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## The impact of entrepreneurship dimensions on solving unemployment problems among Soran University Graduate Students from 2010 to 2023

**Abstract.** Entrepreneurship is a potent force in addressing unemployment and fostering economic growth. However, there remains a research gap in understanding the specific impact of entrepreneurship on unemployment among Soran University Graduate Students within 2010-2023. Hence, the study aims to provide information to address policies and interventions aimed at promoting entrepreneurship and mitigating unemployment challenges among Graduate Students in the specified period. During the research, a descriptive-analytical approach and a quantitative method with 134 participants. As such, the study established a noteworthy and positive correlation between entrepreneurship and the reduction of unemployment. The analysis reveals key insights into the pivotal role of entrepreneurship education, access to funding, and resource facilitation in effectively addressing unemployment challenges among Soran University Graduate Students. The results highlight the significance of empowering graduates to shape their success, contributing not only to personal growth but also to regional economic development. Such findings of the study also emphasize implementing proactive strategies to promote entrepreneurship. All mentioned is supported by a qualitative literature review of previous publications. As a practical value, the study suggests that by fostering an entrepreneurial mindset and providing necessary support, institutions can play a pivotal role in mitigating unemployment and offering a solution to persistent issues

**Keywords:** entrepreneurship impact; unemployment alleviation; economic development; opportunity recognition; risk taking; resource leveraging

### INTRODUCTION

Economists assert that entrepreneurs, along with creativity and resourcefulness, can convert environmental risks into opportunities, particularly in extreme situations, such

as hyperinflation. In the dynamic landscape, where unemployment persists as a formidable challenge, entrepreneurship emerges as a compelling force for economic growth

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and job creation. The ramifications of unemployment extend beyond mere economic concerns, encompassing social crimes and impeding overall economic expansion, as highlighted by G.G. Rotimi *et al.* (2021). S. Chaurasia (2023) related entrepreneurship to innovation. The research relevance of this socio-economic issue is determined by the experiences of Soran University Graduate Students from 2010 to 2023, who faced increased unemployment rates, prompting many to seek opportunities abroad. Despite the global recognition of entrepreneurship as a potential solution, a substantial proportion of Soran University graduates encounter challenges in establishing personal businesses. Unemployment is defined as the state where a person actively seeking employment remains jobless despite possessing the necessary qualifications, thus presenting a complex challenge. This phenomenon extends to individuals who, despite being physically and cognitively capable, choose not to engage in employment (Gajraj & Saxena, 2019).

R. Kapur (2022) notes that unemployment in developing countries is influenced by several key factors. The lack of competencies and abilities presents a significant challenge, necessitating individuals to prepare thoroughly for diverse job opportunities. Concurrently, the absence of essential skills becomes a central barrier, complicating individuals' navigation of employment contexts. Fostering economic growth is crucial for generating employment opportunities. Initiatives targeting skill development, economic planning, and increased investments play a pivotal role in creating a conducive environment for diverse employment prospects. The increase in population intensifies challenges in securing employment, with a growing population heightening job competition. Poor quality education compounds unemployment issues, limiting graduates' capacity to create their employment opportunities. Low rates of savings and investments further contribute to the unemployment quandary, affecting various sectors and compelling individuals, irrespective of their backgrounds, to prioritize the search for employment opportunities.

Unemployment in the Kurdistan region yields social, political, and economic consequences. Socially, it induces discomfort, anxiety, and societal effects such as increased crime rates and altered marriage dynamics. Politically, it can cause instability and security issues, as evidenced by such examples as the Arab Spring. Economically, the lack of an active workforce diminishes production, disrupts demand-supply balances, and increases the unemployment rate (Mahmood, 2022). B. Kareem (2018) advocates for the integration of entrepreneurial skills into education to empower graduates to become entrepreneurs and address the challenge of underemployment. N. Apergis & J.E. Payne (2016) underline the consistent correlation between entrepreneurship growth and job creation, emphasizing the need for proactive measures to enhance individual lives and national prosperity. In the context of the Kurdistan region, the works of local scholars provide valuable insights.

