають на ефективність діяльності малих і середніх підприємств. Практичне значення отриманих результатів є значним, пропонуючи малим та середнім підприємствам дорожню карту для використання інновацій та маркетингової аналітики для процвітання в динамічному бізнес-середовищі. Загалом, це дослідження поглиблює наукові знання про фактори, що впливають на діяльність малих і середніх підприємств, і надає практичні рекомендації для операторів малих і середніх підприємств, політиків та інших зацікавлених сторін, які інвестують в успіх малих і середніх підприємств в Гані

Ключові слова: продукція; процесні інновації; організація; економічне зростання

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Organisational support for the functioning of enterprises in the context of geopolitical turbulence

Abstract. The aggravation of political confrontation and economic competition between the world's leading powers has led to the destruction of established international relations, armed conflicts, the introduction of sanctions, financial instability, and restrictions on trade and cooperation in the technological sphere, which significantly increases the complexity of conducting both local and international business. Since geopolitical risk is a relatively new and serious challenge for companies, there is a problem of investigating its theoretical aspects and developing organisational and methodological approaches to managing it at the level of business entities. This paper was devoted to the investigation of the essence of geopolitical risk, approaches to its classification, assessment, and accounting in the financial and economic activities of enterprises. The authors' definition of geopolitical risk is formulated and its classification by forms of manifestation is proposed. A critical review of methodological approaches to quantitative and qualitative analysis of geopolitical risks was carried out. Analysis of the relationship between the levels of the geopolitical risk index and some macroeconomic indicators of Ukraine showed that the variation in the levels of gross external debt depends on the geopolitical risk index of Ukraine by 88%, the consumer price index – by 86%, direct investment from Ukraine – by 84%, direct investment in Ukraine – by 76%, the gross domestic product of Ukraine – by 90%, the official exchange rate of the UAH against the USD – by 98%. The obtained dependencies allow predicting the behaviour of economic entities depending on the dynamics of the level of geopolitical risk and developing appropriate response scenarios. Based on the recommendations of risk management experts on ensuring the functioning of enterprises in the context of geopolitical turbulence, a list of measures is proposed that companies should take to anticipate and properly consider changes in the geopolitical situation and effectively counteract the associated risks

Keywords: geopolitical risk; uncertainty; multipolarity; correlation; risk management; diversification

INTRODUCTION

In the modern world, the geopolitical landscape is becoming increasingly complex, which directly affects the economy. The traditional foundations of peace and prosperity have been undermined by a number of geopolitical events and economic phenomena, including the ongoing (as of 2024) conflicts in Ukraine and the Middle East, debt crises in the public finances of developed countries, accelerating inflation, problems with bank liquidity and stability, technological breakthroughs (especially in the field of artif), the transformation of the labour market and the global

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struggle for talent in the digital economy. In this changing environment, national security priorities and political intervention, especially among the world's leading powers, are increasingly influencing the future of global trade, supply chains, and economic integration. In addition, elections in at least 64 countries in 2024 could have a significant impact on the global economy, not only because of changes in trade and investment policies, but also because of growing uncertainty and political polarisation. Current geopolitical developments can change traditional supply chains and investment areas, which will lead to increased costs for companies. Highly integrated and complex supply chains, which until recently were considered the achievement of free trade and economic efficiency, are now often seen as vulnerabilities requiring strategic adjustments in the face of escalating geopolitical competition.

Quite a lot of attention was paid to the study of geopolitical risks. The researchers examine the essence, underlying causes and consequences of global risks for society, the state and enterprises, present various approaches to their classification and assessment, and offer theoretical foundations and practical recommendations for their management. In the monograph by L. Skokova (2021) thoroughly examines the conceptual foundations of risks, their systemic nature and modern manifestations in an unstable society. The close relationship between politics, government, and risks is emphasised and key areas of global risks are outlined. Special attention is paid to the study of information sphere risks associated with media and social networks, identification of problems of electronic democratisation, and socio-cultural features of risk perception.

A. Stavytsky (2018) examined in detail how changes in the geopolitical environment in the world create risks and threats to both the country's economy and its economic security. The paper considers possible risks caused by geopolitical confrontation between states and blocs of countries, economic prerequisites for conflicts, and the struggle for resource and energy support. The researcher states that geopolitical challenges will significantly affect the economic component of the countries for quite a long time and this will be especially critical for Ukraine, which, due to the limitations of its economy, cannot play a significant role in the international arena, and its transit position in Europe will remain the subject of geopolitical struggle. O. Herasymenko (2021) thoroughly investigated the problems of risk-based management in the system of economic security of an enterprise. The researcher proposed the concept of risk-oriented management in the system of economic security of the enterprise and developed a methodology for risk-oriented assessment of the level of economic security of the enterprise, which combines the mathematical apparatus with the use of expert assessment to determine key risk indicators.

A number of empirical studies are devoted to the investigation of the relationship between the level of geopolitical risk in the world and key macroeconomic indicators. Thus, the study by V. Mignon & J. Saadaoui (2024) on the relationship between the level of geopolitical risk and oil prices shows that increased geopolitical risks raise oil prices due to fears of supply disruptions. O.F. Tan *et al.* (2022) found that in conditions of uncertainty caused by geopolitical risks, investment activity at the level of enterprises and countries decreases, since economic entities tend to take a risk-averse stance, maintaining cash reserves for investment after the risks are eliminated. D. Caldara *et al.* (2024) based on a study of historical data from a large group of countries over more than a century, found that geopolitical risks increase global inflation due to their impact on financial markets. However, the impact of geopolitical shocks on the inflation rate is multifaceted, including adverse events both from the supply side (supply disruptions, a decline in international trade and an increase in the cost of goods) and from the demand side (a decrease in consumer confidence and tougher financing conditions), and regulatory effects characterised by expansionist fiscal and monetary policy measures. A.I. Kaya & L. Erden (2023) and M.S. Pagliari & S.A. Hannan (2024) noted the significant impact of geopolitical risks on international capital flows. Z. Lu *et al.* (2020) substantiated the negative impact of geopolitical risks on the level of domestic lending to the private sector in developing countries.

Many papers are devoted to the study of the impact of macroeconomic indicators of countries on the development of their policies and vice versa. It was established that the results of economic policy of states have a significant impact on political processes, forming public opinion, electoral preferences, and voter behaviour. B. Marx *et al.* (2022) state that positive macroeconomic trends, such as sustained growth in gross domestic product (GDP), lower unemployment, and moderate inflation, contribute to the support of current political leaders and parties. Conversely, adverse economic phenomena and processes, in particular, high levels of unemployment, inflation and corruption, cause public discontent and stimulate the growth of electoral activity to change political elites (Frank & Martínez i Coma, 2023). Based on the results of the study by M. Funke *et al.* (2023), political populism at the national level has reached a record high – more than 25% of countries are under populist leadership. The analysis shows that under the rule of a populist government, GDP per capita in a 15-year perspective will be on average 10% lower than it could be under the rule of a pragmatic government, since populist rule is usually accompanied by economic disintegration, reduced macroeconomic stability, and erosion of state institutions. The study by M. Giuliani & S.A. Massari (2019) shows that economic downturns cause changes in the political system of states, causing alternating victories of left and right political forces. H. Kriesi & S. Hutter (2019) proved that left-wing and right-wing populist parties, as well as radical political forces and leaders, benefit most from economic difficulties, while support for major parties decreases.

Despite the significant achievements in the study of various aspects of geopolitical risks, there are practically no research on the relationship between the level of geopolitical risk and the macroeconomic indicators of Ukraine and the financial results of enterprises. The problems of identifying, assessing, analysing, and predicting geopolitical risks at the macro and micro levels also remain unresolved. Insufficient attention is paid to the features of enterprise management in the context of a changing geopolitical landscape. Due to the aggravation of geopolitical contradictions, the risks of doing not only international, but also local business have significantly increased. The purpose of this study was to investigate the impact of geopolitical risks on the economy of Ukraine and to develop recommendations for the management of enterprises in the context of the redistribution of traditional spheres of geopolitical influence and the establishment of new economic blocks.

MATERIALS AND METHODS

The research was based on open and independent sources of information. During the study, general scientific methods were used: analysis, synthesis, generalisation, systematisation, graphic. Based on the approaches outlined in the papers analytical reports of international organisations and consulting firms, the authors' definition of geopolitical risk and its classification were proposed. Data by D. Caldara *et al*. (2024) was used to calculate the average annual values of the global geopolitical risk index (GPR) and the geopolitical risk index of Ukraine (GPR UKR). The values of Ukraine's macroeconomic indicators for 2003-2023 were taken from the Official Website of the National Bank of Ukraine (n.d.).

The study of the relationship between the levels of the geopolitical risk index and some macroeconomic indicators of Ukraine was carried out based on the correlation and regression analysis of data presented in the form of two samples X and Y of the same volume n. Pearson's correlation coefficient (linear pairwise correlation coefficient r) was used as a measure of the correlation between attributes X and Y (Holikov, 2006). The Pearson's correlation coefficient helped to estimate the strength and direction of the linear relationship between attributes X and Y. For linear regression, the correlation coefficient r was not only a criterion for the closeness of the relationship, but also a criterion for the accuracy of the approximation. The accuracy of the curved dependence approximation was estimated using a correlation relation (correlation index η). Unlike the linear correlation coefficient, the correlation index did not characterise the direction of coupling. The Cheddock scale was used to convert the quantitative characteristic of the closeness of the correlation relationship between two attributes into a qualitative one.

The significance of the correlation was checked using the Student's t-test. The calculated value of the Student's t-test (t_p) was compared with the critical value of the t-test $t_{cr} = t(\alpha; k)$ at a given value of α and the number of degrees of freedom $k = n - 2$. If $t_p > t(\alpha; k)$, then the correlation is significant at the significance level α (reliability level $p = 1 - \alpha$), which indicates the non-random nature of the statistical relationship between the variables under study. The adequacy of the pair regression model was tested using the Fischer criterion. Actual value of the Fischer criterion F_f was compared with the critical value of Fischer's statistics with 1 and $(n - 2)$ degrees of freedom and level of reliability $(1 - \alpha)$ $F_{cr} = F(1, n - 2, 1 - \propto)$. If $F_f \geq F_{cr}$, then the model is statistically significant (adequate). To estimate what part of the variation (%) of the dependent variable Y was explained by a variation of the factor attribute X (independent variable), the coefficient of determination R^2 was used (Diedenhofen & Musch, 2015).

Statistical analysis of the relationship between the levels of the geopolitical risk index and some macroeconomic indicators of Ukraine was carried out using the modules Basic Statistics/ Tables, Multiple Linear Regression and Advanced Linear/Nonlinear Models of the Statistica Software Suite (Lupan *et al*., 2015). Critical values of statisticians were determined using the Probability Distribution Calculator – Distributions (Toptunova *et al*., 2008). Based on the systematisation of recommendations of leading experts in the field of risk management to ensure the functioning of enterprises in conditions of geopolitical turbulence, a list of measures that companies should take to successfully counteract the destructive impact of geopolitical risks was proposed.

RESULTS AND DISCUSSION

The term "geopolitics" unites a wide range of international relations related to ensuring states' national interests, and includes such multidimensional phenomena and processes as the formation of military-political and economic alliances of states and supranational institutions, changes in the political orientation of individual states, populism, international competition for resources and competition for global leadership, military conflicts, terrorist threats, climate and demographic crises, and any events that can cause regional or global consequences (Kaya, 2024).

S&P Global (2024) defines geopolitical risk as a set of risks arising from interactions between countries, covering trade relations, security partnerships, economic alliances, multinational climate initiatives, supply chains, and territorial disputes that have significant commercial implications, such as sanctions and self-sanctions, reputational risks, trade wars and protectionism, supply chain reconfiguration, and global economic and financial instability. The International Monetary Fund (2023) notes that the global economy can be affected by geopolitical events both directly and indirectly through financial and trade channels, and commodity prices. In financial markets, this affects both direct capital controls or financial sanctions, and increased uncertainty, increased risk premiums, or jumps in asset prices.

In the face of geopolitical tensions, the global economy suffers from higher inflation, lower economic growth, and significant losses to public welfare. The introduction of politically driven trade restrictions disrupts global trade flows and destroys established supply chains even in foreign countries. Rising market prices for key raw materials, their shortage, complications and rising transportation prices lead to a downward trend in industrial production around the world. A potential downturn in globalisation, characterised by an economic divide between conventional

East and West, could lead to a decline in wealth of up to 12% in low-income regions, as they will benefit less from the spread of technology from richer regions. Therefore, it is important for the lowest-income countries to maintain open trade relations with all economic blocs (Góes & Bekkers, 2022).

Since the second half of the 20th century, free trade has largely shaped the global economy. However, geopolitical differences and conflicts are increasingly prompting national governments to raise customs tariffs and use industrial policies to boost national economic development and increase competitiveness. As a result, economic ties are being severed and trade routes are being redrawn. Geopolitics began to have a significant impact on global trade after the USA-China tariff war broke out in 2018. Since then, there has been a redistribution of global trade flows under the influence of geopolitical forces, which is reflected in the growing importance of geopolitical distance as a barrier to trade. Such researchers as C. Bosone *et al.* (2024) state the emergence of friend-shoring instead of near-shoring, that is, the tendency to trade with counterparties from friendly, rather than nearest countries, and provide evidence that now global trade actors are guided primarily by geopolitical considerations, rather than profit-oriented strategies, when choosing partners.

Given the above, the study formulates the definition of geopolitical risk as the probability of adverse events caused by political and economic processes in the international arena (military conflicts, establishment of new military-political and economic alliances, logistics routes, supply chains, markets, investment flows, and sanctions, terrorism, cyber-attacks, climate and migration crises, etc.) that have a significant impact on the economic, social and security situation in individual countries, regions, industries and have implications for state and corporate interests. Since geopolitical risk is a multidimensional phenomenon and can take on various manifestations, there is no consensus among researchers about their classification. Thus, S&P Global (2024) classifies geopolitical risks into several interrelated and often cross-sectional categories (Table 1).

Table 1. Main types of geopolitical risks and their characteristics

Types of geopolitical risks	Characteristics
Political	Impact of political decisions, instability, or conflict on economic and social conditions, such as changes in public policy, civil unrest, and corruption
Economic	Impact of economic and industrial policies, trade disputes, or financial instability on the global economy, including currency fluctuations, inflation, trade wars, and sanctions
Environmental	Impact of natural disasters, climate change, and resource scarcity on the socio-economic situation of states and regions
Regulatory	Changes in the regulatory framework or legal systems for businesses operating in different countries, such as changes in tax, labour, or environmental standards
Cyber risks	Impact of cyber-attacks, data leaks, and other forms of cybercrime, such as ransomware attacks, hacker attacks, and intellectual property theft
Security	Cross-border and internal conflicts with international consequences
Risks of competition for resources	Problems with food and energy security, and with the supply of important minerals

Source: compiled by authors based on S&P Global (2024)

S&P Global (2024) considers the main geopolitical risks worth paying attention to in 2024, tensions between Russia and NATO, cyber-attacks, strategic competition between the United States and China, considering anti/deglobalisation, climate risks, and energy security. There are other approaches to determining the list, time horizon, and scale of geopolitical risks. For example, BCG has developed four scenarios for the possible development of the geopolitical landscape in the coming years (Gilbert & Lang, 2024):

- The "back to the future" scenario. Major world powers are once again taking advantage of enhanced cross-border cooperation and minimal military conflict. Free trade and multilateral institutions remain dominant, enabling constructive cooperation on global issues such as the climate crisis.
- The "spread of regional conflicts" scenario. Targeted military conflicts spread with the limited involvement of major powers. Global institutions struggle for relevance, supply chains are affected by chaos, and the risk of commodity price fluctuations increases.
- The "multipolar rivalry" scenario. Several blocks and groups of countries co-exist in a new global dynamic, where great powers avoid direct conflict, norms and institutions differ between blocs, and trade routes are reformatted to meet new political and economic realities.
- The "global escalation" scenario. The most threatening scenario is in which economic and military confrontations occur in many regions with the deep involvement of major powers. Global institutions are becoming incapacitated, the risks of cyber-attacks and the use of artificial intelligence as weapons are growing, and failures in the global economy are becoming catastrophic.

As of 2024, BCG considers a "multipolar rivalry" scenario to be the most likely, but this estimate may change at any time. Some sources do not distribute geopolitical risks based on certain characteristics, but provide lists of them that are relevant at the current time (Table 2).

Table 2. Current lists of geopolitical risks

List of risks from Eurasia Group specialists	List of risks from BlackRock analysts
The 2024 USA election, which will be a test of American democracy	Strategic competition between the USA and China
The crisis in the Middle East, which has an extremely high risk of escalation	Global technological separation between the USA and China
The actual partition of Ukraine as a result of the war	The Russia-NATO conflict over the war in Ukraine, which is becoming prolonged and increases the risk of escalation outside Ukraine
Breakthroughs in artificial intelligence that will outpace efforts to regulate it	Tensions in the Persian Gulf that threaten energy infrastructure
Rapprochement and mutual support between Russia, Iran, and North Korea	Large-scale terrorist attacks that result in significant human and commercial losses
Weak dynamics of the Chinese economic recovery	Large-scale cyber-attacks that cause long-term failures in critical physical and digital infrastructure
Escalating struggle for important minerals due to trade restrictions	Political crisis in developing countries
The global inflationary shock, which began back in 2021 and will continue to have a slowing impact in 2024	Conflict between North and South Korea
Climate change, which will cause food and water shortages in some regions of the world, disrupt logistical support, promote the spread of diseases and fuel migration processes	Climate policy impasse as advanced economies are unable or unwilling to increase public investment or take steps to meet their emission targets
Limiting the autonomy of decision-making by companies and increasing the cost of doing business	The fragmentation of Europe caused by the energy crisis and inflationary pressures that have led to a resurgence of populist political forces and economic instability

Source: compiled by the authors based on I. Bremmer & C. Kupchan (2024) and T. Donilon *et al.* (2024)

Considering the above, it is advisable to propose such a classification of geopolitical risks by forms of manifestation:

- political (changes in the political regime and course in individual countries associated with making political decisions under pressure from external actors or circumstances without proper economic justification and analysis of the consequences);
- military (internal and international military conflicts, building up conventional and developing new types of weapons, the emergence of weapons of mass destruction in individual countries, the deployment and movement of long-range weapons, conducting military tests and exercises, etc.);
- financial (loss of confidence in traditional financial instruments, markets and institutions, fragmentation of the global financial system, diversification of international settlement forms, etc.);
- economic (increased competition between countries and corporations for access to all types of resources, control of transport corridors, attracting talent, capital and stimulating entrepreneurship);
- legal (changes in the legislative and regulatory regulation of financial and economic activities of business entities and international trade by individual countries that complicate or restrict further cooperation in certain areas);
- security (large-scale terrorist attacks, revolutions, mass protests and riots, strikes that harm the public and private sectors);
- infrastructure (destruction or damage to critical infrastructure as a result of sabotage, cyber-attacks, or military operations, which causes long-term negative consequences, large losses, and requires significant recovery efforts);
- social (increasing unemployment due to automation, closure or relocation of industries, increasing middle-class poverty in developed countries, increasing inequality in access to public goods, stratification of society on various grounds that lead to an increase in social tension and provoke civil conflicts);
- demographic (changes in the number and structure of the population in individual countries and regions, migration processes caused by crisis phenomena in certain countries that create significant pressure for host countries to accommodate and adapt new residents);
- environmental (changes in policies regarding the production and use of minerals, energy generation, emissions, etc., which have long-term consequences for states, businesses, and the population).

As can be seen from the above lists, geopolitical risk is a multidimensional phenomenon that can take on various forms and scales with corresponding consequences not only for the state, but also for the corporate sector. According to a global survey by Oxford-GlobeScan Corporate Affairs (Geopolitical uncertainty..., 2024), corporate affairs professionals are increasingly concerned about the impact of geopolitical conflicts and tensions on business. This is the fifth annual Oxford-GlobeScan Global Corporate Affairs survey, which provides an up-to-date overview of opinions, trends, and challenges in corporate relations. This survey, which was conducted from February to April 2024, involved 227 senior professionals from 43 countries, covering issues and topics related to their position. The results show that geopolitical risk and uncertainty are once again the largest short-term risk category for global business, rising to the top in 2022 with the outbreak of war in Ukraine. The perceived threat to business due to geopolitical factors increased dramatically in 2024 as the conflict in the Middle East escalates, with 70% of respondents identifying geopolitical uncertainty as the biggest risk to business over the next two years. Climate change and the macroeconomic impact on businesses also remain significant risk factors, although concerns about them have eased slightly over the past year. There is a significant increase in concerns about business risks associated with growing populism and social polarisation, and the impact of artificial intelligence and new technologies (Fig. 1).

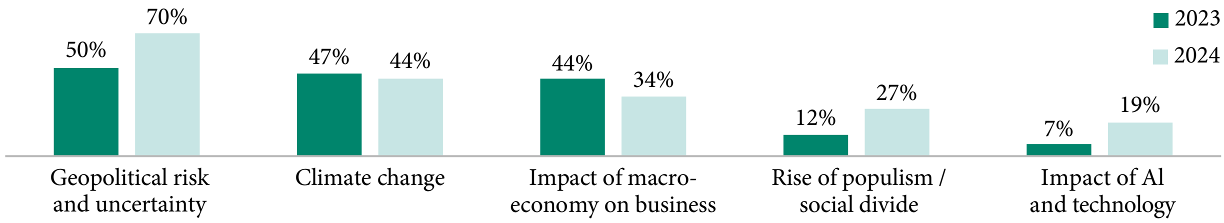

Figure 1. The biggest risks for global business during 2023-2024
Source: Geopolitical uncertainty as risk to business (2024)

Thus, in modern conditions, rapid identification and analysis of geopolitical risks at the global, state and corporate levels using various approaches and methods is an extremely urgent problem. The most well-known and commonly used indicator of geopolitical risk is the geopolitical risk index (GPR), which is based on the frequency of articles in leading newspapers that discuss adverse geopolitical events such as wars, terrorism, and international tensions in the world and in individual countries (Caldara & Iacoviello, 2022). The dynamics of the average annual values of the global geopolitical risk index (GPR) and the geopolitical risk index of Ukraine (GPR UKR) for 2003-2023 is shown in Figure 2.

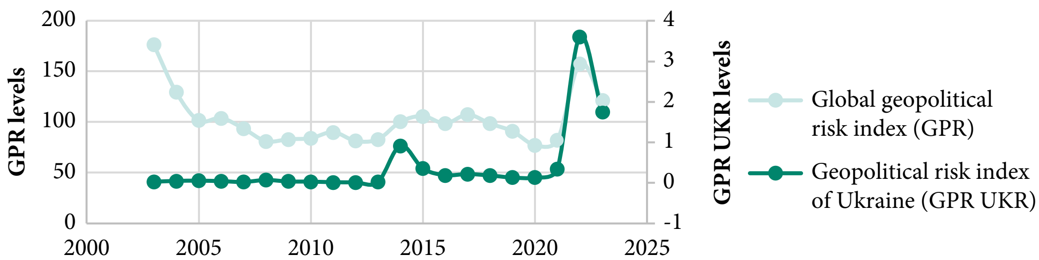

Figure 2. Dynamics of the average annual values of the global geopolitical risk index (GPR) and the geopolitical risk index of Ukraine (GPR UKR)
Source: compiled by the authors based on D. Caldara & M. Iacoviello (2022)

Given that there is a correlation between the levels of the geopolitical risk index of Ukraine and the levels of the global geopolitical risk index (Fig. 3), a statistical analysis of the relationship between the levels of the geopolitical risk index of Ukraine and some macroeconomic indicators was carried out, namely: gross external debt, consumer price index, direct investment in Ukraine, direct investment from Ukraine, GDP of Ukraine, the official exchange rate of the UAH against the USD. The initial data are presented in Table 3.

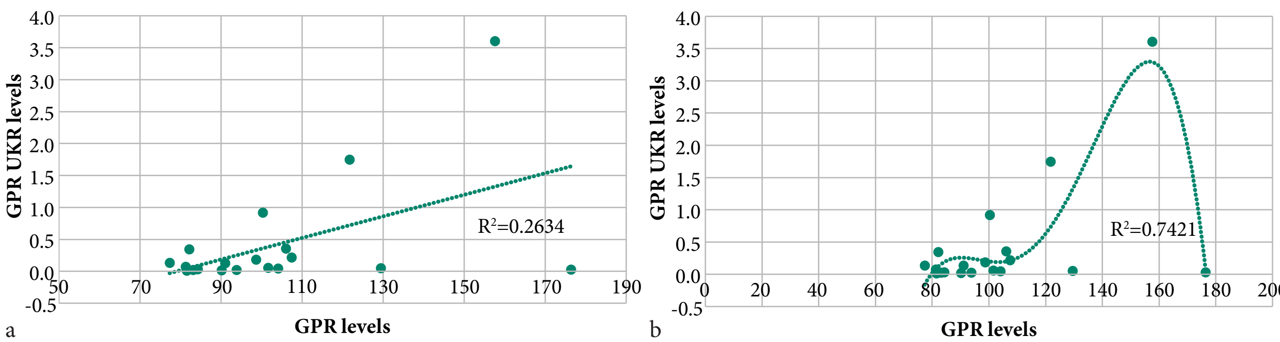

Figure 3. Dependence of Ukraine's geopolitical risk levels on the levels of the global geopolitical risk index
Notes: a) – linear; b) – nonlinear
Source: compiled by the authors

Table 3. Initial data for analysing the relationship between the levels of the geopolitical risk index and some macroeconomic indicators of Ukraine

Years	Indicators							
	Gross external debt, million USD	Consumer price index (December to December of the previous year, %)	Direct investment in Ukraine, million USD	Direct investment from Ukraine, million USD	Ukraine's GDP, million USD	Official exchange rate of the UAH against the USD (average for the period), UAH/USD	GPR	GPR UKR
2003	23,811.0	8.2	1,424.0	-1,411.0	52,010.4	5.33	176	0.029
2004	30,647.0	12.3	1,715.0	-1,711.0	67,220.2	5.32	129	0.050
2005	39,619.0	10.3	7,808.0	-7,533.0	89,238.9	5.12	102	0.056
2006	54,512.0	11.6	5,604.0	-5,737.0	111,884.8	5.05	104	0.045
2007	80,257.0	16.6	9,891.0	-9,218.0	148,733.9	5.05	94	0.024
2008	101,743.0	22.3	10,913.0	-9,903.0	188,110.4	5.27	81	0.072
2009	103,432.0	12.3	4,816.0	-4,654.0	121,552.2	7.79	83	0.037
2010	117,346.0	9.1	6,495.0	-5,759.0	141,209.2	7.94	84	0.032
2011	126,236.0	4.6	7,207.0	-7,015.0	169,333.8	7.97	90	0.018
2012	134,625.0	-0.2	8,401.0	-7,195.0	182,591.8	7.99	81	0.015
2013	142,079.0	0.5	4,499.0	-4,079.0	190,498.8	7.99	83	0.023
2014	125,297.0	24.9	410.0	-299.0	133,503.9	11.89	100	0.918
2015	117,668.0	43.3	-331.0	236.0	91,031.0	21.84	106	0.358
2016	112,524.0	12.4	4,055.0	-3,955.0	93,355.9	25.55	99	0.193
2017	115,451.0	13.7	3,727.0	-3,446.0	112,090.5	26.60	107	0.219
2018	114,710.0	9.8	4,732.0	-4,859.0	130,891.1	27.20	99	0.184
2019	121,739.0	4.1	6,017.0	-5,175.0	153,883.0	25.85	91	0.132
2020	125,682.0	5.0	-36.0	58.0	156,617.7	26.96	77	0.135
2021	129,713.0	10.0	7,320.0	-7,518.0	199,765.9	27.29	82	0.345
2022	130,958.0	26.6	531.0	-187.0	161,989.5	32.34	158	3.609
2023	161,533.0	5.1	4,718.0	-4,676.0	178,757.0	36.57	122	1.748

Source: compiled by the authors

Based on the presented data, a linear correlation and regression analysis of the data was performed – the strength and direction of the correlation relationship were established and its qualitative assessment was made (Table 4). These data indicate that the linear correlation between the levels of the geopolitical risk index of Ukraine and the indicators under study, except for the official exchange rate of the UAH against the USD, is weak and statistically insignificant according to the Student's t-test with a probability of 95% $t_p < t_{0,05;\,n\text{-}1}$ ($t_p < 2.0930$). Since the strength of the paired correlation relationship is significantly affected by the form of the relationship (linear, nonlinear), a nonlinear correlation and regression analysis of the relationship between the levels of the geopolitical risk index of Ukraine and the studied indicators was carried out. Statistical analysis was carried out on sections of the time series that characterise certain political and economic conditions: until 2008 – growth in the world and Ukrainian economy; 2009-2015 – inter-crisis period, which covers the world economic crisis, post-crisis correction and the beginning of the war in Ukraine; since 2016 – a period of gradual recovery. The summary results of linear and nonlinear correlation and regression analysis of the relationship between the levels of the geopolitical risk index of Ukraine and the indicators under study are shown in Table 5.

Table 4. Characteristics of the linear correlation between the levels of the geopolitical risk index of Ukraine and the indicators for 2003-2023

Indicator	Number of observations n	Correlation coefficient r	Student's t-test		Qualitative characteristics of communication
			t_p	t_{cr}	
Gross external debt, billion USD	21	0.3507	0.5725	2.0930	weak
Consumer price index (December to December of the previous year, %)	21	0.3376	0.5279	2.0930	weak
Direct investment in Ukraine, billion USD	21	0.3732	0.6545	2.0930	weak
Direct investment from Ukraine, billion USD	21	0.3864	0.7056	2.0930	weak
Ukraine's GDP, billion USD	21	0.2149	0.2062	2.0930	practically absent
Official exchange rate of the UAH against the USD (average for the period), UAH/USD	21	0.5573	1.6306	2.0930	noticeable

Source: compiled by the authors

Table 5. Results of nonlinear correlation and regression analysis of the relationship between the levels of the geopolitical risk index of Ukraine and the indicators under study

Indicator	Statistical characteristics		Billing period		
			2003-2008	2009-2015	2016-2023
Gross external debt, billion USD	Communication model $y=f(x)$		$y=6E+08x^4–1E+08x^3+$ $+7E+06x^2 – 217230x+$ $+2335$	$y=-484406x^4+$ $+639012x^3–185824x^2+$ $+6980.7x+66.18$	$y=-12.489x^2+$ $+50.805x+110.37$
	Correlation ratio		0.9607	0.9239	0.9367
	Qualitative characteristics of communication		very strong	very strong	very strong
	Student's t-test	t_p	6.6525	4.9885	6.1412
		t_{cr}	2.7764	2.5706	2.4469
	Fischer's criterion	F_f	47.9481	29.1530	42.9796
		F_{cr}	7.7086	6.6079	5.9874
	Coefficient of determination		0.923	0.8536	0.8775
Consumer price index (December to December of the previous year, %)	Communication model $y=f(x)$		$y=13666x^2–1142.7x+$ $+33.64$	$y=-168.03x^2+180.49x+$ $+0.7794$	$y=7.6373x^3–38.231x^2+$ $+45.415x+1.6803$
	Correlation ratio		0.8738	0.9773	0.9313
	Qualitative characteristics of communication		strong	very strong	very strong
	Student's t-test	t_p	3.1410	10.0911	5.8348
		t_{cr}	2.7764	2.5706	2.4469
	Fischer's criterion	F_f	12.9205	106.6071	39.2489
		F_{cr}	7.7086	6.6079	5.9874
	Coefficient of determination		0.7636	0.9552	0.8674
Direct investment in Ukraine, billion USD	Communication model $y= f(x)$		$y=4E+07x^4–$ $9E+06x^3+657291x^2–$ $–20946x+240.96$	$y=24.607x^2–29.79x+$ $+7.0344$	$y=58778x^6–366426x^5+$ $+663258x^4–414487x^3+$ $+114347x^2–14390x+$ $+677.18$
	Correlation ratio		0.8597	0.9325	0.8221
	Qualitative characteristics of communication		strong	very strong	strong
	Student's t-test	t_p	2.8930	5.3848	2.9073
		t_{cr}	2.7764	2.5706	2.4469
	Fischer's criterion	F_f	11.3257	33.3436	12.5071
		F_{cr}	7.7086	6.6079	5.9874
	Coefficient of determination		0.7390	0.8696	0.6758
Direct investment from Ukraine, billion USD	Communication model $y=f(x)$		$y=2E+10x^5–4E+09x^4+$ $+3E+08x^3–1E+07x^2+$ $+282737x–2255.8$	$y=-21.868x^2+$ $+26.721x–6.4115$	$y=-10.215x^4+$ $+55.404x^3–66.98x^2+$ $+0.7225x–1.8441$
	Correlation ratio		0.9950	0.9412	0.801436211
	Qualitative characteristics of communication		very strong	very strong	strong
	Student's t-test	t_p	63.1823	5.8644	2.6306
		t_{cr}	2.7764	2.5706	2.4469
	Fischer's criterion	F_f	3,996.0000	38.8212	10.7738
		F_{cr}	7.7086	6.6079	5.9874
	Coefficient of determination		0.9990	0.8859	0.6423
Ukraine's GDP, billion USD	Communication model $y=f(x)$		$y=1E+09x^4–2E+08x^3+$ $+1E+07x^2–369817x+$ $+3990.4$	$y=-7953.3x^3+10669x^2–$ $–3199.1x+233.56$	$y=1201.4x^4–6970.6x^3+$ $+10488x^2–3615.9x+$ $+467.73$
	Correlation ratio		0.9472	0.9418	0.9625
	Qualitative characteristics of communication		very strong	very strong	very strong
	Student's t-test	t_p	5.5932	5.8970	8.3644
		t_{cr}	2.7764	2.5706	2.4469
	Fischer's criterion	F_f	34.8727	39.2087	75.5217
		F_{cr}	7.7086	6.6079	5.9874
	Coefficient of determination		0.8971	0.8869	0.9264

Table 5. Continued

Indicator	Statistical characteristics		Billing period		
			2003-2008	2009-2015	2016-2023
Official exchange rate of the UAH against the USD (average for the period), UAH/USD	Communication model $y=f(x)$		$y=8E+08x^5-2E+08x^4+$ $+2E+07x^3-680547x^2+$ $13990x-105.56$	$y=-65.861x^2+66.54x+$ $+6.3432$	$y=-2.4791x^2+11.139x+$ $+24.468$
	Correlation ratio		0.9950	0.9946	0.9845
	Qualitative characteristics of communication		very strong	very strong	very strong
	Student's t-test	t_p	63.1823	21.2842	13.5508
		t_{cr}	2.7764	2.5706	2.4469
	Fischer's criterion	F_f	3,996.0000	457.9630	189.4397
		F_{cr}	7.7086	6.6079	5.9874
	Coefficient of determination		0.9990	0.9892	0.9693

Source: compiled by the authors

The obtained data indicate that the correlations between the levels of the geopolitical risk index of Ukraine and, accordingly, the levels of gross external debt, consumer price index, direct investment in Ukraine, direct investment from Ukraine, GDP of Ukraine, and the official exchange rate of the UAH against the USD are significant according to the Student's criterion ($t_p < t_{0,05;n-2}$), and the regression equations are adequate to the actual data according to the Fischer criterion ($F_f \geq F_{cr}$). The degree of influence of the geopolitical index of Ukraine on the variation in the levels of the indicators under study is different. Thus, the variation in gross external debt levels depends on the impact of the geopolitical risk index of Ukraine on average for the entire observation period by 88%, the consumer price index – by 86%, and direct investment in Ukraine – by 76%, direct investment from Ukraine – by 84%, GDP of Ukraine – by 90%, the official exchange rate of the UAH against the USD (average for the period) – by 98% (Fig. 4).

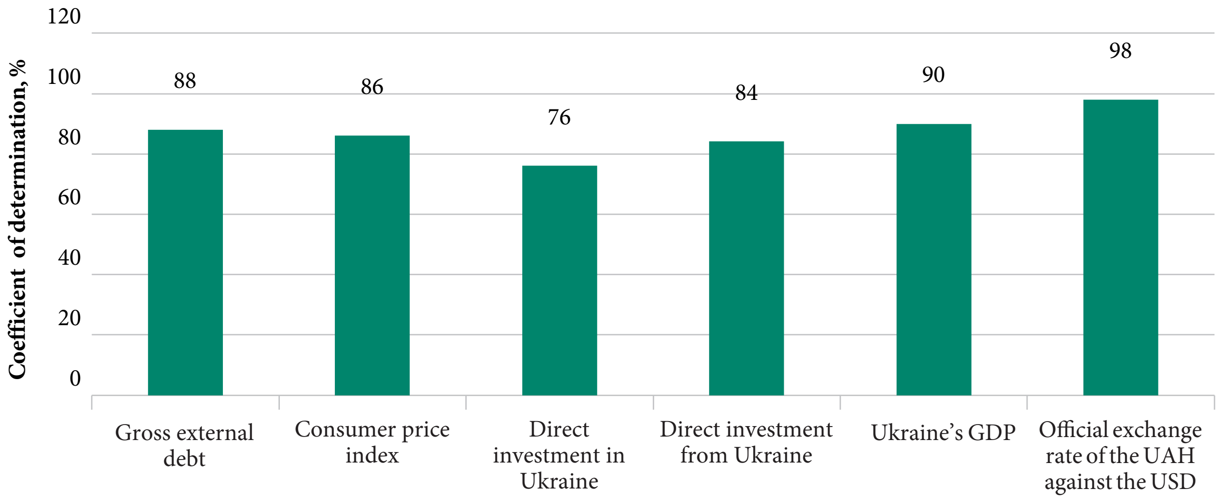

Figure 4. Degree of influence of the geopolitical risk index of Ukraine on the variation in the levels of the indicators under study

Source: compiled by the authors

The dependence of direct investment in Ukraine on the geopolitical risk index of Ukraine at the level of 76% is due to a number of other unfavourable factors of a political, legal and socio-economic nature on the eve of military aggression by the Russian Federation. Therefore, a statistical analysis of the relationship between the levels of direct investment in Ukraine and the levels of the geopolitical risk index of Ukraine was additionally carried out at two intervals – 2016-2020 and 2021-2023 (Fig. 5).

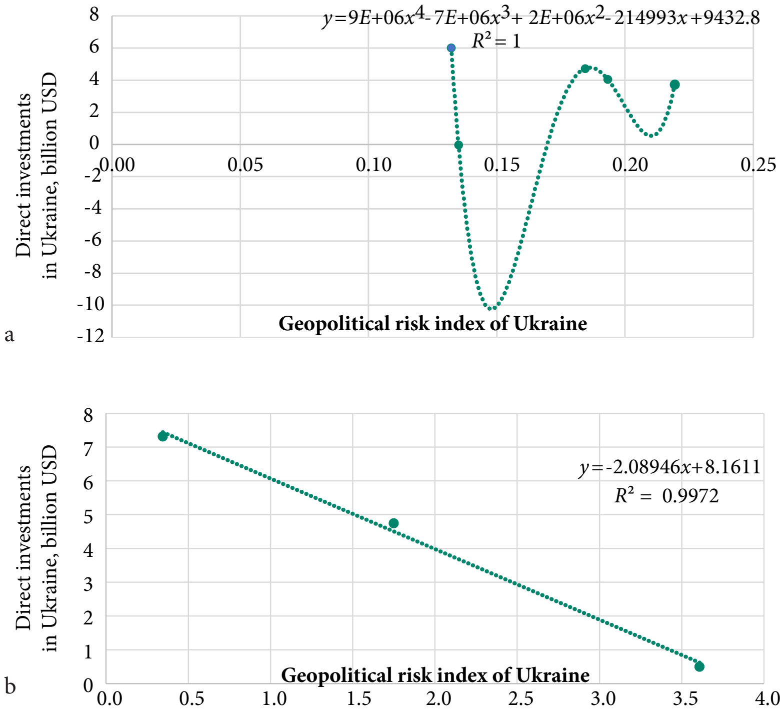

Figure 5. Dependence of direct investment in Ukraine on the geopolitical risk index of Ukraine in different periods
Notes: a) – 2016-2020; b) – 2021-2023
Source: compiled by the authors

The results obtained indicate a functional relationship between the levels of direct investment in Ukraine and the geopolitical risk index of Ukraine in the period 2016-2023. Thus, while the geopolitical risk index (GPR) is easy to use and can be useful for tracking the dynamics of geopolitical risks over time and conducting empirical research, it has certain limitations as a measure of risk. The index states the dynamics of geopolitical risks over past periods, but has no future orientation and cannot predict the potential evolution of risks and the onset of force majeure. The index is a generalised measure of geopolitical risks and is not able to distinguish between individual risks, each of which has different causes, probabilities of occurrence and consequences for countries, markets, industries, and enterprises. The index does not reflect the complexity, duration, sources of occurrence and sustainability of risks, and the non-linear nature of the relationship with macroeconomic indicators, which significantly complicates forecast calculations.

Thus, the geopolitical risk index (GPR) provides only a rough idea of the direction and degree of changes in macroeconomic indicators and is impractical for use in the forecast and analytical activities of enterprises. Therefore, risk analysts typically supplement the GPR index with qualitative analysis, expert advice, probability-based estimates, and scenario analysis to obtain more dynamic and accurate risk assessments. For example, the BlackRock geopolitical risk indicator (BGRI) aims to predict market reactions to geopolitical risks. The indicator represents the average of the top ten risks, including strategic competition between the USA and China, global technological separation, possible conflict between Russia and NATO, tensions in the Persian Gulf, large-scale terrorist attacks and cyber-attacks, political crises in emerging markets, possible conflict in North Korea, a climate policy impasse, and potential fragmentation of Europe (Donilon *et al*., 2024).

The quantitative components of the geopolitical risk dashboard include two different risk indicators: one is based on the market's attention to risky events, and the other is based on the market's response to these events. BGRI tracks the relative frequency of brokerage reports (via LSEG) and financial news (Dow Jones News) related to specific geopolitical risks. It determines the positive or negative mood in the text of articles and sets points, reflecting the level of market attention to each risk compared to the five-year period. At the same time, brokerage reports are given more weight than other sources of information, since they measure the market's attention to a particular risk, rather than public attention or public opinion. The modified methodology improves on traditional approaches to text analytics, which are based on searching articles for pre-defined keywords for each individual risk. A machine learning-based approach to big data processing is being implemented. Using modern advances in computing technologies, neural network language models are used to analyse large amounts of data and determine the relevance of each sentence to geopolitical risks.

At the initial stage, the prepared language model is filled with content related to geopolitical issues and articles that reflect various risks. The tuned model performs two main tasks: it classifies the relevance of each sentence to a specific geopolitical risk to get an attention score, and it classifies the tone of each sentence to determine a mood score. These estimates are then aggregated to form a consolidated geopolitical risk assessment. A score of "0" indicates the average level of the BGRI index for the historical period, while a value of "1" indicates that the BGRI level exceeds the historical average by one standard deviation, which means increased market attention to risk. The latter values have more weight when calculating the average value, and the BGRI level changes gradually, even with constant market attention, reflecting the idea of normalising a high level of attention over time.

To assess the market response, market-oriented scenarios associated with each geopolitical risk event are used, which makes it possible to predict the reaction of market prices when certain events occur. First, scenarios are developed and the catalysts for their occurrence (escalation triggers) are determined, after which, using econometric methods, the results of scenarios are converted into potential shocks for market indices and risk factors. The size of shocks is calibrated using a variety of methods, including analysing historical periods that resemble a risk scenario, with more weight given to recent historical parallels. For scenarios that do not have precise precedents, experts in geopolitical risks and portfolio management are involved to conduct additional analysis. Then, for each risk, a market movement index is compiled based on two indicators: similarity – measures how much the current market environment meets expectations for the implementation of a particular scenario, based on the monthly return on the corresponding assets; value – measures the amount of monthly income of the corresponding assets according to a market-oriented scenario.

These indicators are combined to form an index, where:

- a value of "1" indicates that the markets are reacting according to the scenario;
- a value of "0" indicates that there is no correspondence between market behaviour and the scenario;
- a value of "-1" indicates that the markets react in the opposite way to the expected scenario, that is, they place bets against risk.

This approach is particularly useful for investment companies, but it can be used as a basis by enterprises and adapted to the specifics of their own activities. Thus, companies can create and configure their own language model focused on a specific market and risk events to predict demand and prices for raw materials and finished products and develop appropriate response scenarios. However, the implementation and maintenance of this method will require the involvement of qualified specialists in risk management and information technology, and significant financial and time costs for development, testing and improvement.

A multi-level expert approach to geopolitical risk assessment is an appropriate addition to these methods, since it considers the unique characteristics of the company's operating activities to provide an individual analysis of its risks. This approach was described by M.A. De Villa *et al.* (2015), who emphasised the importance of assessing a company's vulnerability to geopolitical risks to identify both threats and new opportunities. For this purpose, a multi-level analysis is used, covering supranational, international, national, industry, and corporate levels. The researchers suggest using various practical questions and information sources to evaluate each factor at these levels.

Thus, at the supranational level, the ability of international organisations to intervene and mitigate political conflicts between states is assessed, which affects the likelihood of escalation of geopolitical risks. At the international level, countries' dependence on raw materials and energy resources, food or technology, which may pose additional risks to companies, is analysed, and political relations between countries that may increase or decrease the consequences of political instability for businesses are examined. At the national level, the political influence of states in the world, due to their technological development and military power, is considered, and the political programmes of governments and their interaction with business, which can increase or decrease political tensions, are evaluated. At the industry level, the impact of military-political conflicts between states on the supply chains and value creation of companies is subject to research. Identifying and considering the interests and expectations of all stakeholders helps to make more informed and effective management decisions. At the level of an individual company, it examines how political tensions can affect its business processes. Special attention is paid to the development of the company's political influence and its ability to lobby its interests to minimise threats or take advantage of opportunities that arise as a result of geopolitical changes.

The application of a multi-level approach to the assessment of geopolitical risk by enterprises takes place in six stages (De Villa, 2023):

1. Collection of information about each risk factor at all levels of analysis, based on practical questions and available sources of information.
2. Analysis of information for each risk factor to determine the level of risk of the company's activities.
3. Estimation of the risk level for each factor using an assessment sheet by assigning a score from 0 to 100, where 0-20 – very low risk, 21-40 – low risk, 41-60 – moderate risk, 61-80 – high risk, and 81-100 – very high risk.
4. Comparison of risk factor estimates and determination of the highest and lowest risk.
5. Identification of potential problems (for factors with the highest risk scores) or opportunities (for factors with the lowest risk scores).
6. Development of strategies to neutralise possible challenges and implement potential opportunities.

Application of this approach will allow companies to conduct an in-depth analysis of their vulnerability to geopolitical risks to make strategic decisions and develop tactics to respond to current challenges and opportunities.

Companies, especially multinational ones, are actively adapting their business plans and operations in response to the growing fragmentation of the global business environment. They geographically diversify supply chains and production activities, create separate divisions to work in different geopolitical blocs, and actively improve risk protection and cybersecurity. M. Gilbert & N. Lang (2024) recommend that CEOs track geopolitical events, strategically plan important changes and ensure that key management tools are up-to-date, and create an organisational structure to respond quickly to geopolitical events. It is recommended:

- Create scripts and develop pointers. Companies should apply geopolitical scenarios to their industry and region of activity to have an idea of the possible development of the business environment in the coming years and create an early warning system for critical business changes.
- Plan a response. Once pointers are installed, companies can develop plans to respond to their appearance. The intuition and expertise of geopolitical risk management specialists will determine the effectiveness of these plans, so the collective experience of the management team in the areas of international relations, global politics, supply chains and risk management, and the involvement of external experts, is important.
- Stay alert. Pointers and scenarios should be updated at least every two years or after major geopolitical incidents to ensure that these tools remain up-to-date.
- Adapt the company's organisational structure for rapid response. In cases of rapid changes and unexpected events, management should have time for complex decisions, such as rescheduling the supply chain or moving staff immediately.

Experts emphasise that the company's geopolitical competencies are not formed instantly. This requires dedication and effort, and can also lead to additional costs. However, these costs will be lower compared to the potential losses if the geopolitical risk is implemented and damages the business.

Experts of the British Certified Institute of Internal Auditors note that the growth of instability, complexity, and pace of change in the new geopolitical era requires the following approaches (Loke & Hayes, 2023): providing flexibility in responding to geopolitical crises and constant readiness; scenario planning and horizon scanning, which involves conducting constant stress tests and updating basic assumptions about the probability and extent of exposure to risks; reviewing professional profiles of risk specialists and internal audit to ensure consistency, communication, coordination, and cooperation between them; adopting a long-term view of geopolitics, which can vary from five years (in the areas of production and service) up to 30 years (in the energy and infrastructure sectors), along with considering geopolitical risks in the short and medium term, as "reliable" countries can change their policies in the future; commitment to the company's goals and values to have a clear understanding of its goal, risk-taking and strategy, while remaining flexible in responding to geopolitical crises; using favourable geopolitical opportunities and increasing the company's growth potential; promptly providing managers with relevant information to make informed decisions.

J. Allen (2024) highlights the growing importance of companies' legal divisions in the context of increasing geopolitical risks. She points out that legal departments should have a deep understanding of geopolitical issues, anticipate their consequences, and be prepared to provide appropriate recommendations to management. To effectively manage a company, the legal department must be involved in the overall business strategy and transformation plans, and the general counsel must understand how the company's growth factors are related to the geopolitical environment.

Geopolitical developments complicate the role of the legal team, requiring consistency between the positions of the board, management, general counsel and responsible public relations officers in different countries. The regulatory environment is becoming increasingly complex, especially for multinational companies that interact with multiple regulators in different jurisdictions. Companies should ensure that information on similar issues is provided in a consistent and consistent manner in different jurisdictions, in order to avoid additional risks and careful control by regulators. The legal service's response programme should meet the following requirements: quickly identify similar requests that have already been made in other regions and develop an appropriate legal strategy; monitor trends in the volume and types of requests, and appropriate responses from regulators; quickly mobilise specialised experts and get their approval from management; scale the response depending on the volume and urgency of requests in real time.

Therefore, the company's legal team should ensure effective interaction with regulatory authorities around the world. Advanced legal training programmes, well-established workflows, and databases will help companies to better respond to regulatory requests and reduce risks. To summarise the above recommendations, a list of measures that businesses should take to respond appropriately to changes in the geopolitical situation and related risks can be offered:

- Training specialists of risk management departments in ways to identify geopolitical risks, methods of their quantitative and qualitative analysis, and approaches to managing them.
- Development of internal policies and procedures for identification, quantitative and qualitative analysis of geopolitical risks, including the creation and configuration of a language model, selection of information sources, identification of risk markers for a specific industry, region, and enterprise.
- Development of internal regulations for responding to identified geopolitical risks, which define events-triggers of geopolitical risks, their quantitative indicators and corresponding scenarios of actions.
- Consideration of geopolitical risks in the budgeting process by calculating the budget in various geopolitical scenarios, analysing the sensitivity of the company's financial results to certain risks, and stress tests.

- Optimisation of the company's organisational structure to minimise the time spent passing information from specialists responsible for risk management to senior management for prompt adoption of informed management decisions.
- Strengthening the company's information security by improving the information and communication infrastructure and software architecture to counter leaks of confidential information and possible cyber-attacks from competing companies and states.
- Strengthening the legal component in the company's activities, including the involvement of specialists in the field of international law with an in-depth knowledge of the legislation of the countries in which the company operates and its key counterparties (especially tax, labour, environmental and intellectual property protection). Moreover, it is important to keep this knowledge up to date and respond promptly to changes in the legal and regulatory framework for all aspects of business.
- Diversify business risks by purchasing resources from different suppliers and countries, reviewing routes, modes of transport and carriers for their delivery, and cargo insurance.
- Searching for new alternative markets for finished products in different jurisdictions by adapting products and services to local standards and customer preferences.
- Ensuring transparency of the company's values and goals, their presentation to civil society and government agencies, legitimate lobbying of the company's business interests in the discussion and adoption of laws and bylaws.

CONCLUSIONS

In the current geopolitical realities, companies need to develop a strategy and build a geopolitical risk management infrastructure. This process will require the involvement of qualified specialists in risk management, information security and legal support, the development of identification methodology, quantitative and qualitative analysis of geopolitical risks, stress testing and preparation of corporate regulations for responding to identified risks, and changes in the management of many aspects of financial and economic activities of the enterprise. Establishing an effective geopolitical risk management system is a long, laborious, and expensive process, but absolutely necessary in the current economic and geopolitical conditions. Having such a system is no longer just a competitive advantage, but a time requirement for companies seeking to survive and develop in a changing world. In this paper, considering current trends, the definition of geopolitical risk was formulated and it was proposed to classify it according to the forms of manifestation. This definition was intended to improve the understanding of the essence of geopolitical risk, the causes of its occurrence, and possible consequences among the responsible persons of companies. The proposed classification of geopolitical risks will help to properly structure the work on managing them, distributing powers and responsibilities between organisational units and officials of the enterprise.

The results of the study of the degree of influence of the geopolitical index of Ukraine on the variation of its macroeconomic indicators are generally consistent with the results of similar studies in other countries and reflect the typical behaviour of economic entities in conditions of risk and uncertainty. It can be stated that an increase in the level of geopolitical risk suppresses business activity, causing a decrease in production, external borrowing and direct investment, accompanied by a devaluation of the national currency and an acceleration of inflation. The obtained dependencies can be used by enterprises in drawing up business scenarios, business plans, and budgets in conditions of geopolitical turbulence. Further research should be devoted to the development of methodological tools for predicting, identifying, and assessing geopolitical risks, and modelling their potential impact on individual industries and various aspects of companies' activities.

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CONFLICT OF INTEREST

None.

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Організаційне забезпечення функціонування підприємств в умовах геополітичної турбулентності

Анотація. Загострення політичного протистояння та економічної конкуренції між провідними державами світу призвело до руйнування усталених міжнародних відносин, збройних конфліктів, запровадження санкцій, фінансової нестабільності, обмежень щодо торгівлі та співробітництва в технологічній сфері, що суттєво підвищує складність ведення як локального, так і міжнародного бізнесу. Оскільки геополітичний ризик є відносно новим і серйозним викликом для компаній, постає проблема дослідження його теоретичних аспектів та розробки організаційно-методичних підходів управління ним на рівні суб'єктів господарювання. Дана стаття присвячена дослідженню сутності геополітичного ризику, підходів до його класифікації, оцінювання та врахування у фінансово-господарській діяльності компаній. Сформульовано авторське визначення геополітичного ризику та запропоновано його класифікацію за формами прояву. Проведено критичний огляд методичних підходів до кількісного і якісного аналізу геополітичних ризиків. Аналіз взаємозв'язку рівнів індексу геополітичного ризику та деяких макроекономічних показників України показав, що варіація рівнів валового зовнішнього боргу залежить від індексу геополітичного ризику України на 88 %, індексу споживчих цін – на 86 %, прямих інвестицій з України – на 84 %, прямих інвестицій в Україну – на 76 %, внутрішнього валового продукту України – на 90 %, офіційного курсу гривні щодо долара США – на 98 %. Отримані залежності дозволяють прогнозувати поведінку економічних суб'єктів залежно від динаміки рівня геополітичного ризику та розробляти відповідні сценарії реагування. На основі рекомендацій фахівців у сфері управління ризиками щодо забезпечення функціонування підприємств в умовах геополітичної турбулентності запропоновано перелік заходів, яких мають вживати компанії, щоб передбачати і належним чином враховувати зміни геополітичної ситуації та ефективно протидіяти супутнім ризикам

Ключові слова: геополітичний ризик; невизначеність; багатополярність; кореляція; управління ризиками; диверсифікація

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Competitiveness of commercial enterprises in the southern regions of Ukraine

Abstract. In the modern economy, competition between commercial enterprises in the regions is becoming more acute and intense. Each company strives to strengthen its position in the market, attract more customers and provide a stable income. However, to achieve a competitive advantage, it is necessary not only to follow market trends, but also to actively develop own strategies and business models. The purpose of the study was to investigate the competitiveness of commercial enterprises in the southern regions of Ukraine. The following research methods were used: graphical – for displaying the dynamics of indicators; tabular – for calculating changes in indicators; calculation of an integral indicator – for determining the most competitive trading enterprises in the southern regions. It was determined that the most fundamental character is the competitiveness of management and entrepreneurial ideas. The factors of external (the number of available population, the number of registered unemployed, the inflation index) and internal (export, import, retail trade turnover, the number of enterprises, the average salary of full-time employees, the number of full-time employees, capital investments) environment of commercial enterprises that affect their competitiveness were highlighted. As a result of the study, a decrease in retail trade turnover in the southern regions of Ukraine was revealed. In three years (2020-2022), the number of commercial enterprises has significantly decreased. The volume of exports (except for the Odesa region, where exports increased) and imports of commercial enterprises in the southern regions of Ukraine decreased, as did the number of available populations in all four regions, and the number of registered unemployed, but the average salary increased. The number of full-time employees at commercial enterprises decreased in Mykolaiv and Kherson regions, but in Zaporizhzhia and Odesa regions it increased. The volume of capital investments of commercial enterprises of the Zaporizhzhia region increased, but decreased in commercial enterprises of the Mykolaiv, Odesa and Kherson regions. There was a negative trend towards an increase in the inflation rate. It was determined that in 2022 the most competitive commercial enterprises were in the Odesa region, and the least – in the Kherson region. The practical significance of the study lies in the use of the integral assessment method to determine the competitiveness of commercial enterprises

Keywords: retail trade turnover; capital investment; inflation index; export; import

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INTRODUCTION

One of the most important components of business success is development planning and constant accumulation of information about prospects and opportunities, and about the state of markets, competitors and their own competitiveness. All businesses should actively improve their offerings, adapt to changes in consumer behaviour, and apply innovative approaches to improve their performance. Analysis of the competitive environment helps to identify strengths and weaknesses in comparison with competitors and develop strategies that allow standing out in the market.

It is important for retail businesses to develop partnerships with other companies, including suppliers, distributors, and competitors, to share experiences, access new markets, and solve problems together. Attracting and retaining qualified personnel plays an important role, which is achieved through investment in training, creating comfortable working conditions and creating a stimulating corporate culture. A company's success depends on its ability to adapt quickly to changes, innovate, and use resources efficiently. Only the active development of strategies and business models allows achieving long-term success and strengthen the position in the market.

P. Brin *et al.* (2019) investigated the theoretical foundations and methods of assessing the competitiveness of enterprises, proposing a unique dynamic assessment methodology for enterprises in the confectionery industry. They also analysed the impact of their own retail network on competitiveness, proving that the success of an enterprise depends on the competitiveness of its products, because products are the main result of the production process. The development of a classification of principles and existing methods for assessing the competitiveness of enterprises, identifying their advantages and disadvantages, was carried out by O. Shumilo *et al.* (2020). They stressed that competitiveness is a complex comparative characteristic, which is expressed through its level. Their competitiveness assessment algorithm includes the stages of determining evaluation goals, selecting competitors, forming an information base, calculating competitiveness indicators, and summing up results and conclusions about the level of competitiveness. N. Bsharat (2019) developed and described the concept of a competitive strategy for managing the competitiveness potential of a trading enterprise. The researcher substantiated the essence of the concept of strategic anti-crisis management of industrial enterprises, highlighting its main features and advantages. K. Tokar (2024) assessed the competitiveness of agro-industrial enterprises of the Vinnytsia region, which operate in various fields of agriculture and sell their products (grown, produced, or processed) through various sales channels. The analysis of the competitiveness of agricultural enterprises was carried out using the method of comparative advantages, the theory of effective competition, and benchmarking.

S. Arkhiiereiev & V. Mieshkova (2019) provided a theoretical definition of the concept of "enterprise competitiveness" and developed a methodology for assessing the competitiveness of commercial enterprises based on certain relevant methods and key indicators. They presented their vision of the assessment methodology, identifying the appropriate methodological and informational foundations. V. Herasymova & Ye. Riezanov (2020) identified the main factors influencing the competitiveness of enterprises in modern conditions. The researchers analysed the impact of internal and external factors on the sustainability of enterprise development and substantiated the importance of development management to ensure competitiveness. The product range in retail in conditions of high competition was studied by V. Datsenko *et al.* (2022), performing an ABC analysis of the "7 days" category to identify the most important positions. They compared the effectiveness of promotions and advertising in retail. The research of types of entrepreneurial strategies, highlighting corporate, business, functional, operational, and personalised strategies, was carried out by R. Tulchinskiy *et al.* (2021). They also identified strategies for achieving competitive advantages in the market, such as a cost leadership strategy, a differentiation strategy, a focus strategy, and a rapid response strategy.

The purpose of this study was to analyse the competitive advantages of trading companies in the southern regions of Ukraine.

MATERIALS AND METHODS

To investigate the competitiveness of commercial enterprises, a graphical method was used to represent the dynamics of the analysed indicators for 2020-2022 (retail trade turnover, export and import volumes, number of enterprises, capital investment volume, inflation index, integral index). The study was limited to this time period due to the lack of official statistics on the average salary of full-time employees, the number of full-time employees, capital investments, and the number of registered unemployed for 2023-2024. The use of digital data from different periods will not provide accurate information about the level of competitiveness of trading enterprises. The tables show calculations of the dynamics of indicators: the number of available population, the number of registered unemployed, the average salary of full-time employees, the number of full-time employees. The analysis was performed using digital data (State Statistics Service of Ukraine, n.d.). The most and least competitive commercial enterprises of the region (Zaporizhzhia, Mykolaiv, Odesa and Kherson) were determined by calculating the integral index. Integral index-weighted average value of normalised coefficients:

$$I = \frac{\sum_{i-1}^{n} K_i^{reg}}{n}, \quad (1)$$

where n – number of normalised coefficients of efficiency in the use of labour resources of farms; K_i^{reg} – standard value of the coefficient.

The equation is used for stimulant indicators:

$$y = \frac{Zij - Zmin}{Zmax - Zmin}, \quad (2)$$

where *Zij* – value of *i*-th indicator in *j*-th district; *Zmin* – minimum value of *i*-th indicator for all districts; *Zmax* – maximum value of *i*-th indicator for all districts.

Indicators of the destimulator are calculated using the equation:

$$y = \frac{Zmax - Zij}{Zmax - Zmin}, \quad (3)$$

where *Zij* – value of *i*-th indicator in *j*-th district; *Zmin* – minimum value of *i*-th indicator for all districts; *Zmax* – maximum value of *i*-th indicator for all districts.

To calculate the integral index, the indicators were divided into indicators-stimulators (average salary of full-time employees, number of full-time employees, capital investments, number of enterprises, the number of available population, export volumes, retail trade turnover) and indicators-de-stimulators (inflation index, number of registered unemployed, import volumes). To determine the competitiveness of commercial enterprises in the southern regions, a scale was proposed: 0.000-0.200 – not competitive; 0.201-0.400 – low level of competitiveness; 0.401-0.600 – satisfactory level of competitive; 0.601-0.800 – average level of competitiveness; 0.801-1.000 – high level of competitiveness.

RESULTS

In the context of the growing impact on the national economies of the scientific and technological revolution, integration processes, the spread of competition to new areas of socially useful activities and its becoming more acute, competitiveness has become a global phenomenon. The competitiveness of an enterprise is a relative characteristic that expresses the degree of difference between a given enterprise and competitors in the field of customer satisfaction. The high competitiveness of a trading enterprise is determined by the satisfaction and willingness of consumers to re-purchase the products of this company, the absence of claims to the enterprise from the company, shareholders, partners, and the prestige of working at this enterprise. The competitiveness of a retail trade enterprise, being a multi-faceted concept, not only includes quality and price parameters of goods, but also depends on the level of management, the established financial flow management system, investment, and innovation components of its activities. In addition, competitiveness is influenced by the emerging market environment, the degree of competition experienced by the enterprise from other market participants, technical equipment, the degree of innovation implementation, motivation and qualification of personnel, financial stability (Kyrylko & Babych, 2019).

The competitiveness of an enterprise is an integral characteristic. In general, it is advisable to distinguish the following structural components: competitiveness of supply in the market; competitiveness of enterprise resources; competitiveness of management; competitiveness of an entrepreneurial idea (vision). The main properties of competitiveness (in all components) are relativity and dynamic character. Relativity is manifested in the fact that the comparison of an enterprise and its competitors allows speaking about competitive advantages in relation to one or the other party. The dynamic nature of competitiveness determines its constant insufficiency. Lack of competitiveness is one of the main driving forces, which is reflected in both strategic and operational decisions. Confidence in competitiveness often leads to lagging behind. Any advantages will sooner or later be copied or surpassed by competitors. The only sustainable competitive advantage is constant progress.

Figure 1 illustrates the relationship between different aspects of competitiveness, in particular, it emphasises that the most "fundamental" character is the competitiveness of management and the entrepreneurial idea, and the external perception of competitiveness is mainly related to the market supply.

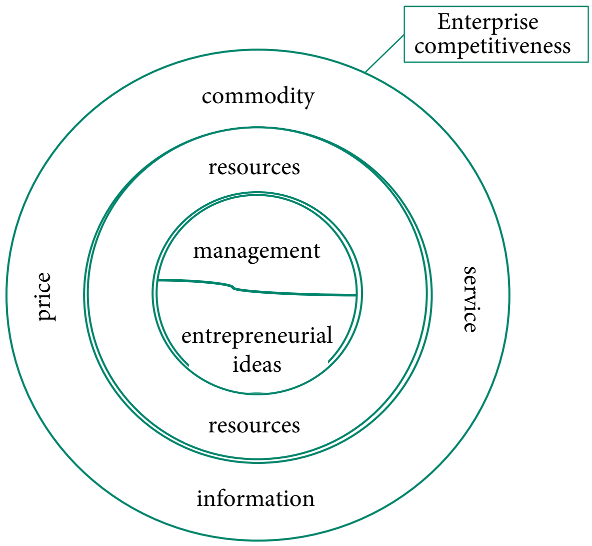

Figure 1. Competitiveness structure
Source: developed by the authors based on N. Bsharat (2019) and O. Vynogradova *et al*. (2021)

Retail trade is one of the key sectors of the economy that directly affects the development of the region and the well-being of its population (Lipych, 2023). This is an important industry that not only provides the population with the necessary goods, but also creates jobs, contributes to economic stability and infrastructure development. The development of retail trade contributes to improving the standard of living of the population, because access to high-quality goods and services becomes wider and more convenient. Retail trade turnover, as an important indicator of economic activity, largely determines the competitiveness of retail enterprises (Fig. 2). It reflects the overall level of economic activity in the region, the purchasing power of the population and the efficiency of enterprises. High turnover indicates a healthy demand for goods and services, which encourages further development of enterprises, allowing them to invest in new technologies, expand the range, improve service and improve the quality of goods.

This, in turn, contributes to the growth of competitiveness of enterprises in the market, providing them with a stable position and the opportunity to successfully compete both at the local and national levels.

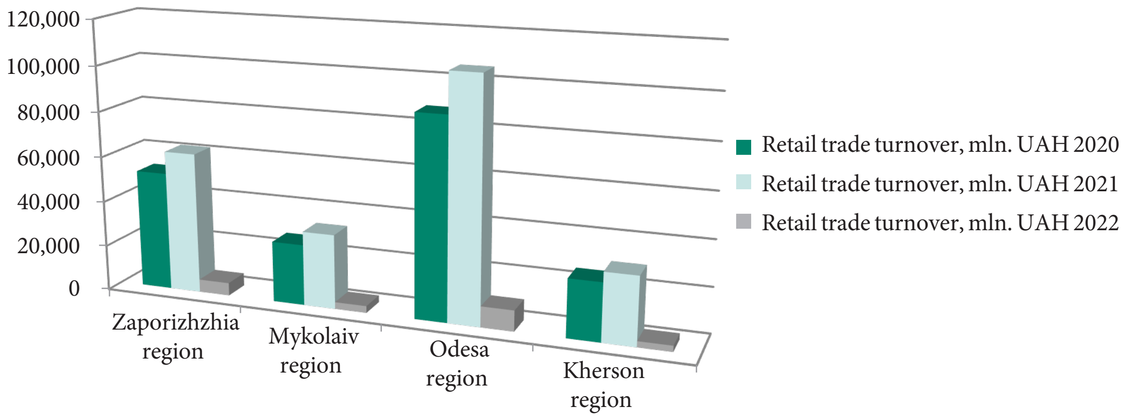

Figure 2. Dynamics of retail trade turnover in the southern regions of Ukraine, mln. UAH
Source: developed by the authors based on research by the State Statistics Service of Ukraine (n.d.)

According to the calculations, it was concluded that the volume of retail trade turnover in the southern regions of Ukraine decreased by 88-89%. Retail trade turnover is an indicator of the purchasing power of the population and the economic activity of the region. A high level of turnover indicates a significant demand for goods and services, which, in turn, ensures a stable cash flow for retail enterprises. This allows enterprises to invest in development, upgrade equipment, improve the quality of service and expand the product range. Stable and high turnover also contributes to the growth of income of enterprises, which is necessary to increase their competitiveness.

Retail trade turnover directly affects the ability of enterprises to implement innovative solutions. Modern technologies such as e-commerce, warehouse management systems, loyalty programmes, and analytics platforms enable businesses to manage resources more efficiently and optimise operational processes. A high level of turnover provides the necessary financial resources for investing in such technologies, which, in turn, increases the competitiveness of enterprises. Retail trade turnover is closely related to consumer demand. Businesses with high turnover can better understand the needs and preferences of consumers, which allows them to develop effective marketing strategies. Due to the analysis of sales and consumer trends, such enterprises can quickly adapt to changes in the market, offering relevant and popular products. This ensures increased customer loyalty and increased market share.

High retail turnover also has a positive socio-economic impact on the region. The growth of trade activity contributes to the creation of new jobs, higher wages, and an overall improvement in the quality of life of the population. This, in turn, encourages additional demand for goods and services, creating a positive economic cycle that contributes to the further development of commercial enterprises. In the modern economy, the number of commercial enterprises is an important factor affecting their competitiveness (Fig. 3).

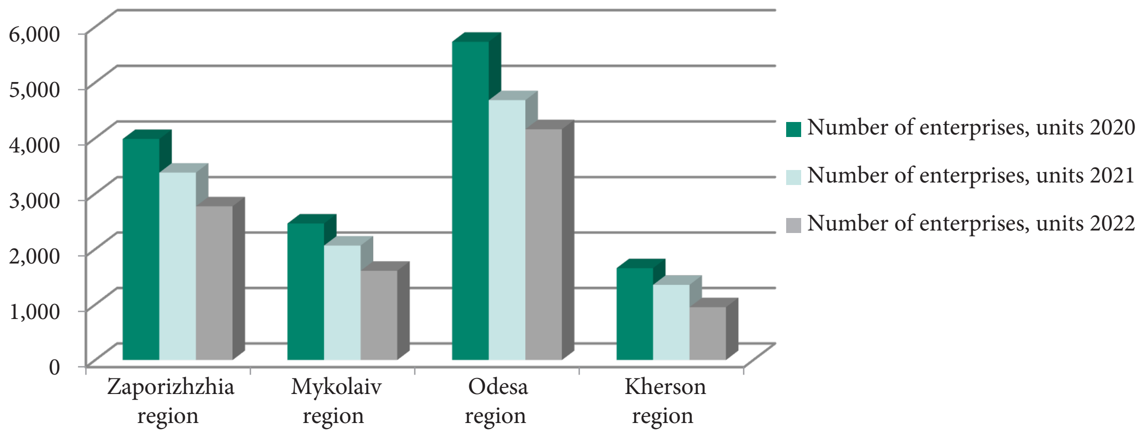

Figure 3. Dynamics of the number of commercial enterprises in the southern regions of Ukraine, units
Source: developed by the authors based on State Statistics Service of Ukraine (n.d.)

For three years (2020-2022), the number of commercial enterprises significantly decreased in the Zaporizhzhia region by 30%, in Mykolaiv region – by 35%, in Odesa region – by 27%, in Kherson region – by 43%. The more businesses operate in the same industry, the higher the level of competition. This can lead to lower prices for goods and services as companies seek to attract more customers. High competition also forces businesses to improve the quality of their products and services to remain attractive to consumers.

The number of enterprises in the industry encourages the development of innovations. Competition encourages companies to look for new solutions, implement new technologies, and optimise their business processes to maintain their market share. This not only contributes to the development of individual companies, but also has a positive impact on the entire industry. Increasing the number of businesses can make it harder to access resources such as skilled labour, raw materials, and financial resources. Companies are forced to compete for limited resources, which can increase their value. However, high competition can encourage the development of new supply markets and the creation of alternative resources.

For consumers, the presence of a large number of businesses is a positive factor, as it provides a wide range of goods and services. In addition, competition forces companies to provide a high level of service and offer more favourable conditions for customers. The economic development of the region largely depends on the dynamics of foreign economic activity, in particular exports and imports (Fig. 4). The relationship between these indicators and the competitiveness of trading enterprises is extremely important for understanding economic processes and forming effective development strategies.

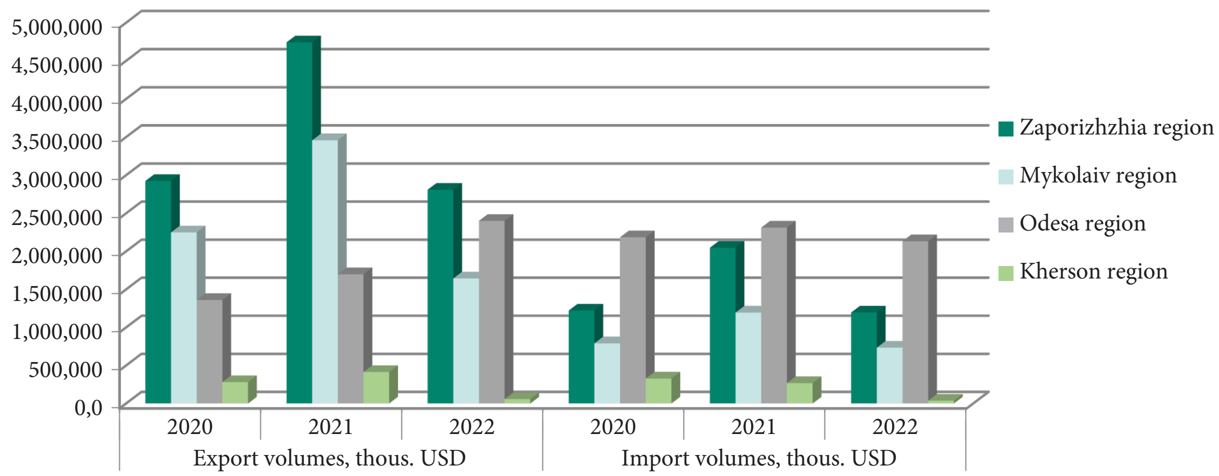

Figure 4. Dynamics of export and import volumes for 2020-2022, thous. USD
Source: developed by the authors based on State Statistics Service of Ukraine (n.d.)

During the study period, the volume of exports (except for the Odesa region, where exports increased by 76.4%) and imports of commercial enterprises in the southern regions of Ukraine decreased. Minor fluctuations are observed in the Zaporizhzhia region: exports decreased by 3.9%, and imports by 2.1%. Exports, as one of the key aspects of foreign economic activity, play an important role in ensuring sustainable economic growth. Expanding export opportunities opens up new markets for goods and services produced in the region. This not only helps to increase the income of enterprises, but also allows them to access more resources for innovation and modernisation of production. Exports encourage the development of technologies and improve product quality, as enterprises are forced to adapt to the requirements of international standards. This, in turn, increases the competitiveness of products in the domestic market. In addition, participation in international trade allows enterprises to gain valuable experience and knowledge that can be used to optimise business processes and improve operational efficiency.

Imports also play a significant role in shaping the competitiveness of commercial enterprises in the region. Access to imported goods and technologies allows businesses to increase their productivity and expand their product range. Imports help to reduce production costs, as businesses have the opportunity to use cheaper or higher-quality resources and components. In addition, competition with imported goods encourages local businesses to improve quality and innovation. This forces them to look for new ways to meet the needs of consumers, which contributes to the development of the market and improving the level of service. Imported goods also expand the choice for consumers, which contributes to their well-being and encourages the growth of purchasing power.

Demographic and socio-economic factors significantly affect the competitiveness of commercial enterprises (Table 1). Understanding these factors and the ability to adapt to changes in the demographic structure and socio-economic environment allow enterprises to effectively manage their development, meet the needs of consumers, and maintain a leading position in the market.

Table 1. Demographic and socio-economic performance indicators of commercial enterprises

Region	2020	2021	2022	Deviation, %
Number of available populations, persons				
Zaporizhzhia	1,666,515	1,638,462	1,636,322	-1.8
Mykolaiv	1,108,394	1,091,821	1,090,492	-1.6
Odesa	2,368,107	2,351,392	2,349,749	-0.8
Kherson	1,016,707	1,001,598	1,000,370	-1.6
Number of registered unemployed, thous. persons				
Zaporizhzhia	21.4	14.3	13.8	-35.4
Mykolaiv	19.2	12.8	10.0	-48.2
Odesa	19.4	12.6	8.1	-58.4
Kherson	14.1	9.6	6.8	-51.7
Average salary of full-time employees, UAH				
Zaporizhzhia	8,497.5	8,862.93	9,678.5	13.9
Mykolaiv	10,416	11,163	12,445	19.5
Odesa	8,203	8,361	10,862	32.4
Kherson	7,970	7,911	9,108	14.3
Number of full-time employees, persons				
Zaporizhzhia	27,969	29,760	28,658	2.5
Mykolaiv	14,946	14,900	13,851	-7.3
Odesa	44,868	46,955	45,677	1.8
Kherson	11,515	11,472	10,816	-6.1

Source: developed by the authors based on National Bank of Ukraine (n.d.) and Inflation index in Ukraine (n.d.)

According to the calculations, it is concluded that the number of available population in all four regions has decreased, the average salary has increased, and the number of registered unemployed has decreased. The number of full-time employees at commercial enterprises decreased in the Mykolaiv region by 7.3%, in the Kherson region – by 6.1%, but in the Zaporizhzhia region the number of employees increased by 2.5%, in the Odesa region – by 1.8%. The size of the available population is one of the main factors determining the competitiveness of commercial enterprises in the region. It affects demand, market opportunities, business development strategies, and overall economic growth. However, a high population size can also pose certain challenges to the competitiveness of commercial enterprises. For example, population growth can lead to higher property values, rents, and wages, which increases the costs of businesses. In addition, competition between businesses for market opportunities and resources may become more intense.

The size of the population directly affects the volume of demand for goods and services. A larger population means a larger consumer market, which creates favourable conditions for the development of commercial enterprises. In regions with a high population density, businesses have more opportunities to sell their products, which contributes to revenue growth and business expansion. Large localities and regions with high populations offer large market opportunities for businesses. They can afford a wider range of products and services, focusing on different market segments. This contributes to business diversification, which reduces risks and increases resilience to economic fluctuations. In regions with a large population, businesses can benefit from economies of scale. This means that they can reduce production and sales costs due to high sales volumes. Reducing costs, in turn, allows businesses to offer competitive prices, which increases their competitiveness in the market.

The high population makes the region attractive for investors. Having a large number of consumers means stable demand for goods and services, which reduces risks for investors. This helps to attract capital, develop infrastructure, and create new jobs, which, in turn, increases the level of well-being of the population and encourages further economic growth. The size of the population also affects the availability of human capital necessary for the successful operation of enterprises. A large number of qualified employees creates favourable conditions for business development and increasing its competitiveness. In addition, the high population contributes to the development of educational and scientific institutions, which provides training for qualified personnel for enterprises. However, a high population size can also pose certain challenges to the competitiveness of commercial enterprises. For example, population growth can lead to higher property values, rents, and wages, which increases the costs of businesses. In addition, competition between businesses for market opportunities and resources may become more intense.

The number of unemployed people in the region is an important indicator of economic stability and social well-being. It affects various aspects of the activities of commercial enterprises, determining their competitiveness, efficiency and stability in the market. The number of unemployed directly affects the solvency of the population. A higher unemployment rate means that a significant part of the population has limited financial opportunities, which reduces overall demand for goods and services. This can lead to a decrease in sales and revenues of retail enterprises, which negatively affects their competitiveness. On the other hand, a large number of unemployed people means that there is free labour, which can be beneficial for commercial enterprises. This creates opportunities to reduce payroll costs and increase flexibility in hiring staff. Businesses can take advantage of this situation to attract skilled workers at lower rates, which helps reduce costs and increase competitiveness.

High unemployment can affect social stability in the region. An unstable socio-economic situation can reduce the attractiveness of the region for investors, which limits opportunities for the development of commercial enterprises. Investors may avoid regions with high unemployment because of the risks associated with potential social unrest and declining consumer demand. In regions with high unemployment, commercial enterprises may face the need to increase their social responsibility. This may include creating new jobs, participating in social programmes, and supporting the local community. Such measures not only help to improve the company's image, but also help to stabilise the socio-economic situation in the region, which in the long term can have a positive impact on competitiveness.

High unemployment can lead to lower wages, which, in turn, reduces businesses' labour costs. This can allow trade enterprises to reduce prices for their goods and services, which increases their competitiveness in the market. A decline in household incomes may limit opportunities for raising prices, which creates challenges for maintaining business profitability. The consequences of high unemployment can be long-term. Declining incomes and limited opportunities for consumption can lead to stagnation of economic growth in the region. This limits the prospects for the development of commercial enterprises and reduces their competitiveness in comparison with enterprises from regions with a more stable economic situation.

Average wages are one of the key indicators of the region's economic well-being. It affects the purchasing power of the population, market demand, standard of living, and social stability. For commercial enterprises, this indicator is important, since it directly affects their competitiveness. The average salary determines the level of income of the population, which, in turn, affects purchasing power. Higher incomes contribute to higher consumer spending, which increases demand for goods and services. For commercial enterprises, this means an increase in sales and revenues, which increases their competitiveness in the market. On the other hand, low average wages can limit opportunities for consumption, which negatively affects commercial enterprises.

The average salary affects the cost of labour for enterprises. Higher wages mean higher staff costs, which can reduce the profitability of the business. However, it can also be an indicator of high productivity and quality of work, which helps to improve customer service and increase customer loyalty. On the other hand, low wages can reduce costs, but they can also lead to lower employee motivation, increased staff turnover, and reduced service quality. The average salary determines the standard of living of the population and affects the structure of demand. Higher incomes contribute to an increase in demand for high-quality and premium products, which creates opportunities for retail businesses that specialise in such products. Low average wages may limit the demand for premium goods, but increase the demand for low-cost and cost-effective goods. It is important for commercial enterprises to adapt their strategies to the level of income of the population and, accordingly, form a product range.

Average wages affect social stability in the region. High wages contribute to reducing poverty and social inequality, which improves the socio-economic situation. This creates favourable conditions for business development, attracting investment and increasing the competitiveness of commercial enterprises. Low wages can lead to social tension, which negatively affects the business climate and enterprise development. The average salary is an important factor in attracting and retaining qualified personnel. Higher wages allow businesses to attract talented employees, which improves the quality of service and work efficiency. This helps to increase the competitiveness of enterprises in the market. Low wages can make it difficult to attract qualified personnel, which can negatively affect the quality of service and productivity.

Capital investment plays a crucial role in the development of commercial enterprises and their competitiveness (Fig. 5). They provide the necessary resources to expand the business, introduce new technologies, improve the quality of service and meet the needs of consumers.

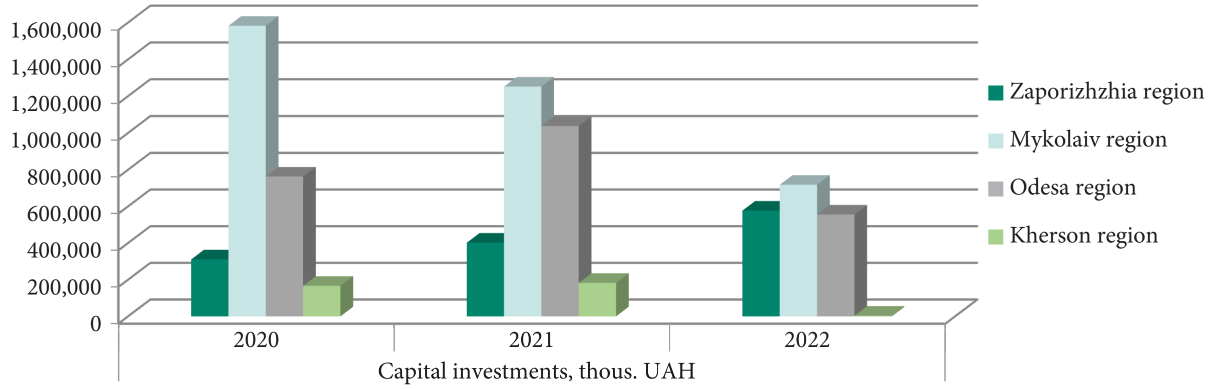

Figure 5. Dynamics of capital investments in commercial enterprises of the southern regions, thous. UAH
Source: developed by the authors based on State Statistics Service of Ukraine (n.d.)

Studies have shown that the volume of capital investments of commercial enterprises of the Zaporizhzhia region increased by 86%, but decreased in commercial enterprises of the Mykolaiv region by 55%, Odesa region – by 27%, Kherson region – by 98%. Capital investment allows merchants to expand and modernise their infrastructure. This includes the opening of new stores, warehouses, logistics centres, and other facilities, which helps to increase sales and improve the level of customer service. Infrastructure upgrades allow businesses to be more efficient and competitive, reducing operating costs and increasing productivity.

Investment in new technologies is a key factor in improving the competitiveness of commercial enterprises. They allow automating processes, reducing costs, improving the accuracy and speed of order processing, and improving logistics and inventory management. The use of modern information technologies, such as customer relationship management systems (CRM), supply chain management systems (SCM), and e-commerce, helps to improve interaction with consumers and increase their level of satisfaction. Investing in staff training and development can improve the quality of customer service. Training employees in new sales techniques, communication techniques, and management allows businesses to be more competitive. Highly qualified staff is able to solve customer problems more effectively, increase their satisfaction and attract new customers.

Capital investments in marketing and advertising help increase brand awareness, attract new customers, and retain existing ones. Effective advertising campaigns aimed at raising awareness of products and services allow businesses to increase sales and increase their competitiveness in the market. Investing in market research and consumer preference analysis helps businesses better understand customer needs and adapt their strategies to suit them. Capital investment allows retail businesses to attract innovation and develop new products and services. This helps to expand the range, improve the quality of products, improve the consumer experience and meet the diverse needs of customers. Investing in research and development allows businesses to be at the forefront of innovation, which provides them with significant competitive advantages. And investments in business process management and automation systems can increase the efficiency of managing commercial enterprises. The introduction of modern accounting, analysis and planning systems allows management to make more informed decisions, respond faster to market changes and optimise operational activities. This helps to reduce costs, increase productivity, and increase enterprise competitiveness.

In the modern economy, inflation is one of the most important macroeconomic indicators, which significantly affects the activities of enterprises, especially in the trade sector (Fig. 6). Inflation reflects the overall price level in the economy and its changes over a certain period. A high level of inflation can have a significant impact on the competitiveness of commercial enterprises in the region, determining their ability to maintain their market positions, attract customers, and provide stable income.

In the period from 2020 to 2022, the inflation index increased in the Zaporizhzhia region by 19.9%, in Mykolaiv region – by 21%, in Odesa region – by 20.8%, in Kherson region – by 36.7%. One of the main aspects affected by inflation is the cost of production. Rising prices for raw materials, energy carriers and other resources lead to an increase in the costs of enterprises for the production and sale of goods. This, in turn, forces companies to raise prices for their products, which can negatively affect their competitiveness, as consumers can switch to more affordable alternatives. Inflation also affects the solvency of consumers. Higher prices for goods and services lead to a decrease in the purchasing power of the population, which can reduce the demand for products of commercial enterprises. In the face of high inflation, consumers are becoming more cautious in their spending, looking for cheaper alternatives, or avoiding unnecessary purchases altogether.

High inflation makes financial planning and forecasting difficult for businesses. Price volatility leads to difficulties in determining long-term development strategies and investment projects. Businesses may face increased risks associated with unpredictable changes in costs and revenues. This can hinder investment activity and innovative development, which negatively affects their competitiveness. Inflation also affects the availability of credit resources for businesses. Raising interest rates is one of the ways to combat inflation, but it leads to an increase in the cost of loans. Businesses, especially small and medium-sized ones, may face difficulties in obtaining funding to develop and support their operations. This may limit their ability to expand and strengthen their competitive position.

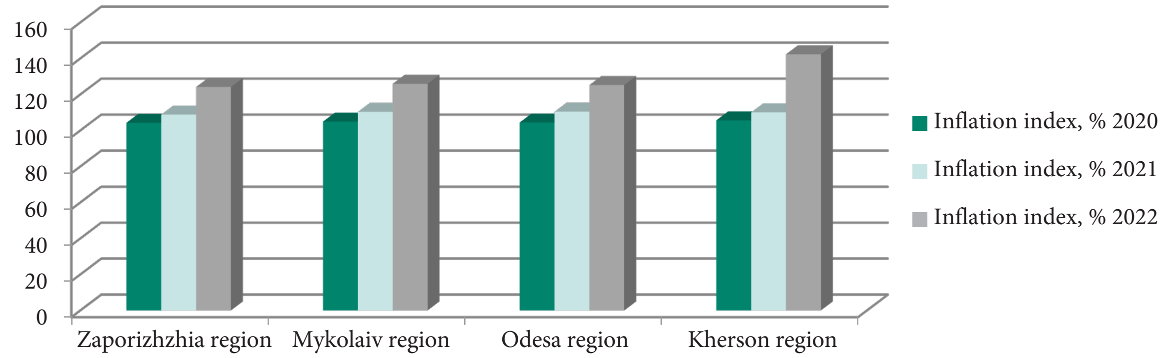

Figure 6. Dynamics of the inflation index in the southern regions of Ukraine, %
Source: developed by the authors based on Inflation index in Ukraine (n.d.)

The integral index is a powerful tool for assessing the competitiveness of a trading enterprise (Fig. 7). It enables a comprehensive approach to analysis, considering various aspects of the company's activities, such as financial position, market position, operational efficiency, and innovation potential. This provides a more accurate and comprehensive assessment that considers not only current indicators, but also trends and development prospects.

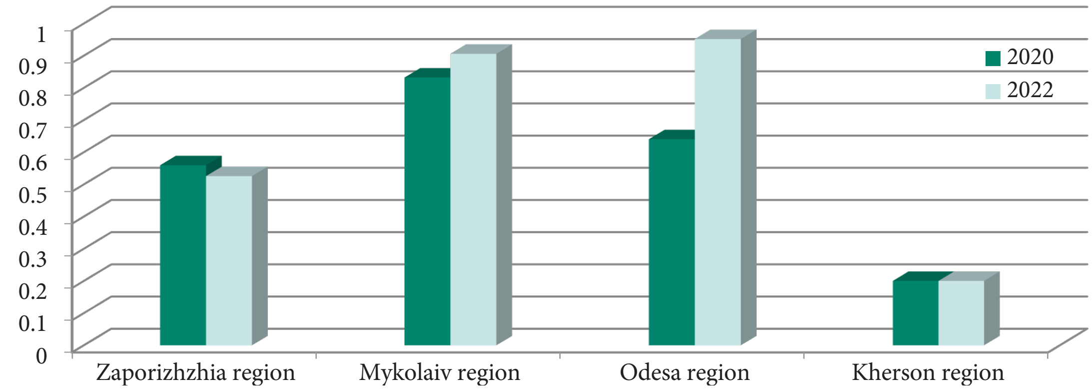

Figure 7. Dynamics of the integral index of competitiveness of commercial enterprises in the southern regions of Ukraine
Source: developed by the authors based on National Bank of Ukraine (n.d.); State Statistics Service of Ukraine (n.d.); Inflation index in Ukraine (n.d.)

According to the calculations of the integral index of competitiveness of commercial enterprises in the southern regions of Ukraine, it was concluded that in 2020, the most competitive were commercial enterprises of the Mykolaiv region (0.84). In 2022, the most competitive were commercial enterprises of the Odesa region (0.95). The competitiveness of commercial enterprises in the Kherson region has not changed and is the lowest. The use of an integral index contributes to more informed management decision-making and identification of strategic development directions. Businesses can identify their strengths and weaknesses, allowing them to develop effective strategies to improve their competitiveness. For example, if the analysis shows a low level of innovation, the company may focus on introducing new technologies and products to improve its market position.

In addition, the integral index provides an opportunity to compare an enterprise with competitors, which is important for determining its competitive advantages and weaknesses. This helps the company's management to better understand the market situation and make more informed decisions about business development. Due to the integrated index, an enterprise can quickly respond to changes in market conditions, adapting its strategy and tactics to new challenges. This helps to ensure stable growth and improve operational efficiency, which is a key factor for success in a highly competitive environment.

DISCUSSION

The analysis of research papers on the topic of enterprise competitiveness indicates the versatility and complexity of this issue. The contribution of each of the researchers is considered separately in order to better understand their approach to the study of this important economic category. V. Baldynyuk (2022) focuses on a systematic approach to competitiveness management, which is critical for modern enterprises. The researcher suggests considering the control object as an integral model, ensuring the interrelation of all its components. This approach allows businesses to respond more effectively to market changes and maintain their competitive position. However, despite the clarity and logic of the approach, it is worth noting that in practice, the implementation of system management can be difficult due to the variety of influencing factors and the complexity of integrating various controls. N. Kyrychenko & H. Zhosan (2021), in turn, identify key factors affecting the competitiveness of enterprises, in particular, communication policy, new product development, branding and other aspects. They focus on the importance of packaging, service policies, and product marketing, emphasising the importance of these elements in competition. Their approach is valuable because it covers a wide range of aspects that affect competitiveness, but requires additional empirical research to identify priority factors in specific markets.

The study by Y. Kyrylov *et al.* (2021) focuses on the institutional and innovative components of the competitiveness of agricultural enterprises. The authors emphasise the interdependence of these components, and the importance of government support in stimulating innovation. This study is important for understanding the specifics of the agricultural sector, but its results may have limited application in industrial or service industries without appropriate adaptation. N. Sarai (2023) points out the importance of assessing the attractiveness of market segments in determining the competitive status of an enterprise. The proposed valuation algorithm provides a structured approach to market analysis, which is useful for strategic planning. However, it is unclear to what extent this approach is flexible and adapted to rapid changes in market conditions, especially in times of crisis. O. Vynogradova *et al.* (2021) provide a comprehensive analysis of competitiveness as an economic category. The researcher determined the levels of ensuring competitiveness: operational, tactical, and strategic. Their approach helps to clearly structure the processes of competitiveness management, but it is worth paying attention to the dynamism of the environment and the need for flexibility in applying these levels.

In their research, O. Vynogradova & S. Mikuliak (2020) analyse the impact of the COVID-19 pandemic on the competitiveness of enterprises, which is relevant and important in modern conditions. They emphasise changes in the socio-economic environment and the need to adapt enterprises. This study is valuable for understanding the impact of external shocks on businesses, but may be limited in other contexts, outside of the pandemic. Yu. Grynchuk *et al.* (2019) highlight the importance of competitiveness improvement programmes as part of an organisation's strategic plan. They showed the relationship between the programme development process and strategic management. This is valuable for businesses looking to integrate competitiveness into their strategy, but their findings need to be supported by empirical evidence. N. Sapotnitska & V. Kozak (2023) investigated the competitive strategies of enterprises under martial law in Ukraine. They note that the war has become a catalyst for the rapid growth and development of Ukrainian business. This study is important for understanding the specifics of doing business in crisis conditions, but its results may be specific to Ukraine and not suitable for other contexts. Research of factors influencing the competitiveness of the bakery industry, conducted by V. Kostryschenko (2019), provides important conclusions about the specifics of this industry. The use of SWOT analysis helps to better understand the internal and external factors that affect enterprises. However, the results of this study may be limited by the specifics of the industry and require adaptation for other sectors of the economy.

Research by various authors on enterprise competitiveness highlights a wide range of approaches and aspects that need to be considered. They emphasise the importance of consistency, innovation, adaptation to external conditions and strategic management in ensuring competitiveness. However, the specifics of industries and markets require adapting general approaches to specific conditions, and further research in this area remains relevant and important.

CONCLUSIONS

The main factors of competitiveness of commercial enterprises are retail trade turnover, exports and imports, and population size. Low turnover negatively affects cash flow, investment, marketing strategies, and socio-economic development. Expanding the product range, improving service and introducing modern technologies are essential for the success of enterprises. Exports and imports contribute to the development, quality, and optimisation of business processes, and the balance of foreign economic activity ensures sustainable growth. Planning of foreign economic activity is also a key element of development in the context of globalisation. Population size affects demand, market opportunities, the economy, investment, and human capital. Population decline has a negative impact on retailers, and unemployment is important to consider in development strategies, especially in a competitive environment. Studies have shown that increased demand and availability of labour, social stability and investment climate are associated with positive dynamics of the unemployment rate. Successful functioning of enterprises requires adaptation to market conditions and consideration of these factors in development strategies. Social responsibility and active participation in improving the socio-economic situation contribute to increasing competitiveness and sustainable business development. In addition to unemployment, average wages also affect the competitiveness of enterprises. Salary increases increase market demand, improve social stability, and promote attractiveness for qualified personnel. Capital investment is an important factor in improving the competitiveness of commercial enterprises in the region. Insufficient capital investments lead to a lack of infrastructure modernisation, poor quality of service, inefficient marketing and advertising campaigns, and limited development of new products. Commercial enterprises that actively invest in the development of resources and technologies have significant competitive advantages, which allows them to successfully operate and develop in a modern dynamic environment. To maintain competitiveness in the face of inflation, trading enterprises need to implement effective strategies. These strategies include cost optimisation through the use of modern technologies, process automation, and more efficient resource management. Another important factor is the diversification of products and services, which reduces dependence on individual products and markets. The use of innovations, such as new technologies and management methods, helps to increase productivity and reduce costs. Flexibility of pricing policy also plays an important role in a competitive environment, helping to adapt prices to changes in the market. Further research can be conducted to investigate the competitiveness of enterprises in other industries and regions of Ukraine.

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CONFLICT OF INTEREST

None.

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Конкурентоспроможність торгових підприємств південного регіону України

Анотація. В умовах сучасної економіки конкуренція між торговельними підприємствами регіонів стає дедалі гострішою та насиченішою. Кожна компанія прагне зміцнити свої позиції на ринку, залучити більше клієнтів і забезпечити стабільний дохід. Однак для досягнення конкурентної переваги необхідно не тільки стежити за тенденціями ринку, а й активно розвивати свої стратегії та бізнес-моделі. Метою роботи було дослідження конкурентоспроможності торгових підприємств південних регіонів України. Було використано такі методи дослідження: графічний – для відображення динаміки показників, табличний – з метою розрахунку зміни показників, розрахунок інтегрального показника – для визначення найбільш конкурентоспроможних торгових підприємств в південних регіонах. Визначено, що найбільш фундаментальний характер має конкурентоспроможність менеджменту та підприємницької ідеї. Виділено фактори зовнішнього (чисельність наявного населення, кількість зареєстрованих безробітних, індекс інфляції) та внутрішнього (експорт, імпорт, оборот роздрібної торгівлі, кількість підприємств, середня заробітна плата штатних працівників, кількість штатних працівників, капітальні інвестиції) середовища торгівельних підприємств, які впливають на їх конкурентоспроможність. В результаті дослідження виявлено зменшення обсягів обороту роздрібної торгівлі у південних регіонах України. За три роки (2020-2022 рр.) кількість торгівельних підприємств значно зменшилась. Обсяги експорту (крім Одеської області, де експорт збільшився) та імпорту торгівельних підприємств в південних регіонах України зменшились, як і чисельність наявного населення у всіх чотирьох регіонах, а також кількість зареєстрованих безробітних, однак зросла середня заробітна плата. Кількість штатних працівників на торгівельних підприємствах зменшилась у Миколаївському та Херсонському регіонах, проте у Запорізькому та Одеському регіонах збільшилась. Збільшились обсяги капітальних інвестицій торгівельних підприємств Запорізького регіону, але зменшились у торгівельних підприємствах Миколаївського, Одеського та Херсонського регіонів. Спостерігається негативна тенденція щодо росту рівня інфляції. Визначено, що у 2022 році найбільш конкурентоспроможні торгівельні підприємства в Одеському регіоні, а найменш – у Херсонському. Практична цінність роботи полягає у використанні методу інтегральної оцінки з метою визначення конкурентоспроможності торгівельних підприємств

Ключові слова: оборот роздрібної торгівлі; капітальні інвестиції; індекс інфляції; експорт; імпорт

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Adaptation of accounting and audit education to the challenges of artificial intelligence

Abstract. The emergence of artificial intelligence is reshaping the landscape of accounting and auditing education, necessitating significant adaptation to meet the challenges posed by this technological revolution. This study investigated the impact of artificial intelligence on the skillsets required for accounting and auditing professionals and explored the implications for the institutions of higher education. This study employed a qualitative research design, incorporating a systematic literature review and SWOT analysis. Findings showed that artificial intelligence enhances the efficiency, transparency, promptness, and accuracy of financial reporting, compelling accounting professionals to transition from conventional roles to more strategic functions that involve data analysis and decision-making. In auditing, artificial intelligence technologies enhance audit quality and enable auditors to focus on value-added tasks, such as risk assessment and advisory services. Despite the benefits, challenges such as resistance to change, organisational culture, workforce adaptation, privacy issues, and prohibitive costs of implementing artificial intelligence are significant barriers to integration. The findings highlighted a growing trend toward artificial intelligence adoption, with most organisations expected to implement or pilot artificial intelligence solutions soon, underscoring the need for continuous learning and skill upgrades among professionals. The results underscored the urgent need for educational reform within accounting and auditing curricula. Institutions of higher education must incorporate artificial intelligence-related competences, emphasising data analytics, critical thinking, and ethical considerations regarding technology use. Collaborative efforts among institutions of higher education, professional organisations, regulators, and the business community are vital for developing a workforce equipped to thrive in an artificial intelligence-driven environment. The practical value of this study lies in offering actionable insights for educational institutions, professional organisations, and regulatory bodies to adapt their curricula and training programmes, equipping accounting and auditing professionals with the necessary AI-related skills for future practice

Keywords: digital technologies; data; skills; professionals; institutions of higher education

INTRODUCTION

Artificial intelligence (AI) is rapidly transforming the global labour market, and the field of accounting and auditing is no exception. Modern technologies based on AI are reshaping conventional methods of accounting and auditing by automating routine processes and optimising data processing. AI-powered algorithms also enable accounting and auditing professionals to access real-time information through advanced data analytics, facilitating

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business decision-making, such as identifying trends and optimising strategies. Consequently, the demand for specialists who can work in an environment where AI technologies are becoming an integral part of professional activity is increasing. However, the implementation of AI presents new challenges for the system of professional education. Conventional educational programs often fail to address the need for training in working with intelligent systems and adapting to the rapidly evolving changes in the profession. This calls for a fundamental shift in the approaches to training accountants and auditors, ensuring their competitiveness in the labour market.

Studies on the rapid changes in the roles and responsibilities of accountants and auditors in response to the development of AI systems suggest that the profession is undergoing a transformative evolution (Surya, 2024). Among the advantages of further integrating AI systems into accounting and auditing practices, researchers point to increased efficiency, accuracy, and decision-making capabilities, which lead to improved financial reporting and auditing processes (Abdullah & Almaqtari, 2024); provision of predictive analytics for strategic decision-making (Odonkor *et al.*, 2024); and innovation and reduction of information processing time in managerial accounting, enhancing its application (Vărzaru, 2022). Some researchers also highlight the potential threats AI may pose to the accounting and auditing profession. R. Seethamraju & A. Hecimovic (2023) share an opinion that, while AI can improve the audit quality and provide additional services to audit clients, its implementation requires a reconsideration of auditing practices, particularly considering the lack of control in the AI "black-box".

Researchers are almost unanimous in agreeing that AI will not replace humans but will instead collaborate with them and complement human decision-making. S. Leitner-Hanetseder *et al.* (2021) suggest that AI will also increase the demand for highly skilled workers and can create as many jobs as it replaces, thus opening several promising employment opportunities. J. Ballantine *et al.* (2024) note that the development of AI has triggered a "change inducing crisis" that presents a unique opportunity for accounting scientists to critically examine the unchallenged functionalist view of the discipline and the technical reductionism in accounting. S. Vitali & M. Giuliani (2024), who investigated the impact of AI on audit firms, concluded that future auditors must acquire IT and data analysis skills, which may influence hiring practices in these firms. V. Brabete *et al.* (2024) consider redesigning accounting education as a solution to address the challenges, which AI poses to the accounting and auditing profession. According to A.R. Hasan (2022), such revolution in accounting education, however, must be accompanied by joint efforts from institutions of higher education, professional organisations, regulatory bodies, and the business community.

The purpose of this study was to assess the advantages and risks of AI implementation, examine its impact on the development of new skills and knowledge required for professionals, and explore how AI presents both challenges and opportunities for the education of accountants and auditors. The study focused on identifying the necessary shifts in professional education to ensure that future specialists are equipped to meet the demands of an AI-driven environment.

MATERIALS AND METHODS

This study adopted a qualitative research design aimed at analysing the integration of AI in accounting and auditing, with a particular focus on the implications for professional education. The methodology was anchored in a systematic literature review, which involved a comprehensive examination of existing academic studies and industry reports. This review provided a basis for understanding how AI technologies are reshaping accounting and auditing practices, and what new skills and competences professionals in these fields must acquire.

The study examined the advantages and risks associated with the implementation of AI in accounting and auditing, utilising insights from earlier studies, such as A.R. Hasan (2022), who conducted an extensive literature review on the AI's impact on these professions. The current study adopted analogous methods of reviewing and synthesising relevant literature to understand the opportunities and challenges of AI in accounting practices. In addition, the methodology incorporated the findings of B. Odonkor *et al.* (2024), who explored the transformation of conventional accounting methods due to AI-driven systems. The review of their study guided the discussion on the evolving responsibilities and competences required of accounting and auditing professionals.

SWOT-analysis was employed to systematically evaluate the benefits and risks associated with the implementation of AI in accounting and auditing. By categorising the strengths (internal advantages), weaknesses (internal challenges), opportunities (external opportunities), and threats (external risks), the SWOT analysis helped to identify the advantages of AI integration, such as improved efficiency and decision-making capabilities, while also highlighting potential challenges like resistance to change and data security concerns. This method enabled a clearer understanding of the inherent strengths and weaknesses within organisations, as well as the broader opportunities and threats posed by AI-driven transformations in the profession offering valuable insights into how AI can shape the future of accounting and auditing practices. As AI continues to reshape accounting and auditing practices, professionals in these fields must acquire a new set of skills and knowledge to stay competitive.

This study concluded by discussing the role of higher education institutions, professional organisations, and regulatory bodies in adapting curricula to include AI-related competences. The joint efforts of these stakeholders are considered essential in preparing future accountants and auditors for the rapidly evolving digital landscape. Thus, the research methodology employed in this study combined a systematic literature review with SWOT-analysis, providing a structured and analytical approach to understanding the impact of AI in accounting and auditing, particularly in the realm of professional education.

RESULTS AND DISCUSSION

Implementation of AI in accounting and auditing: advantages and risks. The integration of AI into accounting and auditing offers many advantages and opens considerable opportunities for innovation and productivity. However, there are a series of challenges and risks that raise concerns about the implementation of AI systems. To provide a structured and comprehensive evaluation of the implementation of AI systems in accounting and auditing, the SWOT-analysis was chosen due to its ability to systematically assess both internal and external factors influencing AI adoption (Table 1).

Table 1. SWOT-analysis of AI implementation in accounting and auditing

Strengths (Internal Advantages)	Weaknesses (Internal Challenges)
Accounting:	***Accounting:***
Optimisation of routine tasks and reduction of accounting information processing time	Resistance to change among personnel and organisations
Increased efficiency, productivity, and effectiveness of accounting processes	Organisational culture not supportive of AI integration
Improved accuracy in financial reporting	Lack of trust in AI-driven systems
Enhanced promptness, transparency, and overall quality of financial reporting	Prohibitive costs and difficulties in integrating AI systems
Auditing:	***Auditing:***
Acceleration of audit tasks and increased audit efficiency	Challenges in adaptation of employees to innovative AI technologies
Improved audit quality	Lack of control in the AI "black-box"
More accurate identification and forecasting of risks	
More reliable conclusions from audit reports	
Opportunities (External Opportunities)	**Threats (External Risks)**
Accounting:	***Accounting:***
Opportunity for accounting professionals to focus on more strategic and analytical roles, contributing to business strategy	A growing need for skilled personnel proficient in AI and data analytics
	Loss of unskilled labour and possible negative impact on social justice and inclusivity due to job displacement
Auditing:	***Auditing:***
Opportunity to focus on value-added activities and advisory roles	Data security, confidentiality, and reliability concerns in AI systems
Possibility to provide additional services to audit clients	Potential disappearance of conventional professions, including some auditing roles

Source: compiled by the authors

The impact of AI on the development of new skills and knowledge for accounting and auditing professionals. Although AI is unlikely to completely replace human expertise, it is poised to significantly impact the accounting and auditing professions in the near future. The report by World Economic Forum (2023) examined trends in job markets and skill development over the next five years, highlighting both job growth and decline across various sectors from 2023 to 2027, primarily driven by technological advancements and digitalisation. The report points to a potential risk for low-skilled jobs in accounting and finance due to the implementation of innovative technologies like AI. However, this also indicates that AI introduces new possibilities for accountants and auditors, offering opportunities for professional development and career advancement.

To assess the current state and prospects of AI in financial reporting and auditing, KPMG (n.d.) conducted a study that surveyed 1,800 financial reporting specialists from the largest global economies. The findings revealed that AI is increasingly being integrated into auditing and financial reporting across various countries and industries. While only 10% of companies currently use AI extensively in financial reporting, 72% are either experimenting with or selectively implementing it, and an additional 27% plan to do so. Within the 2025-2027, nearly all companies (99%) are expected to be piloting or actively using AI. Companies that are already leveraging AI for financial reporting are reaping numerous benefits. Two-thirds of leaders identify the key advantages as the ability to forecast trends and outcomes (65%), real-time risk insights (60%), improved data-driven decision-making, and enhanced data accuracy (both 57%). As a result, the role of accounting and auditing professionals is increasingly focused on higher-level cognitive tasks, making decisions under uncertainty, and engaging in strategic planning. This shift underscores the importance of continuous learning as a crucial part of career progression for these professionals.

Research by Institute of Management Accountants (IMA) (Duong, 2024) reveals that the financial function in many organisations has transitioned from a conventional focus on accounting and reporting to a more strategic role as business partners. This shift emphasises critical thinking, scenario planning, collaboration across functions, and decision-making based on AI insights to meet the rising demands of business competition. As companies adopt AI, the value of the financial function as a business partner becomes even more critical. In the era of digitalisation and AI implementation, finance professionals will need to develop a range of new skills (Fig. 1).

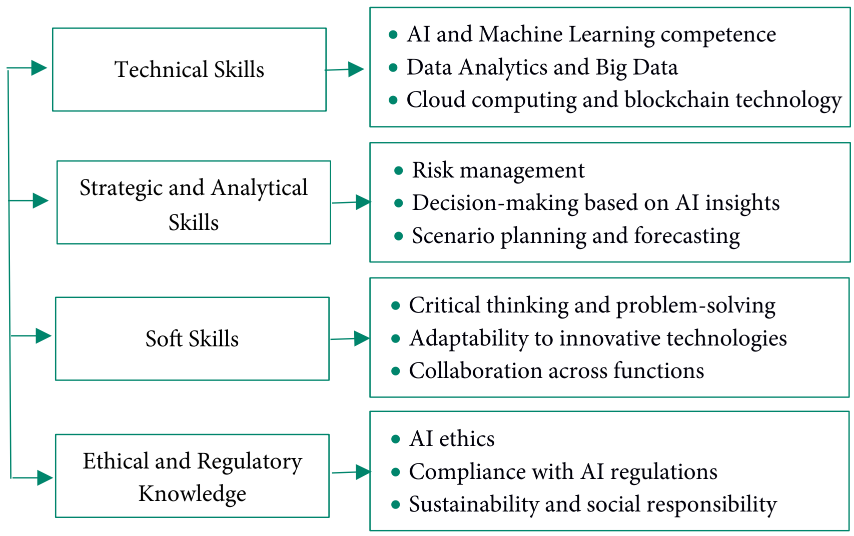

Figure 1. Skills and knowledge required for accountants and auditors in the era of digitalisation and AI implementation
Source: compiled by the authors

Thus, the integration of artificial intelligence into the field of accounting and auditing considerably affects the skill and knowledge requirements for professionals. Although AI will not fully replace human expertise, it will shift the focus towards more strategic aspects of the work, such as data-driven decision-making, risk management, and planning under uncertainty. This necessitates continuous learning and the development of new competences, particularly in critical thinking, technological literacy, and creative approaches to leveraging innovations. These changes will enable accounting and auditing professionals to effectively adapt to modern business demands and create additional value for their organisations.

Artificial intelligence as a challenge and opportunity in the education of accountants and auditors. AI presents a significant challenge and opportunity in the education of accounting and auditing professionals. Technological innovations, specifically the integration of AI and machine learning, have revolutionised conventional accounting processes (Ebirim *et al.*, 2024). The implementation of AI in accounting and auditing processes opens new avenues for automation, accelerating the execution of routine tasks such as data entry, report generation, and information processing. This allows the accountants and auditors to focus more on strategic aspects of their work, such as risk analysis, forecasting, and optimising business strategies (Fig. 2).

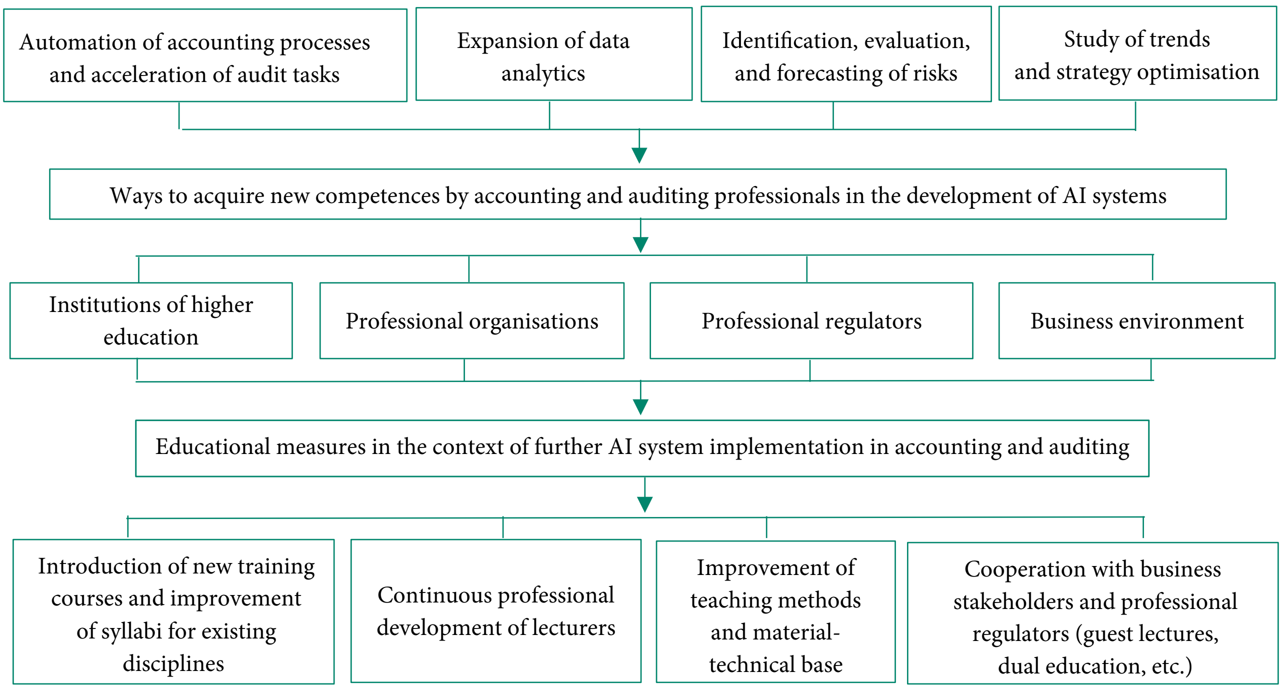

Figure 2. The impact of AI on the education of accounting and auditing professionals

Source: compiled by the authors based on research data by J. Ballantine *et al.* (2024), V. Brabete *et al.* (2024) and G.U. Ebirim *et al.* (2024)

The development of advanced technologies, including AI, directly impacts the accounting profession by redefining the role and position that accounting specialists occupy within economic entities (Brabete *et al.*, 2024). There is an urgent need for the acquisition of new competences that accountants and auditors must develop or acquire, such as advanced data analytics, proficiency in working with AI algorithms, and the cultivation of creative thinking to identify new opportunities. In the context of AI implementation, the ability to use technology effectively becomes as crucial as the capacity to adapt these technologies to enhance business processes.

In terms of the ways for acquiring new competences by accounting and auditing professionals in the face of AI development, institutions of higher education, professional organisations, regulators, and the business environment itself play essential roles. Universities and professional organisations should implement new courses and curricula that incorporate knowledge of AI and digital technologies. Universities are increasingly seen as the primary support in the redesign of accounting education, with curriculum updates in the field being a key measure that must be taken (Ballantine *et al.*, 2024). Continuous professional development for educators who prepare future specialists is also critical, as they must stay abreast of the latest trends and technologies to effectively impart knowledge. The role of professional regulators cannot be underestimated either; they must adapt existing standards and requirements to the new reality of the labour market, fostering the development of necessary competences for working with AI. Additionally, the business environment should actively support its employees in learning and development by providing opportunities for professional growth through collaboration with educational institutions and stakeholders.

In the context of educational initiatives in the AI era, it is essential to implement new courses focused on critical thinking, data analysis, working with AI algorithms, and the creative application of technology. Furthermore, it is vital to update teaching methods, improve the material and technical base, and actively collaborate with businesses and professional regulators to ensure an integrated approach to education, enabling professionals to meet market demands. Thus, AI poses both a challenge and an opportunity for accountants and auditors. Those who can adapt to new conditions and develop the necessary competences and skills will have substantial advantages in the labour market, where demand for strategic thinking, analytics, and data-driven decision-making is increasing. To successfully acquire these new competences, various stakeholders – such as institutions of higher education, professional organisations, regulators, and the business environment – must play an active role in creating conditions for learning and development. This includes the implementation of new courses, the enhancement of curricula, continuous professional development for lecturers, and collaboration with diverse stakeholders to update teaching methods.

Although researchers and practitioners emphasise the significance of AI integration in accounting and auditing, M.A. Agustí & M. Orta-Pérez (2023) highlight that the impact of AI technologies on these fields is still understudied, and there are relatively few studies analysing this influence. The implementation of AI systems in accounting is expected to primarily automate numerous accounting processes, leading to increased efficiency, productivity, and effectiveness. N. Abhishek *et al*. (2024) provides empirical evidence that the adoption of digitised accounting enhances economic efficiency by reducing accounting costs and improving accuracy, which in turn minimises fines and legal proceedings due to regulatory non-compliance. This, indirectly, has a positive effect on the financial health of business organisations and the economy as a whole. F. Imene & J. Imhanzenobe (2020) assert that with the advent of advanced IT tools, accountants in the IT era can prepare and present financial statements in a more prompt and accurate manner. The ongoing digitalisation has also expanded external users' access to financial reports. Hence, AI applications lead to improvements in the timeliness, transparency, and overall quality of financial reporting. Furthermore, the implementation of AI systems allows accounting professionals to focus on more strategic and analytical roles. D.M. Coman *et al.* (2022) note that the role of professional accountants is evolving from "transaction recorders" to analysts and advisors to entrepreneurs. Strategic AI integration enables professionals to focus on strategic analysis and decision support rather than routine tasks (Duong, 2024).

As for auditing, it is also undergoing transformations aimed at improving efficiency and enhancing quality. G.U. Ebirim *et al.* (2024) underscores the significance of auditors embracing digital innovations to deliver more prompt, accurate, and in-depth evaluations of financial statements. A.A.H. Abdullah & F.A. Almaqtari (2024) found that AI technologies help audit firms improve efficiency, accuracy, and decision-making capabilities, which enhances financial reporting and audit processes. According to S. Vitali & M. Giuliani (2024), AI technologies are expected to positively affect the auditors, as they will be able to focus more on the value-added activities. AI-trained auditors can reduce the time needed for annual audit reports through programming, applied technologies, and logical thinking skills, thus improving the promptness of audit reports (Liao *et al*., 2024). AI-based risk identification and forecasting are already performed with greater accuracy, and the acceleration of audit tasks also allows auditors to offer additional services to their clients.

However, certain obstacles and risks are associated with the implementation of AI systems in accounting and auditing practices. M.J.A. Gonçalves *et al.* (2022) identify these challenges as resistance to change, organisational culture, and costs. A. Tiron-Tudor *et al.* (2024) emphasised the shortcomings in accountant education, while B.S. Ayinla *et al.* (2024) highlight challenges in integration, workforce adaptation, and privacy concerns. D. Agostino *et al.* (2022) also argue that more attention should be paid to the implications of digitalisation for social justice and inclusivity. B.T.M. Surya (2024) stresses the need for a comprehensive strategy encompassing skill development, technological implementation, cultural change, and active engagement with regulatory and technological advancements.

The skills and knowledge required for accountants and auditors in the era of AI are also a relevant topic of contemporary research. F. Imene & J. Imhanzenobe (2020) argue that considering continuous IT advancements, accounting processes will become cloud-based, and future accountants will interact with AI machines, which highlights the need to explore the potential of virtual and augmented reality in meeting user information needs. S. Leitner-Hanetseder *et al.* (2021) focus on the changing tasks and roles of accounting specialists in the AI era. The researchers conclude that AI-driven innovation will increase productivity and overall employment in the accounting field rather than decrease it, thus obligating companies to adopt AI in a continuous learning cycle and position themselves for growth. M.M. Thottoli (2024) highlighted the role of regulators and professional organisations in further integrating AI into accounting and auditing practices. Moreover, several researchers stress the role of higher education institutions in preparing future accountants for a digital environment, emphasising that educational institutions must adjust their curricula to equip students with the skills expected by employers (Kroon *et al*., 2021). V. Brabete *et al*.(2024) identifies universities as a key pillar in redesigning accounting education, with curriculum updates being the main measure to be taken.

Thus, the integration of AI into accounting and auditing presents both major opportunities and challenges. On the one hand, AI enhances efficiency, accuracy, and the strategic role of professionals, allowing accountants and auditors to focus on more value-added tasks such as decision-making and advisory roles. On the other hand, the implementation of these technologies raises concerns about workforce adaptation, organisational culture, and data security, as well as the need for continuous education and skill development. Addressing these challenges will require a concerted effort from educational institutions, professional organisations, regulators, and the entire business community to ensure that the potential of AI is fully fulfilled, while also safeguarding against the risks associated with its adoption. This balanced approach will be crucial in shaping the future of the accounting and auditing professions in the era of digital transformation.

CONCLUSIONS

The implementation of AI in accounting and auditing marks a pivotal shift in both fields, transitioning professionals from routine, transaction-based tasks to more strategic and analytical roles. The automation of accounting processes facilitated by AI has proven to substantially enhance the efficiency, transparency, and promptness of financial reporting. As a result, accounting professionals are increasingly becoming analysts and consultants, offering deeper insights and added value to their organisations. In auditing, AI technologies streamline the auditing process, improving the quality of audits and allowing the auditors to focus on value-added tasks such as risk identification and advisory services.

Despite these promising advancements, challenges such as resistance to change, organisational culture, and the prohibitive cost of AI implementation persist. There are also major concerns regarding the adaptation of the workforce and potential privacy issues. These obstacles highlight the need for a comprehensive approach to AI integration, which involves not only the technological aspects but also considerable attention to the educational and social dimensions. Regulators, professional organisations, and institutions of higher education will play crucial roles in preparing the next generation of accountants and auditors for this evolving digital landscape.

The integration of AI into accounting and auditing is reshaping the skill set required for professionals in these fields. While AI is not expected to replace human expertise entirely, its growing presence will necessitate a shift from routine tasks to more strategic responsibilities such as data-driven decision-making, risk management, and planning under uncertainty. Accounting and auditing professionals will need to develop new competences, particularly in technology, data analytics, and critical thinking. Furthermore, the ability to collaborate across functions and understand the ethical implications of AI use will be crucial.

AI represents both a challenge and an opportunity for the education of accountants and auditors. As AI continues to automate routine accounting and auditing tasks, professionals in these fields must develop new competences, specifically in data analytics, critical thinking, and creative problem-solving. The increasing demand for strategic roles highlights the necessity for continuous learning and professional development. Education systems, especially institutions of higher education, must adjust their curricula to integrate AI-related skills and knowledge, equipping future accountants and auditors to succeed in a rapidly changing digital environment.

Future research should focus on addressing the gaps in AI education, exploring how curricula can be further tailored to equip accounting and auditing professionals with the skills needed for a rapidly changing environment. Additionally, ongoing investigations into the social implications of AI adoption, particularly in terms of inclusivity and social justice, will be critical to ensuring that the benefits of AI are distributed equitably across the profession.

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CONFLICT OF INTEREST

None.

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Адаптація бухгалтерської та аудиторської освіти до викликів штучного інтелекту

Анотація. Поява штучного інтелекту змінює ландшафт бухгалтерської та аудиторської освіти, вимагаючи значної адаптації до викликів, пов'язаних з цією технологічною революцією. У цьому дослідженні вивчено вплив штучного інтелекту на набір навичок, необхідних для фахівців з бухгалтерського обліку та аудиту, а також проаналізовано наслідки для вищих навчальних закладів. У дослідженні використано якісний дизайн дослідження, що включає систематичний огляд літератури та SWOT-аналіз. Результати показали, що штучний інтелект підвищує ефективність, прозорість, оперативність і точність фінансової звітності, змушуючи фахівців з бухгалтерського обліку переходити від традиційних ролей до більш стратегічних функцій, які передбачають аналіз даних і прийняття рішень. В аудиті технології штучного інтелекту підвищують якість аудиту і дозволяють аудиторам зосередитися на завданнях з більшою доданою вартістю, таких як оцінка ризиків та консультаційні послуги. Незважаючи на переваги, такі проблеми як опір змінам, організаційна культура, адаптація персоналу, питання конфіденційності та надмірна вартість впровадження штучного інтелекту, є значними перешкодами для інтеграції. Результати дослідження підкреслили зростаючу тенденцію до впровадження штучного інтелекту, причому більшість організацій, як очікується, незабаром впровадять або випробують рішення на основі штучного інтелекту, що підкреслює необхідність безперервного навчання та підвищення кваліфікації серед фахівців. Результати дослідження підкреслили нагальну потребу в освітній реформі в рамках навчальних програм з бухгалтерського обліку та аудиту. Вищі навчальні заклади повинні включати компетенції, пов'язані зі штучним інтелектом, наголошуючи на аналізі даних, критичному мисленні та етичних міркуваннях щодо використання технологій. Спільні зусилля між вищими навчальними закладами, професійними організаціями, регуляторними органами та бізнес-спільнотою є життєво важливими для розвитку робочої сили, здатної процвітати в середовищі, керованому штучним інтелектом. Практична цінність цього дослідження полягає в тому, що воно пропонує навчальним закладам, професійним організаціям та регуляторним органам практичні рекомендації щодо адаптації їхніх навчальних планів і програм, які допоможуть фахівцям з бухгалтерського обліку та аудиту набути необхідних навичок, пов'язаних зі штучним інтелектом, для майбутньої практичної діяльності

Ключові слова: цифрові технології; дані; навички; фахівці; заклади вищої освіти

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Financial behaviour in a cultural context: Cross-countries analysis of savings and consumption

Abstract. This study investigated how certain aspects of national culture affect saving and consumption behaviours. The study examined the correlation between gross saving, consumption, and economic development for 38 countries, including both developed and developing ones, from different continents, with data from 1996 to 2021. The cross-countries correlation indicators differed quite a lot in 1996-2008 and somewhat levelled later in 2009-2021. The growth of financial literacy and financial inclusion of the economic agents explained such changes. The findings suggest that countries exhibiting a strong relationship between income and savings are more receptive to the tools of monetary policy. In contrast, the economies expressing a strong relationship between income and consumption are more susceptible to the tools of fiscal policy. Therefore, high correlation scores are more desirable. Cluster analysis was employed to define groups of comparable countries for evaluation of national aspects of saving and consumption behaviour. Single membership in 2- and 3-clusters were observed, but the list of countries in these clusters differed across the years. The pronounced homogeneity of the clusters indicated the absence of significant national differences in the saving and consumption behaviour of economic agents according to the selected factors of comparison. This allows using the same instruments of regulation and stabilisation of the economy in the countries that are the closest neighbours in the cluster. The study stressed the significance of including national cultural elements in the analysis of financial behaviour and the formulation of macroeconomic policy. Awareness of these cultural differences enables policymakers to adapt their strategies more effectively to enhance economic growth and stability

Keywords: saving behaviour; cultural finance; economic growth; macroeconomic policy; countries' clustering

INTRODUCTION

Using the same macroeconomic tools does not always achieve the desired result. Such heterogeneity of results is caused by differing reactions in savings and consumption behaviour regarding changes in income. When creating macroeconomic policies, considerations related to cultural frameworks must be made at the national level. Changes in consumption and savings depend on many factors, including previous and current incomes, expectations, inflation, etc. However, the consumption and savings behaviour of economic operators is also shaped by the national habits and cultural traditions of the country. If national traditions are strong, the financial behaviour of the country's economic operators differs significantly from that of other countries. Under such conditions, it is difficult for the government

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to apply the experience of economic reforms in other countries, as the results will not necessarily be successful. Conversely, common features of savings and consumption behaviour with other countries allow using universal methods of reforming and transforming the country's economy to respond to challenges, such as economic or financial crises. All this necessitates a cross-country comparison of the financial behaviour of economic entities to find the closest neighbours in terms of financial behaviour.

Some psychological factors determine the propensity of people to save. It is logical to assume that identical living conditions, national traditions, and mentality form a similar saving behaviour in people living on the same territory. Most researchers agree that savings are determined, among other things, by habits. The question arises whether it is possible to assert the existence of certain national habits to distribute income between consumption and savings. It is uncommon to find empirical cross-national data on saving habits. L. Csorba (2020) proved that financial culture is one of the key factors in the functioning of financial markets. The researcher noted that the values, beliefs, standards, and views shared by communities play a key role in the formation of financial behaviour and financial literacy. M. Ahunov & L. van Hove (2020) proved that aspects of national culture describe the cross-country variations in financial behaviour. It was demonstrated that more research is necessary to comprehend the impact of national culture on financial literacy to help understand the determinants of financial behaviour and manage financial policy better.

P. Bialowolski *et al*. (2023) investigated the relationship between culture and financial capabilities at the country level. The researchers believe that differences in national culture correlate with the average level of financial capabilities at the country level. They proved a positive link between financial opportunities and cultural factors such as individualism, long-term orientation, and indulgence. M.N. Khiar & M. Kooli (2023) proved that national culture influences corporate dividend policy. The choice of corporate payout methods (dividends or share repurchases) depends on the high or low level of cultural dimensions such as avoiding uncertainty, masculinity, long-term orientation, and indulgence. M.A. Khan *et al*. (2022) showed that national culture is a significant factor in the distinctions in financial sector development between emerging and developing countries. To enhance the development of the financial sector, policymakers must adapt their financial strategies to accommodate the cultural aspects of the native population.

C.B. Gabler *et al*. (2020) proved that propensity to save affects consumption and life satisfaction. The ability to earn income affects the ability to save. While national and private saving trends are comparable, there are considerable differences throughout countries concerning saving amounts and how they change over time. The high rates of economic growth result in high savings, and not vice versa. A. Ribaj & F. Mexhuani (2021) noted that the differences in savings clearly reflect the indicators of growth: the higher savings rates can be observed in the developed countries. The risk of volatile foreign direct investment is significantly reduced when countries have a pronounced national savings rate. Such nations are not reliant on foreign direct investment.

The cited studies show that the researchers focus mainly on proving the relationship between cultural traditions and the specific features of financial behaviour. At the same time, the problems of cross-country analysis of such relationships are not covered. The purpose of the present study was to determine whether economic growth depend on some aspects of national saving and consumption behaviours.

LITERATURE REVIEW

There has been a lot of research on the connection between financial behaviour and national culture. Numerous studies emphasise the influence of cultural elements on the evolution of financial systems and economic growth, attesting to the significance of this connection. Evidence of a close relationship between the level of development of a country's financial system and its economic growth is confirmed by the studies of researchers within the framework of the so-called theory of cultural dimensions (Hofstede *et al*., 2010). According to this theory, the diversity of financial behaviour of companies, households, and governments is determined by national cultural aspects.

T.D. Willemink (2018) concluded that cultural factors truly affect the capital structure decisions made by companies. Moreover, cultural dimensions lead to substantial variations in the way companies structure their capital. That is why science argues that country-level determinants influence corporate financial policy even greater than firm-specific ones. V. Mogha & B. Williams (2021) noted that the national cultural characteristics determine risk tolerance and methods of financial management. They also proved that cultures influence on corporate finance may initiatively mix the debt-to-equity rates.

J. Le Blanc *et al*. (2015) found the distinctive effects of some factors on the financial behaviour of certain groups of households living in particular geographic regions of Eurozone countries. M. Brueckner *et al*. (2023) estimated the relationship between economic growth and the national saving rate. GDP (gross domestic product) growth increases the national saving in poor countries. This pattern is reversible for rich countries. The income elasticity of national savings is decreased by the increased credit-to-GDP ratio.

Research on the interrelationships between finance and national cultural conditions conducted within the framework of cultural finance theory allows expanding the cultural considerations when analysing financial decisions, as it is not limited to the application of outlined dimensions. J. Costa-Font *et al*. (2018) noted that differences in savings rates between countries are caused by culturally specific social norms. The researchers concluded that cross-country differences in saving behaviour can be explained by cultural preferences. The place of origin is a factor of savings pattern changes.

National values and perspectives influence not only the financial decisions of states and businesses but also the respective decisions of households and individuals. T. Hens *et al.* (2020) provided a summary of research findings on cultural differences in financial decision-making and financial markets. Researchers concluded that culture can influence the degree of loss aversion. They proved the link between loss aversion and the spread of major religions in the country, pointing out that the link between loss aversion and macroeconomic variables looks much smaller compared to culture and emotions. T. Anyangwe *et al.* (2022) determined culture as one of the of savings indicators. Features of saving behaviour were considered by scientists as an element of financial inclusion. Cultural dimensions were used to explain cross-country and cross-regional variation in savings.

Thus, the analysis revealed several key findings on the relationship between national culture and financial behaviour. Based on the studies mentioned, it can be assumed that there are certain aspects of national culture that determine the strength of the connection between economic growth and financial behaviour. National culture also plays a significant role in shaping corporate finance decisions, household savings patterns, and broader financial systems, thus underlining the importance of integrating cultural factors when analysing financial outcomes.

MATERIALS AND METHODS

The study focused on proving the following hypothesis. H0: there are significant cross-country differences in saving and consumption behaviour when incomes change. H1: if savings and consumption behaviour vary in countries due to national cultural characteristics, then such countries belong to different clusters.

The specific national features of financial behaviour were compared using cluster analysis. For this, it was useful to apply an agglomerative hierarchical classification algorithm with Euclidean distance between objects:

$$p(x_{ij}) = \sqrt{\sum (x_{il} - x_{ij})^2}, \qquad (1)$$

where l – the features; i – the number of features.

The algorithm for dividing the objects $x_i (i = 0,1,\ldots, n)$ is based on minimising the intercluster distance; using the root-mean-square norm ℓ^2 as the distance, the objective function is as follows:

$$J = \sum_{j=1}^{k} \sum_{x_i \in C_j} \left\| x_i - \mu_j \right\|^2, \qquad (2)$$

where x_i – the i^{th} object; Cj – the j^{th} cluster with centre μj.

The amounts of savings, consumption, and GDP were used as the metrics for assessing the behaviour of households. However, the absolute data is inconvenient for cross-country analysis. Therefore, the correlation coefficients (r_{SY}) and (r_{EY}) were calculated according to the formulas (3) and (4):

$$r_{SY} = \frac{n \sum S_i Y_i - \sum S_i \sum Y_i}{\sqrt[n]{n(\sum S_i^2 - (\sum S_i)^2} \sqrt{n \sum Y_i^2 - (\sum Y_i)^2}}; \qquad (3)$$

$$r_{EY} = \frac{n \sum E_i Y_i - \sum E_i \sum Y_i}{\sqrt[n]{n(\sum E_i^2 - (\sum E_i)^2} \sqrt{n \sum Y_i^2 - (\sum Y_i)^2}}, \qquad (4)$$

where r – the correlation coefficient; n – the number of observations; S – the gross domestic saving; E – the consumption expenditure; Y – the gross domestic product.

The empirical positive correlation of saving with income growth is inconsistent with the life cycle hypothesis model, unless the higher income growth is expected to be at least partly temporary (Masson *et al.*, 1995). For the confirmation of such relationship, R. Alessie & F. Teppa (2010) made the hypothesis of habit persistence. The correlation dependencies of savings and income are measures of saving behaviour, as far as they are an empirical equivalent of habit. Since habit is an indicator of behaviour, then the selected indicators are the identifiers of specific national features in financial behaviour. The use of indicators (3) and (4) allows implementing concrete data of time preference for consumption: current consumption E and deferred consumption S (Bailey, 2007). High values of the correlation coefficients r_{SY} indicate the rational, financially literate behaviour of economic operators.

According to the Neo-Classical theory of interest formation, interest rates depend on saving/investment/consumption (Spahija, 2016). Loan Theory devotes great attention to the study of time-preference (consumption/savings/investment) as a factor, which influences the interest rates. Thus, savings are a factor that determines the interest rates. At the same time, interest rates are one of the tools of monetary policy. Proceeding from this, an economy with the higher coefficients of correlation r_{SY} is sensitive to the monetary policy. High interest leads to higher savings, while low interest leads to low saving. Thus, saving is directly (or positively) related to interest rates. Firms' demand for investment is fulfilled by households' savings. Thus, saving is supply and investment is demand on the market of goods.

Similarly, an economy with prominent correlation levels between consumption and income is sensitive to fiscal policy. N. Yaroshevych *et al.* (2024) noted that fiscal policy employs various tools such as government spending, taxation, and grants to influence the economy through expenditures. Such an impact is more pronounced with the higher dependence of consumption on income. The combination of high degree of correlation between consumption and income determines the high sensitivity of the economy to the regulation by monetary and fiscal policy tools. The study examined the relationship between savings, consumption, and economic growth in 38 countries, including both developing and developed countries (Table 1).

Table 1. Sample of countries under study

1	Albania	11	Germany	21	India	31	Morocco
2	Argentina	12	Estonia	22	Iceland	32	Mexico
3	Azerbaijan	13	Spain	23	Israel	33	Paraguay
4	Austria	14	Finland	24	Italy	34	Poland
5	Brazil	15	France	25	Japan	35	Romania
6	Bulgaria	16	United Kingdom	26	Kazakhstan	36	Slovak Republic
7	Canada	17	Honduras	27	Cambodia	37	Turkey
8	Chile	18	Croatia	28	Republic of Korea	38	Ukraine
9	Cyprus	19	Hungary	29	Latvia		
10	Czech Republic	20	Indonesia	30	Lithuania		

Source: developed by the authors of this study

Data on savings, consumption, and GDP was obtained from the World Bank Open Data (n.d.). To avoid the influence of other factors (devaluation), indicators were used in the LCU (Local Currency Unit). The period under study was 1995-2021, which was divided into two intervals: 1996-2008 and 2009-2021. This allowed assessing the changes in the dependences in time.

RESULTS AND DISCUSSION

The calculated values of the correlation coefficients and differ significantly between various countries and periods (Figs. 1, 2). However, there is a tendency to increase the homogeneity of distribution. The value of in 1996-2008 was minimum (-0.7709) for Bulgaria and maximum (0.8946) for Finland. The coefficient of variation for this period was 1,807%, which indicates the substantial differences in saving behaviour in different countries (Table 2). These findings prove the hypothesis H0: there are significant differences in the saving and consumption behaviour when incomes change. In 2009-2021, the distributions of coefficients were more homogenous with a minimum value (-0.6850) for Iceland and a maximum (0.9413) for France. The coefficient of variation has decreased to 774.65%. The change of the extremes in different periods proves that the saving behaviour changes over time. The drop in the coefficient of variation disproves the hypothesis H1: the national habits in saving and consumption behaviour are not persistent. It is logical to assume that with the increase in financial literacy and financial inclusion, saving behaviour becomes more literate (rational) and the influence of subjective and psychological factors decreases. The high values of and may be interpreted as the goal of economic development.

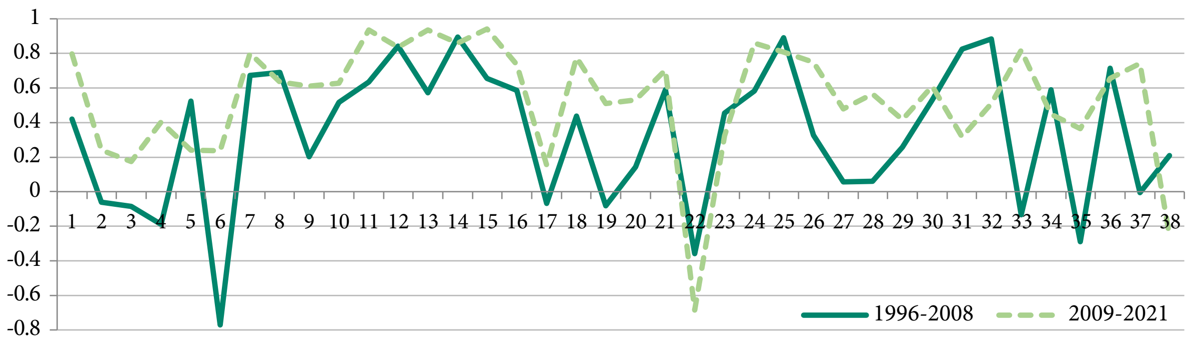

Figure 1. Dynamics of correlation coefficients r_{SY} in different period

Source: developed by the authors of this study

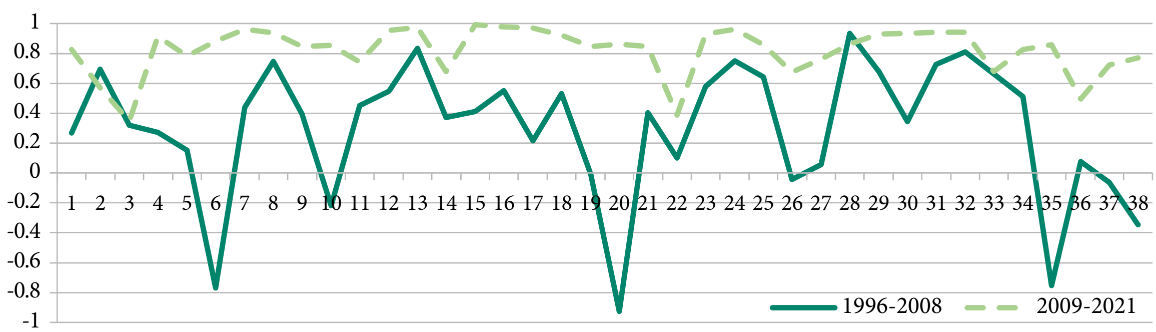

Figure 2. Dynamics of correlation coefficients r_{EY} in different period

Source: developed by the authors of this study

Table 2. Parameters of r_{SY} and r_{EY} distribution

	r_{SY} 1996-2008	r_{SY} 2009-2021	r_{SY} 1996-2021	r_{EY} 1996-2008	r_{EY} 2009-2021	r_{EY} 1996-2021
Standard deviation	6.0495	4.1593	4.1874	7.4251	0.9316	6.5695
Mathematical expectation	0.3347	0.5369	0.4422	0.2986	0.8215	0.5439
Coefficient of dispersion	0.1635	0.1124	0.1132	0.2007	0.0252	0.1776
Coefficient of skewness	-0.6391	-1.6061	-0.9566	-1.1663	-1.5352	-1.6006
Coefficient of variation	1,807%	774.65%	947%	2,487%	113%	1,208%
Min point	-0.7694	-0.6850	-0.6464	-0.9265	0.3876	-0.7046
Max point	0.8946	0.9413	0.9047	0.9340	0.9920	0.9591
Number of intervals	10	10	10	10	10	10

Source: developed by the authors of this study

Analogous conclusions can be made for the dynamics of the r_{EY} indicator. For 1996-2008, volatility of indicators was higher than in 2009-2021. In 1996-2008, the minimum indicator (-0.9265) was typical for Indonesia, while maximum 0.9340 – for the Republic of Korea. The coefficient of variation amounted to 2,487%. In 2009-2021, the coefficient of variation was 1,208%, which is twice less than in the previous period – the distribution became more even. Over time, the sample became more uniform. The minimum value of r_{EY} in this period reaches 0.3876 for Azerbaijan, and maximum (0.9920) for France. Despite considerable fluctuations, the high levels of r_{SY} and r_{EY} predominate for the countries of the sample. The coefficients of skewness were negative in each period – a distribution with the tail stretched to the left. The presence of the binomial distribution of the correlation coefficients can be assumed (Tables 3, 4). In each period of observation, the value of the confidence coefficient (χ^2) followed the condition: $\chi^2 < \chi^2_{critical}$. The empirical value of χ^2 test statistic is lower than the critical one.

Table 3. Pilot parameters of chi-square test hypothesis about the type of r_{SY} distribution

No.	1996-2008 Interval	1996-2008 Frequency actual data	1996-2008 Frequency $y = -0.015x^2 + 0.930x - 0.733$	2009-2021 Interval	2009-2021 Frequency actual data	2009-2021 Frequency $y = 0.136x^2 - 0.348x + 0.466$	1996-2021 Interval	1996-2021 Frequency actual data	1996-2021 Frequency $y = 0.041x^2 + 0.523x - 0.683$
1	-0.603	1	0.182	-0.522	1	0.254	-0.491	1	-0.119
2	-0.437	0	1.067	-0.360	0	0.314	-0.336	0	0.527
3	-0.270	2	1.922	-0.197	1	0.646	-0.181	0	1.255
4	-0.104	2	2.747	-0.035	0	1.25	-0.026	1	2.065
5	0.063	5	3.542	0.128	0	2.126	0.129	4	2.957
6	0.229	5	4.307	0.291	5	3.274	0.284	6	3.931
7	0.395	2	5.042	0.453	6	4.694	0.439	3	4.987
8	0.562	6	5.747	0.616	7	6.386	0.595	7	6.125
9	0.728	10	6.422	0.779	8	8.350	0.750	8	7.345
10	0.895	5	7.067	0.941	10	10.586	0.905	8	8.647
χ^2			**0.342**			**0.590**			**0.986**

Source: developed by the authors of this study

Table 4. Pilot parameters of chi-square test hypothesis about the type of r_{EY} distribution

No.	1996-2008 Interval	1996-2008 Frequency actual data	1996-2008 Frequency $y = -0.022x^2 + 1.001x - 0.833$	2009-2021 Interval	2009-2021 Frequency actual data	2009-2021 Frequency $y = 0.197x^2 - 1.160x + 2.6$	1996-2021 Interval	1996-2021 Frequency actual data	1996-2021 Frequency $y = 0.25x^2 - 1.610x + 3.033$
1	-0.740	2	0.146	0.448	2	1.637	-0.538	2	1.673
2	-0.554	1	1.081	0.509	1	1.068	-0.372	0	0.813
3	-0.368	0	1.972	0.569	0	0.893	-0.206	1	0,453
4	-0.182	2	2.819	0.629	1	1.112	-0.039	1	0.593
5	0.004	2	3.622	0.690	3	1.725	0.127	1	1,233
6	0.190	4	4.381	0.750	2	2.732	0.294	1	2.373
7	0.376	6	5.096	0.811	3	4.133	0.460	5	4.013
8	0.562	10	5.767	0.871	10	5.928	0.626	7	6.153
9	0.748	7	6.394	0.932	4	8.117	0.793	8	8.793
10	0.934	4	6.977	0.992	12	10.7	0.960	12	11.933
χ^2			**0.00028**			**0.587**			**0.961**

Source: developed by the authors of this study

Binominal distributions indicate that the high r_{SY} and r_{EY} coefficients are more common (Figs. 3, 4). Thus, the high coefficients r_{SY} and r_{EY} are more rational and desirable. As the country develops and the market condition of its functioning is established, the relationship between savings/consumption and income becomes closer. The economy becomes more sensitive to the tools of monetary and fiscal policies.

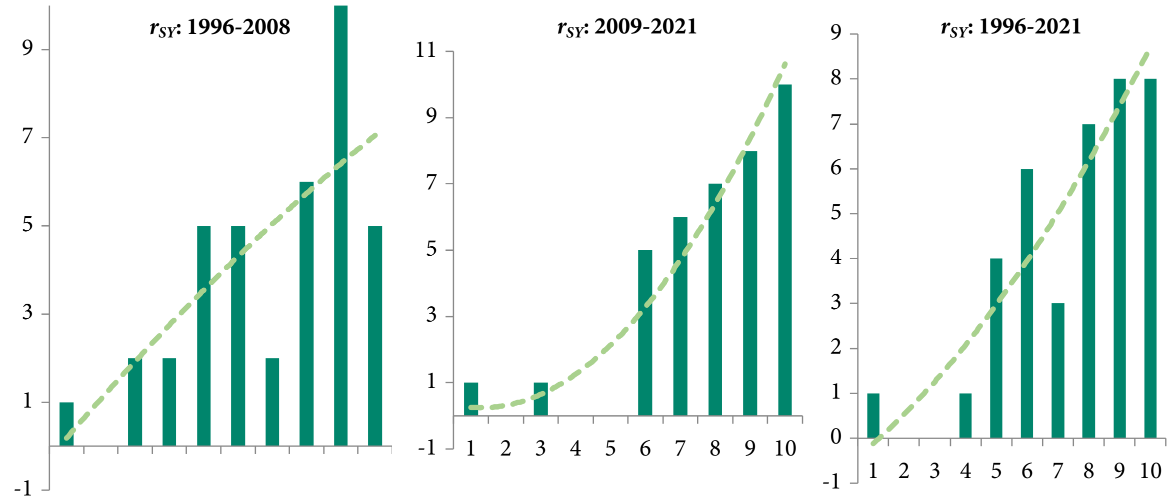

Figure 3. Histograms of r_{SY} frequencies in different periods
Source: developed by the authors of this study

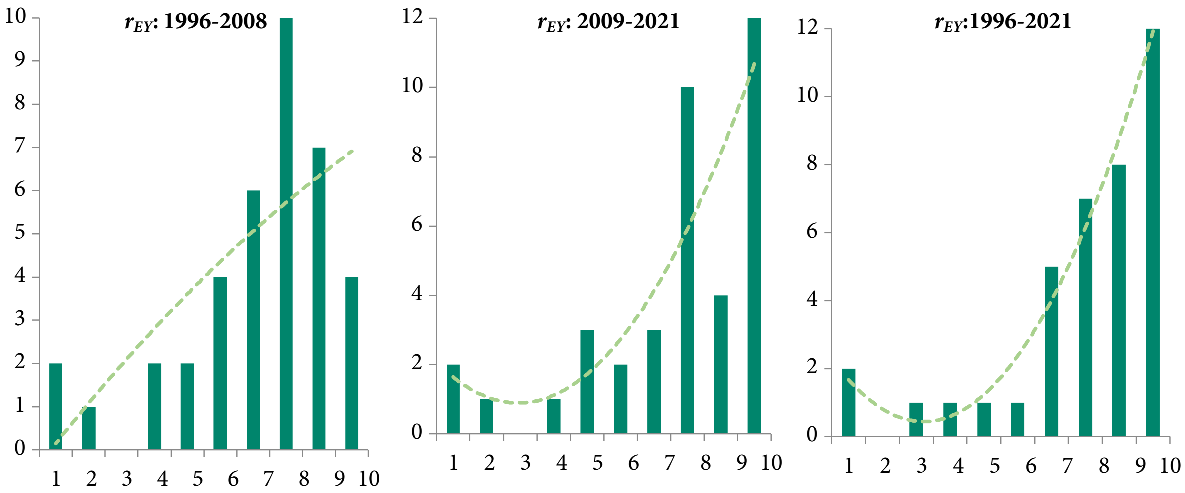

Figure 4. Histograms of r_{EY} frequencies in different periods
Source: developed by the authors of this study

The high coefficient r_{SY} indicates a significant direct dependence of savings and GDP. Such behaviour can be interpreted as financially literate: savings increase simultaneously with income growth and decrease when income declines. The influence of psychological factors such as habits, traditions, and culture are minimal. The higher the r_{SY} coefficient, the less sensitive is the financial behaviour to the influence of relevant factors. The inverse relation is also fair: the lower the r_{SY} coefficient, the more non-economic factors determine the financial behaviour of the economic operators. Thus, in countries where r_{SY} is low, the saving behaviour is more influenced by the power of habit and tradition than the economic factors (change of income). According to the calculations, the financial behaviour of economic operators has greatly changed during 2009-2021. Saving behaviour has become more sensitive to the change of income level. Economy of the countries where the saving behaviour has such characteristics is sensitive to the tools of monetary policy. The distribution of both characteristics of financial behaviour, as graphically depicted below, does not indicate the existence of pronounced clusters – it is rather sporadic (Fig. 5).

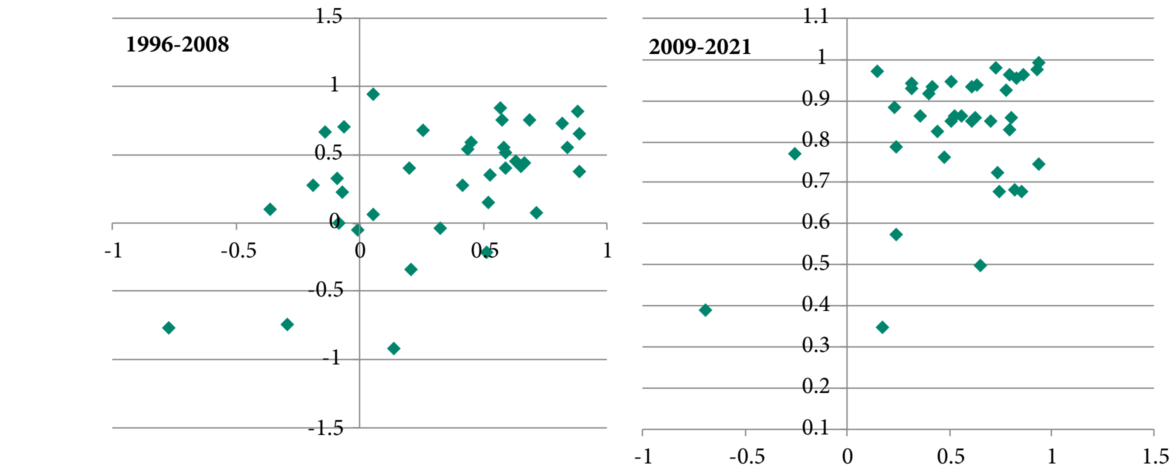

Figure 5. Distribution of financial behaviour indicators in different period
Source: developed by the authors of this study

According to the formula (1) the usual Euclidian distances between objects are as follows:

- for 1996-2008:

$$p(x_{1,2}) = \sqrt{(0.418-(-0.062)^2 + (0.268-0.696)^2} = 0.64$$
$$p(x_{1,3}) = \sqrt{(0.418-(-0.085)^2 + (0.268-0.318)^2} = 0.51$$
$$p(x_{1,2}) = \sqrt{(0.418-(-0.188)^2 + (0.268-0.272)^2} = 0.61$$

- for 2009-2021:

$$p(x_{1,2}) = \sqrt{(0.797-0.240)^2 + (0.826-0.573)^2} = 0.61$$
$$p(x_{1,3}) = \sqrt{(0.797-0.173)^2 + (0.826-0.347)^2} = 0.79$$
$$p(x_{1,4}) = \sqrt{(0.797-0.402)^2 + (0.826-0.915)^2} = 0.40.$$

Based on calculations, three clusters were formed as follows (Fig. 6):

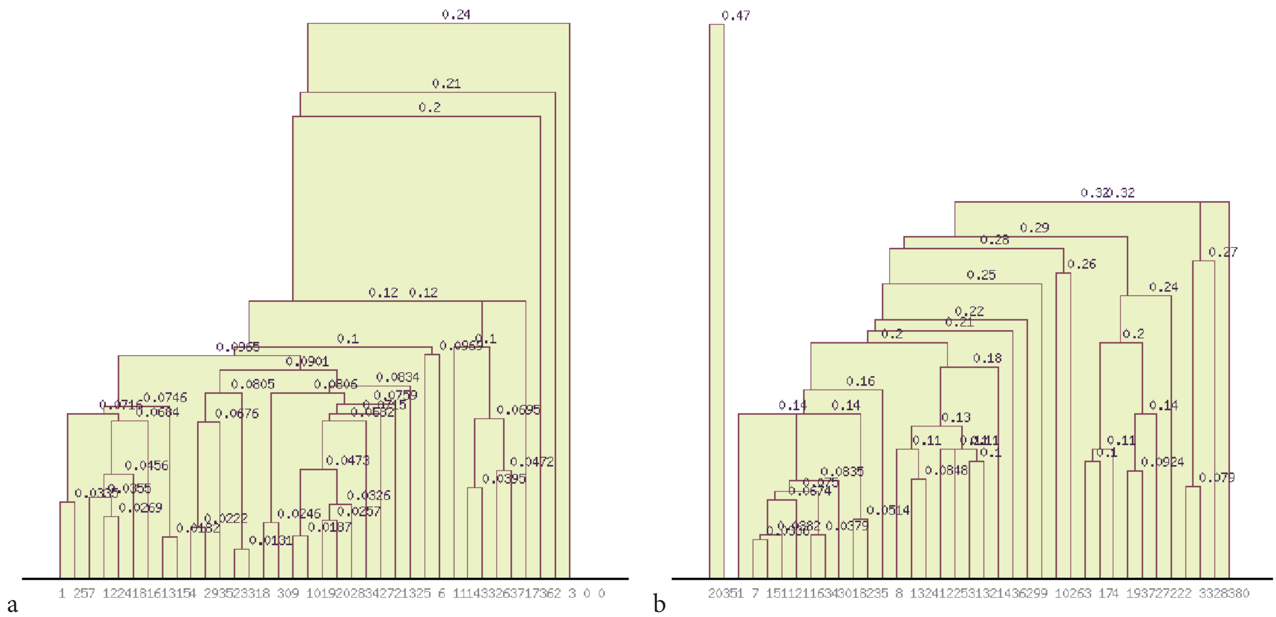

Figure 6. Clustering dendrogram
Notes: a) 1996-2008; b) 2009-2021
Source: developed by the authors of this study

- for 1996-2008:

$S_{(1,7,15,11,21,16,34,30,18,23,5,8,13,24,12,25,31,32,14,36,29,9,10,26,3,17,4,19,37,27,22,2,33,28,38)}$, $S_{(6)}$, $S_{(20,35)}$;

- for 2009-2021:

$S_{(1,25,7,12,24,18,16,13,15,4,29,35,23,31,8,30,9,10,19,20,28,34,27,21,32,5,6,11,14,33,26,37,17,36,2,3)}$, $S_{(22)}$, $S_{(38)}$.

The first cluster is the largest on both periods. The second and third clusters are represented by single cases. Countries in the first cluster are countries with economies amenable for regulation. The second cluster includes countries with medium amenability to tools of monetary and fiscal policies. The third cluster includes countries, the economies of which are hard to stabilise by conventional tools of fiscal and monetary policy. Interestingly, the countries of Europe and the European Union were included in each of three clusters in every period: Bulgaria (II cluster) and Romania (III cluster) in 1996-2008 and Iceland (II cluster) and Ukraine (III cluster) in 2009-2021. This indicates the existence of heterogeneity in the forms of development of EU countries and the high probability of receiving distinct economic results as a consequence of common regulatory policy within the European Union.

Revealing a statistically significant positive correlation between GDP, savings, and consumer expenditures, the findings of the present study align with those of F. Modigliani (1970) and P.R. Masson *et al*. (1995), emphasising that high savings appear to be positively correlated with growth but contradict the life cycle hypothesis model. The significant spread of correlation values for different countries coincides with the main hypothesis of the theory of cultural finance on the existence of national features of saving and consumption behaviour.

The study proved that the homogeneity of the distribution of the country by the characteristics of financial behaviour increases over time. In other words, the financial behaviour of economic entities is gradually becoming more similar, while national habits are having less and less influence on savings and consumption. This finding contradicts the position on habit persistence in saving and consumption (Alessie & Teppa, 2010). Modern processes of countries' integration and knowledge exchange are gradually reducing the influence of national traditions on decisions regarding the income distribution between savings and consumption. This coincides with the conclusion of T.W. Smith (2002) on the decreasing function of savings and the strength of habit formation.

The fact that most countries, according to the study, fall into one grouping cluster does not negate the approach of T. Anyangwe *et al*. (2022) that culture is one of the determinants of saving. However, it refutes the opinion on the need to form an individual trajectory of macroeconomic policy, which is based on the cultural dimension (Ahunov & van Hove, 2020). Accommodating cultural aspects is necessary only to adjust the time and strength of influence of certain macroeconomic tools.

The results of cluster analysis support the view offered by J. Tansey & T. O'riordan (1999), who pointed that cultural theory is still relevant, although its application in economic policy needs to be reconsidered. However, further research should concentrate on examining the elements that lead to the convergence of financial behaviour in greater detail as well as the possible influence of new cultural and economic factors on these processes. Consequently, this could lead to a more precise comprehension of how culture affects economic conduct within the framework of globalisation.

It is possible to outline several factors due to which the obtained findings do not always coincide with the opinions of other researchers. The first is the time factor, since, over time, economic and cultural conditions change under the influence of digitalisation, globalisation, and integration. Secondly, the alternative results are determined by the authors' methodology and analysis indicators, which are based on correlational dependencies, not absolute indicators. Furthermore, differences in findings may be influenced by contextual factors, including socioeconomic norms, public policies, and international relations.

CONCLUSIONS

The study provided a comprehensive examination of the connections among GDP, savings, and consumer spending, emphasising the increasing impact of cultural and economic factors on financial behaviours in various nations. The findings underscored the increasing convergence of financial behaviours globally, driven by the forces of globalisation and the diminishing influence of national traditions. This convergence challenges some traditional economic theories, particularly those emphasising the persistence of habitual financial practices. According to the findings, cultural influences still affect saving and spending habits, but they are losing ground to economic integration and international information sharing. The observed clustering of countries in terms of financial behaviour suggests that national macroeconomic policy must not only consider regional variations and global trends but also trust the experience of successful countries more.

Differences between the findings obtained in this study and those of other researchers highlight the dynamic nature of cultural and economic impacts. Further study is necessary to fully understand the mechanisms underlying these shifts. Subsequent research endeavours should concentrate on pinpointing the latest cultural and economic elements that may additionally affect financial conduct and investigate the consequences of these modifications for policy and implementation. The present study expanded the research on cultural finance by substantiating how cultural factors influence financial behaviour. As the conventional borders of national financial practices rapidly erode, the research urges a re-evaluation of current macroeconomic policies to better reflect the realities of an increasingly interconnected globe.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

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Фінансова поведінка в культурному контексті: міжкраїновий аналіз заощаджень та споживання

Анотація. У цьому дослідженні вивчено, як певні аспекти національної культури впливають на поведінку заощаджень і споживання. У дослідженні проаналізовано кореляцію між валовими заощадженнями, споживанням та економічним розвитком для 38 країн, як розвинених, так і тих, що розвиваються, з різних континентів, за даними з 1996 по 2021 рік. Показники кореляції між країнами досить сильно відрізнялися у 1996-2008 роках і дещо вирівнялися у 2009-2021 роках. Такі зміни пояснюються зростанням фінансової грамотності та фінансової інклюзії економічних агентів. Отримані дані свідчать про те, що країни, які демонструють сильний зв'язок між доходами та заощадженнями, є більш сприйнятливими до інструментів монетарної політики. І навпаки, країни, в яких спостерігається сильний зв'язок між доходами та споживанням, є більш чутливими до інструментів фіскальної політики. Тому високі показники кореляції є більш бажаними. Кластерний аналіз був використаний для визначення груп порівнянних країн для оцінки національних аспектів поведінки заощаджень та споживання. Спостерігалося одночасне входження до 2- та 3-кластерів, але перелік країн у цих кластерах різнився за роками. Виражена однорідність кластерів свідчить про відсутність суттєвих національних відмінностей у заощаджувальній та споживчій поведінці економічних агентів за обраними факторами порівняння. Це дозволяє використовувати однакові інструменти регулювання та стабілізації економіки в країнах, які є найближчими сусідами в кластері. Дослідження підкреслило важливість включення національних культурних елементів в аналіз фінансової поведінки та формулювання макроекономічної політики. Усвідомлення цих культурних відмінностей дозволяє політикам більш ефективно адаптувати свої стратегії для посилення економічного зростання та стабільності

Ключові слова: ощадна поведінка; культурні фінанси; економічне зростання; макроекономічна політика; кластеризація країн

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Increasing the financial potential of investment activity of business entities

Abstract. The study aimed to address the tools and strategies for optimising the use of financial resources of business entities to ensure their investment capacity. The study also addressed the key aspects of the financial potential of enterprises and its role in ensuring investment attractiveness in conditions of economic instability, in times of war. The structure of financial potential, which includes domestic and borrowed financial resources, the ability of an enterprise to fulfil financial obligations and adapt to changes in the market, as well as the relationship between financial potential and investment activity, was investigated. The analysis revealed that the financial potential of an enterprise determines its ability to effectively accumulate, distribute and use financial resources to achieve stability and ensure competitiveness in the market. The analysis of sources of financing for investment projects in Ukraine, including the use of both internal and external financial instruments, such as bank loans, bonds, venture capital, and international financial assistance, was highlighted. The study determined that the limited internal resources and high cost of borrowed capital leave small and medium-sized enterprises with limited financial capabilities in their investment initiatives. The conclusions indicate that in the context of crises and war, Ukrainian enterprises are demonstrating significant adaptability by introducing new approaches to financial planning, through digital technologies to optimise financial flows. In addition, corporate social responsibility is an important element that can significantly increase investment attractiveness. To strengthen the financial potential of enterprises and attract investment, it is necessary to intensify cooperation with state and international financing programmes that will contribute to the development of innovative projects and infrastructure restoration in the face of economic instability

Keywords: strategic planning; economic sustainability; risk management; digital technologies; social responsibility

INTRODUCTION

The current economic environment is characterised by extraordinary dynamism and diversity, which creates a new reality for business entities. While the globalisation of markets creates additional opportunities for business expansion, it also intensifies competition, forcing businesses to seek innovative approaches to maintain their competitive edge. Revolutionary technological changes, such as the development of artificial intelligence, digital platforms and automation, are driving the transformation of traditional business models, requiring businesses not only to adapt but also to actively invest in new technologies. Competition at the global and local levels is constantly intensifying, challenging businesses to maintain their market share. For many companies, investment activity is becoming a key factor in this process, as it allows them to carry out large-scale transformations, modernise production processes, develop new products and enter new markets. However, the implementation of even the most promising investment ideas faces several financial constraints, such as insufficient internal resources, difficulties in raising external funds due

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to high lending rates, and volatile global financial markets. These factors significantly limit the opportunities for strategic development and innovation.

The financial potential of business entities is a crucial element in ensuring effective investment activity. It encompasses the comprehensive ability of an enterprise to accumulate financial resources, manage them efficiently and ensure the sustainability of cash flows. However, current realities show that many companies face several challenges. For instance, low solvency limits their ability to attract external capital, high debt obligations reduce flexibility in financial management, and a lack of investment attractiveness complicates the process of finding investors. These difficulties threaten the long-term sustainability of the business and its ability to innovate.

The issue of increasing financial potential is complex and multidimensional. It includes improving financial management and developing new financing strategies and mechanisms to minimise financial risks. Adaptation of enterprises to changes in the external environment, such as inflation, currency fluctuations, toughening environmental standards and changes in tax legislation, is substantial in this process. In the context of growing uncertainty in global markets, a systematic approach to enhancing financial potential is becoming a necessity for ensuring the sustainable development of enterprises. Thus, the development of effective mechanisms and strategies aimed at improving the financial capacity of business entities is an urgent task for both theorists and practitioners.

Studies on the financial potential of investment activity have highlighted several important aspects that have become the basis for further research. N. Raimo *et al.* (2021) studied mechanisms for improving the financial sustainability of enterprises, which allowed them to substantiate approaches to optimising the capital structure in conditions of limited access to finance. The stated study addressed the importance of balancing equity and debt. Y. He *et al.* (2019) analysed the impact of internal reserves of enterprises on their investment capacity. As a result, recommendations were developed for the effective use of depreciation and retained earnings to finance investments. At the same time, L. Sidelnykova *et al.* (2022) focused on studying the impact of tax regulation on the financial potential of business entities. The work emphasised the importance of tax benefits in stimulating investment activity. A different approach was demonstrated by R. Koepke (2019), who studied the issue of attracting external financing through capital markets. The conclusions highlighted the feasibility of using bonds as an effective tool for diversifying funding sources. The study by N. Dobrianska *et al.* (2021) assessed the risks associated with the implementation of investment projects. The author proposed a methodology for assessing the riskiness of projects, considering the instability of the external environment, which made it possible to improve the accuracy of forecasting. H. Cui *et al.* (2020) studied the impact of international investment on the financial stability of enterprises. The results showed a significant potential for the integration of enterprises into global financial markets. A.A. Olayinka (2022) addressed strategic financial planning, focusing on the importance of long-term cash flow forecasting. The recommendations of the study contributed to the improvement of the financial management of enterprises.

K. Chang *et al.* (2019) analysed the impact of banks' credit policies on the investment opportunities of business entities. The study proved that the availability of bank lending significantly affects the dynamics of investment activity. S. Bonini & V. Capizzi (2019) studied alternative sources of financing, in particular venture capital, and substantiated the feasibility of using them to finance innovative projects. S. Kurniati (2019) analysed the impact of corporate governance on the investment attractiveness of enterprises. The results highlighted the role of transparency in management decisions in increasing investor confidence. Thus, the researchers' findings form a comprehensive understanding of the factors that affect the financial potential of investment activity. However, despite the significant amount of research, several important aspects remain insufficiently studied. There is a lack of comprehensive approaches to assessing the financial potential of investment activity, taking into account the changing economic environment, such as macroeconomic instability and the impact of digital transformation. There is a lack of research on the integration of innovative financial instruments (e.g., crowdfunding or blockchain technologies) into the process of ensuring the investment capacity of enterprises. In addition, insufficient attention has been paid to analysing the relationship between corporate social responsibility and the investment attractiveness of business entities.

The study aimed to identify ways to increase financial potential, accounting for the current challenges of the economic environment. The objectives of the study were to analyse the effectiveness of innovative financial instruments in ensuring investment capacity and to determine the impact of macroeconomic and social factors on the investment attractiveness of business entities.

MATERIALS AND METHODS

One of the main sources of data for the study of the financial potential of enterprises was the official statistical indicators provided by the State Statistics Service of Ukraine (2023) for the period from 2014 to 2023. The study is limited to data only for 2023 due to the lack of officially published financial statements for 2024 at the time of the analysis. The data cover a wide range of economic and financial indicators, which can be used to obtain an objective and detailed picture of the state of enterprises at the macro level. To analyse the financial potential of enterprises, several key financial indicators were selected, which are the main indicators of their economic condition and ability to further develop and attract investments. These indicators include current assets, non-current assets, non-current assets held for sale and disposal groups, equity, long-term and current liabilities, and liabilities related to non-current assets held for sale and disposal groups.

The main legislative acts of Ukraine regulating the investment and financial sectors were reviewed: Law of Ukraine No. 1560-XII (1991), Law of Ukraine No. 959-XII (1991), Tax Code of Ukraine (2010) and Budget Code of Ukraine (2010). Particular attention is devoted to the analysis of regulatory and institutional barriers that may hinder investment activity. Information on investments in fixed and intangible assets was also analysed (State Statistics Service of Ukraine, 2023). Fixed assets, such as buildings, equipment, and vehicles, are tangible assets that provide direct production and services. Intangible assets, which include patents, trademarks, software, licences and other intellectual resources, are an indicator of a company's innovation and ability to adapt to changes in the market.

The study analysed the financial performance of two leading Ukrainian companies for 2019-2023: Naftogaz: Financial Reporting (2023) and MHP: Financial Reports (2023). These companies were selected for analysis as they are key players in their respective industries and demonstrate different impacts of external economic and geopolitical factors on their financial stability. The data of these companies can be used to assess their financial dynamics, adaptability to crisis conditions and strategic management approaches. Key indicators, such as revenue, profit (loss), assets and capital, are analysed, which helped to identify the strengths and weaknesses of their financial sustainability.

To determine the relationship between the financial potential and investment activity of enterprises, a correlation and regression analysis was conducted. It was used to assess the impact of various factors, such as owned and borrowed resources, on the level of investment investments of enterprises. Particular attention was devoted to the impact of external factors, political and economic instability, on the ability of enterprises to attract financial resources for the implementation of investment projects. Risks and their impact on the financial stability of enterprises were assessed using financial analysis methods, which allowed to identification of weaknesses in the financial position of companies in the crisis. To study the efficiency of using financial instruments, the most popular methods of raising capital, such as bank loans, bonds, venture capital financing and the use of grants and international financial assistance, were analysed. The study also included an analysis of innovative financial instruments, such as crowdfunding and asset tokenisation, which are becoming increasingly relevant for companies with limited access to traditional sources of funding.

RESULTS

The financial potential of an enterprise is a complex characteristic that reflects the ability of an organisation to attract, accumulate, and effectively use financial resources to achieve its strategic goals and ensure sustainable development. It is the basis for investment activities, effective financial planning and implementation of innovative projects. The level of financial potential determines not only the financial sustainability of an enterprise but also its competitiveness in the market. The main essence of financial potential is the ability of an enterprise to generate and efficiently allocate financial resources to ensure stable operation, expand its activities and achieve strategic goals. This includes the ability to raise, manage, and provide a return on investment (Bartolacci *et al*., 2020). However, financial capacity is not a stable indicator – it changes depending on external and internal factors: the economic situation in the market, managerial competence, and access to financial instruments and resources.

The financial potential of an enterprise includes several key elements. Own financial resources are the funds generated by the company through its activities, including profit, depreciation and amortisation, and retained earnings. Own financial resources are the main source for financing internal investment projects. Their advantage is the absence of additional liabilities or capital maintenance costs, but the limited nature of this source can be an obstacle to large-scale investments. Borrowed capital is financial resources obtained by an enterprise through external financing, including loans, bonds, shares and other forms of capital raising. This allows enterprises to have access to larger amounts of money for development but is accompanied by the need to pay interest or dividends, which increases the financial burden.

One of the main aspects of financial potential is the ability of an enterprise to meet its financial obligations on time and ensure the continuity of operations. A high level of financial stability helps to reduce risks and provides the company with confidence in the possibility of obtaining new loans or investors. Effective financial management is an important component of a company's financial potential. This includes planning, cost control, asset and liability management, and forecasting financial results (Al Breiki & Nobanee, 2019). Skilled financial management helps to optimise costs, minimise financial risks and ensure efficient use of resources. An enterprise's ability to use a variety of financial instruments, such as loans, investments, bonds, and derivatives, and to raise capital on international markets, is an important component of its financial potential. This allows the company to attract the necessary resources to implement large investment projects and modernise production. The ability of an enterprise to adapt to changes in the market, change its capital raising strategy, and use the latest financial technologies and instruments to increase its investment attractiveness is also important (Bustinza *et al*., 2016). For example, the ability to raise venture capital or use digital technologies to optimise financial flows is an important component of modern financial capabilities.

Investment activity is a key area of strategic development of business entities. It includes the processes of planning, organising, attracting and implementing investments to achieve economic growth, introduce innovations and ensure competitive advantages. The main characteristics of investment activity reflect its essence as a means of converting financial resources into long-term assets that generate income or contribute to the efficiency of business processes. Investment activities are long-term in nature. The implementation of investment projects requires significant financial resources and time, therefore a strategic method for achieving future goals (Jin, 2024). At the same time, the effects of investments usually do not appear immediately, which requires careful analysis and planning. It is also characterised by a high level of risks, which depend on both external factors (macroeconomic instability, inflation, currency fluctuations) and internal factors (incorrect estimates of project profitability, insufficient competence of managers). Risk management is an integral part of the investment process.

In the modern environment, investments are often aimed at introducing the latest technologies, automating processes, developing new products or expanding existing markets. Innovations are becoming a crucial factor in improving the efficiency of an enterprise and ensuring its long-term success. Another important feature of investment activity is its complex nature, covering various stages, from analysing an idea to monitoring project implementation. Successful investment activity requires the involvement of qualified specialists, competent financial management and flexible response to environmental changes (Bellos & Golitsis, 2023).

Financial potential and investment capacity are interrelated categories that together form the basis for ensuring the effective investment activity of enterprises. Financial capacity reflects the ability of an enterprise to accumulate, allocate and use financial resources, and investment capacity is the result of this capacity, demonstrating the ability of an enterprise to make investments in the long term. The main link between these concepts is that without adequate financial capacity, an enterprise's investment capacity will be limited. For instance, enterprises with insufficient solvency or low financial strength face difficulties in attracting external resources, such as bank loans or investments from external partners. At the same time, high financial stability and effective financial management create the conditions for raising capital on favourable terms. Financial potential also determines the ability of an enterprise to manage risks, which is critical for investment activities. Enterprises with strong financial potential can diversify their investment portfolios, which reduces dependence on a single source of income or project. The investment capacity, in turn, influences the further growth of financial potential. Successful investments contribute to the growth of revenues, which allows the enterprise to accumulate more resources for future projects (Macmillan *et al.*, 1997). Thus, financial potential and investment capacity are in constant dynamic interaction, forming a kind of growth cycle. The financial potential of business entities in Ukraine reflects their ability to effectively use available resources to achieve strategic goals. However, current economic realities pose numerous challenges that limit the ability of companies to implement investment projects. This is due to both the specifics of funding sources and the need to adapt to the volatile financial environment. Table 1 shows the balance sheet indicators of enterprises.

Table 1. Balance sheet indicators of Ukrainian enterprises in 2014-2023, billion UAH

Value	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Non-current assets	2,717.6	3,960.1	4,212.8	4,303.3	4,584.3	4,844.5	5,312.3	5,650.7	5,622.2	6,241.3
Current assets	3,272	4,108.6	5,772.8	5,650.8	6,285.1	6,640.3	7,360.6	8,411.9	9,024.3	10,193.4
Non-current assets held for sale and disposal groups	4.7	5	6.2	7.7	8.7	10.2	9.6	7.8	8.1	7.9
Equity capital	1,480.7	2,288.7	2,445.8	2,458.5	2,708.6	3,092.8	3,339.8	4,113.3	3,976	4,612.4
Long-term liabilities and provisions	1,359.9	1,668.2	1,696.9	1,731	1,757.6	1,633.7	1,914.1	1,841.6	1,960.2	2,199.3
Current liabilities and provisions	3,151.3	4,114.9	5,846.7	5,769.5	6,408.6	6,764.6	7,425	8,111.3	8,714	9,625.8
Liabilities related to non-current assets held for sale and disposal groups	2.4	2	2.4	2.7	3.3	3.9	3.6	4.2	4.5	5.2
Balance	5,994.3	8,073.8	9,991.8	9,961.8	10,878.1	11,495	12,682.5	14,070.5	14,654.7	16,442.6

Source: compiled by the author based on State Statistics Service of Ukraine (2023)

Non-current assets demonstrated steady growth during the period under review. This indicates that companies are gradually investing in long-term assets such as property, plant and equipment. However, the growth since 2022 may be driven by both inflationary processes and the revaluation of assets due to economic changes caused by the war. Current assets grew more significantly than non-current assets. This may indicate a change in business models in favour of greater liquidity and the need to hold more working capital to support operations in an uncertain environment. An increase in equity is a positive signal. It may indicate the ability of companies to generate profits even in a crisis, as well as external capital injections in the form of government support or private investment. Long-term liabilities are growing at a moderate pace. This indicates a restrained attraction of long-term financing, due to limited access to capital on foreign markets and increased risks associated with the war. Current liabilities are growing more dynamically. This may indicate an increased reliance on short-term financing, which is risky given the volatile economic environment. Overall, the aggregate balance sheet of enterprises almost tripled over the period. This reflects the overall expansion of the economy, although much of this growth may be due to inflation, hryvnia devaluation, and revaluation of assets and liabilities.

Ukrainian enterprises traditionally use both internal and external sources of financing for investment projects. The main internal sources are company profits and depreciation charges. Their advantage is that there is no need to attract external creditors, which allows companies to avoid additional debt burdens. However, limited internal resources significantly limit the scale of investment, especially for small and medium-sized enterprises. The most popular external sources of financing in Ukraine are bank loans, bonds, venture capital, and international financial assistance. Bank loans remain the most common source of financing, although their cost is often high due to high interest rates and collateral requirements. Bond issuance provides access to long-term capital, but this instrument is complex and less accessible to small enterprises. Another promising source is grants and financial assistance from international organisations such as the European Bank for Reconstruction and Development (EBRD) or the World Bank. These resources have favourable terms but require considerable administrative preparation and strict eligibility criteria. Table 2 shows the capital investments of enterprises.

Table 2. Capital investments of Ukrainian enterprises in 2014-2023, billion UAH

Value	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Capital investments of enterprises	184	218.8	288.1	366.1	480.3	533.7	409.1	545.2	344.3	520.2
including										
capital investments in tangible assets	176.7	200.6	276.5	349.9	444.2	510.9	384.5	514.5	323.9	489.5
of them										
into land	0.9	1.3	1.7	1.9	1.6	2.3	2.3	2.7	1	1.5
into existing buildings and structures	2.9	5.4	8.5	6.5	10.8	10.7	5.3	6.2	2.4	4.3
into the construction and reconstruction of buildings	86.7	86.5	106.1	121.1	166.6	205.7	152	206.3	105.3	181.7
in machinery and equipment	79.2	98.9	148.3	205	246.7	249.5	201.2	267.5	180.5	271.3
capital investments in intangible assets	7.2	18.2	11.7	16.2	36.1	22.8	24.6	30.7	20.4	30.6
of them										
in concessions, patents, licences, trademarks and similar rights	2.9	12.3	4.1	5.6	23.7	7.2	3.9	5.9	3.3	4.6
into the purchase of software	2.3	3.8	4.8	6.4	6.9	7.5	8.2	11.2	9.8	12.6

Source: compiled by the author based on State Statistics Service of Ukraine (2023)

The dynamics of capital investments of Ukrainian enterprises in the analysed period demonstrate unevenness, which is due to both economic cycles and significant external shocks, including military operations in 2022-2023. Overall, capital investments by Ukrainian enterprises demonstrate a high degree of adaptability to the crisis. Tangible assets, in particular machinery and equipment, remain the focus, indicating a desire to maintain and modernise production capacity. Growth in investment in intangible assets, albeit modest, indicates a gradual digital transformation of businesses. The main challenges remain the effects of the war, economic instability, and limited financial resources.

Ukrainian legislation governing investment, finance, taxation, banking and foreign trade plays a key role in shaping the business environment. One of the main regulators is the Tax Code of Ukraine (2010), which defines tax rates, benefits and obligations for businesses. Taxation changes for 2022-2024 aimed at supporting businesses affected by the war include temporary tax holidays for certain sectors and simplified declaration procedures, which should make it easier for entrepreneurs to operate. An important document in this system is the Budget Code of Ukraine (2010), which defines the basis for the formation, execution and control of state and local budgets. This code regulates the procedure for allocating budget funds for investment programmes, including under martial law.

The Law of Ukraine No. 1560-XII (1991) is central in the field of investment, defining the rights of investors and guaranteeing of protection of their funds. This law provides a framework for attracting foreign direct investment, but additional risks related to the protection of property rights remain significant under martial law. Government initiatives, such as grant and subsidy programmes introduced to support businesses in times of crisis, are an important complement to the legislation. Foreign economic activity is regulated by the Law of Ukraine No. 959-XII (1991), which defines the rules of export, import and currency control. Ukraine seeks to integrate into the European and global markets, as evidenced by the simplification of customs procedures and the conclusion of international agreements. However, problems with infrastructure and customs barriers sometimes hinder the growth of foreign trade.

The financial sustainability of businesses in Ukraine during the war is being affected by both internal and external factors to an unprecedented extent. The war has created a challenging environment that requires businesses not only to adapt to new economic realities but also to implement innovative approaches to financial management. One of the main challenges is macroeconomic instability, which has been exacerbated by the war. Inflationary processes have accelerated significantly, and the devaluation of the national currency has increased pressure on businesses that depend on imports of raw materials or equipment. Rising energy costs, in particular, due to the destruction of the energy infrastructure, not only increase production costs but also limit the availability of energy for many businesses, which directly affects their profitability. The second challenge is the high tax burden amid the difficult economic situation. Although the government has introduced some business incentives, the tax system remains non-transparent and complex, especially for small and medium-sized enterprises. The administrative costs of fulfilling tax obligations have increased significantly, making it difficult to plan financial flows and reducing investment activity. A third major aspect is the limited access to financial markets, which has been exacerbated by the war. Low corporate credit ratings, increased risk of default, and general economic instability have resulted in a reduction in lending. The banking system is operating with heightened caution, which is reflected in tight lending conditions and high interest rates. This is particularly acute in the sectors that have suffered the greatest losses because of the hostilities. In addition, the destruction of infrastructure and logistics chains makes financial resilience more difficult. Damaged transport routes, blocked ports, and the relocation of businesses to safer regions increase costs and reduce profitability. At the same time, the loss of access to traditional markets exacerbates the problem of low liquidity. Another important challenge is the shortage of skilled workers. Due to population migration, the mobilisation of employees into the ranks of the Armed Forces, and physical insecurity, many businesses have lost key specialists, which creates additional costs for the training and education of new staff. Equally significant is the increased level of financial risks due to the unpredictability of the military situation. This reduces investor confidence, limits the volume of foreign investment and complicates the formation of long-term development strategies. Many businesses face the need to ensure financial sustainability in the face of growing military risks and the need to respond quickly to changes in the external environment.

At the same time, businesses are demonstrating a desire to adapt. They are developing new approaches to financial planning, implementing cost-cutting mechanisms, and actively seeking international assistance in the form of grants or loans with favourable terms. For instance, Naftogaz of Ukraine, the state-owned energy company, is a key player in the gas production, transportation and supply sector. The company's financial potential is dependent on access to international financial markets, tariff policy, and the ability to restructure its debt obligations. Key limitations include a high debt burden and dependence on macroeconomic and political conditions. Amid the war, the company is implementing large-scale cost optimisation and energy efficiency initiatives, including the digitalisation of energy management processes. The company actively attracts international financial assistance, including grants and loans. The use of analytical tools to manage financial flows allows Naftogaz to meet its obligations even in difficult market conditions. Table 3 shows the company's key financial indicators.

Table 3. Key financial indicators of Naftogaz of Ukraine for 2019-2023, billion UAH

Indicators	2019	2020	2021	2022	2023
Income	2,288	2,896	15,426	58,072	55,692
Profit (Loss)	-19	-115	-4,774	-23,423	-1,987
Assets	633	1,414	5,699	21,109	22,546
Capital	154	0.8	-3,400	-26,823	-28,810

Source: compiled by the author based on Naftogaz: Financial Reporting (2023)

Table 3 shows the significant financial challenges of Naftogaz of Ukraine, including a sharp increase in revenue from 2021 onwards amid rising energy costs, which, however, did not compensate for the significant losses that peaked in 2022. Despite asset growth in 2023, negative equity indicates a critical debt situation. To improve its financial position, the company needs to optimise costs, implement digital financial planning tools, actively attract international assistance and invest in innovative areas such as renewable energy. These steps will help reduce losses, stabilise liquidity and create the preconditions for further development. "Myronivsky Hliboproduct" (MHP) is a leading chicken producer in Ukraine, which also actively exports its products abroad. The company's financial potential is based on efficient vertical integration, the ability to attract international capital and sustainable export potential. The challenge is the rising logistics costs due to the war and limited access to ports. Table 4 shows the company's key financial indicators. MHP's financial performance demonstrates steady revenue growth thanks to an effective export policy and expanding markets. However, the company has experienced fluctuations in profitability, with significant losses in 2020 and 2022 reflecting the impact of crises such as the COVID-19 pandemic and the war. Assets remain stable and capital maintains positive dynamics. To strengthen the company's financial potential, it is advisable to focus on reducing operating costs, diversifying revenue sources, introducing modern management technologies and optimising production. This will help improve the company's competitiveness and financial stability.

Table 4. Key financial indicators of MHP for 2019-2023, million USD

Indicators	2019	2020	2021	2022	2023
Income	2,056	1,911	2,372	2,642	3,021
Profit (Loss)	215	-133	393	-231	142
Assets	2,509	2,108	4,014	3,809	3,886
Capital	1,596	1,254	1,794	1,446	1,567

Source: compiled by the author based on MHP: Financial Reports (2023)

Attracting international financial assistance is a significant method for adaptation. Ukrainian businesses are actively using grant programmes, loans with favourable terms and support from international financial institutions. Emphasis is placed on cooperation with international funds, such as the European Bank for Reconstruction and Development (EBRD), which provides loans for infrastructure rehabilitation and support for small and medium-sized businesses; the World Bank, which finances projects to modernise production and socio-economic development; and USAID, which supports innovative projects aimed at enterprise resilience and economic recovery in the post-crisis environment. In this context, the digitalisation of management processes is of particular importance. The use of modern IT solutions allows businesses to improve control over financial flows, analyse data efficiently, and make decisions faster. Many companies are expanding their presence in the online space by opening new sales channels through e-commerce, which is especially important in the context of physical constraints and business relocation. Online sales provide access to customers even in remote regions and help maintain turnover in an unstable environment.

Despite all the difficulties, Ukraine's investment attractiveness is twofold. On the one hand, the war has created serious threats to investors due to the risks of physical destruction of assets, unpredictable market conditions and significant political and economic challenges. On the other hand, Ukraine remains an interesting investment target due to its significant recovery potential after the end of hostilities. The main positive factors for investors include a large domestic market, which could become one of the drivers of economic growth after the war; a developed agricultural sector, which remains strategically important even in a time of war; opportunities for investing in infrastructure rehabilitation, where the sector will receive significant funding from both the state and international partners, opening up prospects for attracting private capital; potential in IT and digital technologies, which are showing steady growth and are globally competitive. At the same time, investors face several risks, including military operations, instability of the legal environment, and lack of investment protection guarantees. To improve its investment climate, Ukraine needs to address the issue of guarantees for foreign and domestic investors, strengthen legal protection for businesses, and develop transparent mechanisms for raising capital.

Increasing the financial potential of enterprises' investment activities is an important factor in ensuring their sustainable development, especially in the context of economic instability. This involves the use of innovative financial instruments to raise capital, optimisation of the capital structure to ensure financial stability, and effective financial risk management. All these areas are relevant for increasing the investment attractiveness of enterprises, as they help to ensure stable operation in a changing market environment.

Among the innovative financial instruments that can help businesses raise capital are crowdfunding and crowd-investing. These platforms allow businesses to raise funds from many investors, which is important in times of economic instability or war, when traditional bank financing may be limited. Other important instruments are green and social bonds, which can become a source of funding for businesses operating in environmental and socially oriented industries. The use of blockchain technologies for asset tokenisation is another promising strategy to attract investment, providing greater transparency and access to finance. In addition, investment through venture capital or business angel support can be an important source of funding for start-ups and innovative projects (Law of Ukraine No. 1560-XII, 1991).

Optimisation of the capital structure is an important step in ensuring the financial sustainability of enterprises. To achieve this, it is necessary to properly balance equity and debt. The predominance of equity capital reduces financial risks, as the company is not dependent on external creditors. At the same time, the prudent use of borrowed funds allows enterprises to finance large-scale projects without significant expenditures of their resources. Businesses should focus on long-term loans or loans with fixed rates to reduce the risks associated with inflation and currency fluctuations. Leasing is an effective tool for reducing the financial burden on enterprises, allowing them to obtain the necessary assets without large one-off expenditures (Law of Ukraine No. 959-XII, 1991). Another important strategy is to minimise financial costs, which includes choosing the most favourable lending terms and improving the company's credit rating to reduce the cost of borrowed funds.

Financial risk management mechanisms are an integral part of enhancing a company's financial potential. Diversification of funding sources helps to reduce dependence on a single instrument or market, which is critical in the context of global economic changes. At the same time, the use of hedging to protect against currency risks can reduce the impact of currency fluctuations, which is important for companies that export. Developing anti-crisis plans and strategies to respond to various risks allows businesses to quickly adapt to changes in the external environment. In times of war, companies should be prepared for the loss of assets, relocation of production facilities and changes in demand. The introduction of modern risk management systems, such as ERP systems (Enterprise Risk Management), and the use of artificial intelligence technologies to predict financial performance allows businesses to respond to potential threats promptly and remain competitive (Godbole, 2023).

To strengthen the financial potential of enterprises and increase their investment attractiveness, it is necessary to introduce modern approaches and practices in financial management that will contribute to stability and development in a dynamic economic environment. One such recommendation is the active use of digital technologies in financial management. Digitalisation of financial processes can significantly improve the efficiency of financial flow management, reduce the cost of administrative and operational functions, and mitigate the risks of human factors. Automation of accounting, financial planning, analysis and reporting with the help of specialised software solutions helps to reduce time spent on routine tasks and focus on strategic financial management. In addition, the use of artificial intelligence and machine learning technologies to forecast financial performance and identify risks helps businesses to be more flexible and respond quickly to changes in the market. At the same time, the expansion of online platforms for financial transactions allows businesses to reduce customer service costs and find new sales channels.

Another important recommendation is to increase the importance of corporate social responsibility (CSR). Investors are increasingly paying attention not only to financial performance but also to the extent to which companies comply with social, environmental and ethical standards. This is especially true for Ukrainian companies seeking to attract investment in the post-crisis recovery. The implementation of CSR initiatives helps to create a positive image of the company and strengthen its reputation among consumers, partners and government agencies. Environmental responsibility, support for social projects, and transparency in business processes can be important factors that increase the investment attractiveness of an enterprise (Nofsinger *et al*., 2019). Importantly, corporate CSR strategy is interconnected with its financial goals, as investors value long-term prospects and company stability.

An important step in strengthening financial capacity is active engagement with government and international funding programmes. Ukrainian businesses can take advantage of various grants, subsidies and concessional loans offered by government agencies, international financial institutions and investment funds. To do so, it is necessary to actively monitor changes in legislative and financial policies and be prepared to submit applications and relevant projects promptly. Attracting international investment can help develop new technologies, improve infrastructure and increase production capacity. In addition, cooperation with international programmes can significantly increase the level of trust in the enterprise in global markets, which will be an additional incentive to attract investors. Thus, to strengthen the financial potential of enterprises, it is important not only to manage resources efficiently, but also to actively implement innovative technologies, pay attention to social responsibility, and seek funding opportunities through government and international programmes. This will help companies not only to operate stably but also to develop actively even in the face of economic instability.

DISCUSSION

The results of the study emphasise the importance of financial potential as a key factor in the development of enterprises and their investment activity. This complex characteristic reflects the ability of an organisation to mobilise, allocate and effectively use financial resources to achieve strategic goals and ensure operational stability and long-term competitiveness. In the modern environment, Ukrainian enterprises demonstrate a complex interaction between financial potential and investment opportunities, which deserves a detailed analysis.

The financial potential of an enterprise is a dynamic indicator that changes under the influence of internal and external factors, such as the economic situation, management competence and access to financial resources. The key elements of financial potential are own financial resources and borrowed capital. Own resources, which are generated from profits, depreciation and retained earnings, ensure stability and reduce dependence on external liabilities. However, their limitations, especially for small and medium-sized businesses, point to the need to use external sources of financing, such as loans, bonds, or investors. M.E. Neves *et al*. (2020) focused on the structural elements of the financial potential of enterprises, particularly the prevalence of short-term financial instruments. The study emphasised that such elements as accounts receivable, short-term loans and current financial liabilities account for up to 60-70% of the total financial potential of enterprises. The current study partially confirms these findings by pointing to the high level of short-term liabilities of enterprises. At the same time, it emphasises that to ensure sustainable development, it is necessary to reorient to long-term financial resources, which is not mentioned in the authors' conclusions. The analysis shows that Ukrainian enterprises are increasingly relying on current assets to provide liquidity and adapt to volatile economic conditions. While this contributes to operational resilience, there is a risk of limiting long-term investments in non-current assets. A positive signal is the growth of equity, which indicates the ability of companies to generate profits even in a crisis. At the same time, the dynamic increase in short-term liabilities indicates a risky dependence on short-term financing.

Financial potential and investment activity are closely interrelated, forming the basis for the sustainable development of enterprises. Businesses with a stable financial position are more likely to attract external investment, reduce the cost of financing and manage risks more effectively. At the same time, successful investments help build financial capacity, providing new sources of income and opportunities for further projects. D. Cumming *et al.* (2019) analysed the areas of investment of financial resources. Based on their research, modern enterprises are increasingly investing in intangible assets, including digital technologies, automation, and brand development. The current study reveals a different trend: enterprises are focusing on investments in tangible assets, such as modernising production equipment or expanding production capacity. This difference can be explained by the sectoral differences in the sample: the author studied the IT and service sectors, while the current study focused on enterprises in the real economy.

P. Demirel & G.O. Danisman (2019) analysed the role of external sources of finance in building the financial capacity of enterprises. The author argued that most enterprises in times of economic instability prefer bank loans because of their availability and predictable conditions. The current study partially confirms these results: it notes the importance of external resources but also emphasises the growing role of internal financial sources, such as profit reinvestment and depreciation. This indicates a shift in financing strategy towards greater financial autonomy of enterprises, which may be the result of a cautious approach to risk management.

The war in Ukraine significantly affected the financial stability of businesses. The main challenges were macroeconomic instability, inflation, the energy crisis, high tax pressure and limited access to financial markets. The destruction of infrastructure, disruption of supply chains and loss of skilled personnel further complicated the situation. Nevertheless, businesses are demonstrating a high level of adaptability. They are actively implementing innovative approaches to financial management, such as using digital technologies to optimise operations and attract international financial assistance. Online sales and e-commerce have become important tools for retaining a customer base and expanding markets. H. Kim *et al.* (2020) analysed the impact of the economic crisis on the financial stability of enterprises. Their data show a sharp decline in the liquidity of enterprises, reduced access to external financial resources, and a drop-in investment activity. S.K. Naradda Gamage *et al.* (2020) also noted that during the crisis period, most enterprises seek to minimise costs by avoiding new investments. The current study finds a different result: a gradual increase in investment activity even in difficult economic conditions. This can be explained by the adaptation of enterprises to new challenges, as well as their desire to use the crisis to upgrade production processes.

Ukraine has an ambiguous investment appeal. On the one hand, military operations, legal instability and high risks deter investors. On the other hand, the restoration of infrastructure, the agricultural sector and the development of the IT industry create unique investment opportunities. To implement them, it is necessary to focus on strengthening the financial potential of enterprises and attracting innovative financial instruments. C. Challoumis (2024) studied the role of foreign economic integration in shaping the financial potential of enterprises. The study addressed the fact that enterprises that actively cooperate with international partners have access to better financing conditions, including international credit lines and grants. I. Alami *et al.* (2023) also noted that firms with high exports are more resilient to economic crises due to the diversification of revenue sources. In the current study, similar trends are also observed: enterprises focused on foreign markets demonstrate a higher level of financial potential and greater investment activity. At the same time, the authors pay insufficient attention to the problems that may arise from dependence on foreign markets, such as exchange rate fluctuations or trade restrictions.

X. Chang *et al.* (2019) analyses the impact of external macroeconomic conditions on the financial potential of enterprises. The study highlighted the importance of factors such as government tax policy, regulatory restrictions, and access to foreign markets. The author concluded that high tax pressure and unequal competitive conditions are key obstacles to the formation of financial potential. These conclusions are consistent with the results of the current study, which also emphasises the significant role of state support and the creation of favourable conditions for enterprises. In particular, the study determined that a reduction in the tax burden could stimulate investment activity, especially in high-value-added sectors.

Key strategies include diversifying funding sources, optimising capital structure and strengthening risk management. The use of tools such as crowdfunding, green bonds and asset tokenisation can open new opportunities for raising capital. At the same time, corporate social responsibility is becoming an increasingly important factor that increases investor confidence and stimulates development. S. Feng *et al.* (2022) studied the use of innovative financial instruments, such as crowdfunding, green bonds, and venture capital, in the financial strategies of enterprises. The paper notes that these instruments are particularly popular among small and medium-sized enterprises seeking to avoid the traditional constraints associated with bank loans. In contrast, the results of the current study show that innovative instruments play a minor role in the financing of Ukrainian enterprises. Most of the surveyed companies prefer traditional sources of financing, such as loans or own resources. This indicates a low level of awareness or distrust of new financing mechanisms. Overall, the interaction of financial potential and investment activity forms the basis for the sustainable development of Ukrainian enterprises. Despite the challenges of wartime, businesses demonstrate significant potential for adaptation and growth. The use of innovative solutions, digital technologies and international cooperation creates the preconditions for the recovery of the Ukrainian economy and its global competitiveness.

CONCLUSIONS

The study carried out a comprehensive analysis of the financial potential of enterprises as a key factor in their sustainability and competitiveness. The study determined that financial potential is a multidimensional category that characterises the ability of an enterprise to attract, accumulate and effectively use financial resources to achieve strategic goals, including expanding operations, implementing investment projects and adapting to changing market conditions. The study emphasises that financial potential changes are under the influence of internal and external factors, such as the economic situation, access to financial instruments, and the competence of management personnel.

Particular attention was devoted to the Ukrainian context, where economic instability caused by the war creates serious obstacles to business development. An analysis of the financial statements of Ukrainian companies for 2014-2023 showed that, despite significant external challenges, companies demonstrate adaptability and a desire to recover. An increase in long-term and current assets was noted, indicating investment in fixed assets and a growing need for liquidity to support operations. The growth of companies' equity capital is a positive signal, indicating the ability to generate profits even in a crisis. However, the dependence on short-term liabilities and limited access to long-term capital pose additional risks to financial stability.

The investment activity of Ukrainian enterprises remains a strategic direction of development, although it is characterised by significant challenges. The study determined that capital investments are directed at modernising equipment and maintaining production capacity, while investments in intangible assets indicate a gradual digital transformation. Among the main barriers to investment activity are the high cost of financing, lack of internal resources, and difficulties in attracting external capital due to high risks associated with military operations and macroeconomic instability. The study also highlighted the link between the financial potential and the investment capacity of enterprises. A high level of financial capacity provides access to financial resources on favourable terms, which, in turn, facilitates the implementation of investment projects and the growth of the enterprise. Among the adaptation strategies of enterprises in times of war is the introduction of modern approaches to financial management, such as the digitalisation of financial processes, the use of international financial assistance, and the optimisation of capital structure. Companies are actively using grants, loans with favourable terms and support from international organisations. Digital technologies help to optimise costs, automate processes and expand opportunities to attract customers through online channels.

Overall, the study demonstrated that Ukrainian enterprises, despite significant challenges, remain adaptable and strive for sustainable development. The key areas are strengthening financial planning, diversifying funding sources, and introducing innovative financial instruments and risk management strategies. This helps to ensure financial sustainability and lays the groundwork for future growth even in difficult conditions. Further research could focus on developing models for assessing financial potential, accounting for wartime risks, and studying the impact of international financial support on business development in Ukraine.

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CONFLICT OF INTEREST

None.

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Підвищення фінансового потенціалу інвестиційної діяльності суб'єктів господарювання

Анотація. Дане дослідження було направлене на вивчення інструментів та стратегій, спрямованих на оптимізацію використання фінансових ресурсів суб'єктів господарювання для забезпечення їх інвестиційної спроможності. У роботі було розглянуто ключові аспекти фінансового потенціалу підприємств та його роль у забезпеченні інвестиційної привабливості в умовах економічної нестабільності, зокрема в умовах війни. Було досліджено структуру фінансового потенціалу, яка включає власні та залучені фінансові ресурси, здатність підприємства виконувати фінансові зобов'язання та адаптуватися до змін на ринку, а також взаємозв'язок між фінансовим потенціалом та інвестиційною діяльністю. У результаті проведеного аналізу було виявлено, що фінансовий потенціал підприємства визначає його здатність ефективно акумулювати, розподіляти та використовувати фінансові ресурси для досягнення стабільності та забезпечення конкурентоспроможності на ринку. Особливу увагу приділено аналізу джерел фінансування інвестиційних проєктів в Україні, зокрема використанню як внутрішніх, так і зовнішніх фінансових інструментів, таких як банківські кредити, випуск облігацій, венчурний капітал та міжнародна фінансова допомога. Виявлено, що обмеженість внутрішніх ресурсів та висока вартість позикового капіталу залишають підприємства з малими та середніми фінансовими можливостями обмеженими в їхніх інвестиційних ініціативах. У висновках зазначено, що в умовах криз та війни українські підприємства демонструють значну адаптивність, впроваджуючи нові підходи до фінансового планування, зокрема через цифрові технології для оптимізації фінансових потоків. Окрім того, важливим елементом є корпоративна соціальна відповідальність, яка може суттєво підвищити інвестиційну привабливість. Для зміцнення фінансового потенціалу підприємств та залучення інвестицій необхідно активізувати взаємодію з державними та міжнародними програмами фінансування, що сприятиме розвитку інноваційних проєктів і відновленню інфраструктури в умовах економічної нестабільності

Ключові слова: стратегічне планування; економічна стійкість; ризик-менеджмент; цифрові технології; соціальна відповідальність

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