The study aimed to contribute to the existing body of knowledge by providing a comprehensive analysis of the relationship between entrepreneurship dimensions and unemployment issues among Soran University Graduate Students from 2010 to 2023. The synthesis of current literature reveals a growing awareness of the potential of entrepreneurship in addressing unemployment, yet the specific challenges faced by Soran University graduates remain underexplored.

## LITERATURE REVIEW

J.B. Say (1836) was the first who define the term "entrepreneurship". C. Adam & S. Dercon (2009) contributed by denoting entrepreneurship as a dynamic force that mobilizes resources to address market gaps, emphasizing its proactive role. M.O. Agwu & G.R. Luke (2014) elaborate on entrepreneurship as a complex process involving the identification of opportunities, strategic resource allocation, and the creation of substantial value. M.A. Adawo & J.A. Atan (2013) add depth to the understanding, portraying entrepreneurship as a strategic pursuit involving the identification of market opportunities and the effective mobilization of resources for sustainable gains. Y. Lowrey (2003) described economic system perspectives, characterizing entrepreneurship as a complex interplay of economic goals pursued by entrepreneurs, with significant support from social institutions and government. S. Maina (2013) captures the essence of entrepreneurship as the willingness to seek investment opportunities and successfully launch a business.

O.M. Hassan (2013) defined an entrepreneur as someone leveraging land, labour, and capital to create and sell a product. P.D. Reynolds (2005) defines entrepreneurship as the identification of opportunities and the generation of new economic activity, often manifested through the creation of new organizations. F.C. Okeke & E.C. Edikpa (2014) addressed the risk element, defining an entrepreneur as one willing to take financial risks in initiating and managing a business, particularly those involving novel concepts or methods. H.O. Bula (2012) emphasised multiple dimensions enriching the study of entrepreneurship, while P.F. Drucker (1993) perceived it as endowing existing resources with new wealth-producing capacities. H. Frederick *et al.* (2007) defined entrepreneurship as a dynamic process of vision, change, and creation, encompassing any endeavour to initiate a new enterprise or firm.

Numerous studies addressed entrepreneurial aspects of university graduate unemployment, with each emphasizing dimensions crucial to entrepreneurial success. R. Makgosa & H. Ongori (2012), S. Kalyoncuoğlu *et al.* (2017) and A. Padi & A. Musah (2022) provided diverse perspectives on entrepreneurial success in solving unemployment. In the Education Dimension, the relationship between unemployment and education is scrutinized, emphasizing the necessity to align educational programs with market demands for enhanced employability, a concept supported by P. Restrepo (2015). Transitioning to the Market Dimension, the impact of supply and demand dynamics on unemployment becomes apparent, particularly when an oversupply

of university graduates surpasses available positions, contributing to escalating unemployment rates, as observed by M. Hedayat *et al.* (2013). Within the Economic Dimension, inadequate economic growth emerges as a contributor to unemployment, with a robust correlation established between Gross Domestic Product (GDP) and unemployment rates, a perspective articulated by J. Amani (2017). Challenges are further compounded by such issues, as inefficient career guidance and counselling services. Turning to the Individual Dimension, factors such as age, gender, marital status, and discrimination are recognized as contributors to individual-level unemployment, noting a negative correlation between age and unemployment, with young individuals facing higher rates. This comprehensive analysis of diverse perspectives lays the foundation for understanding the multifaceted nature of entrepreneurship, setting the stage for a nuanced exploration of its impact on unemployment among Soran University Graduate Students from 2010 to 2023.

## MATERIALS AND METHODS

The study employed a comprehensive research methodology to investigate the impact of entrepreneurship on addressing unemployment issues among graduates from Soran University. Following the guidance of J.M. Saunders (2022), a survey method was adopted for data collection. Informed consent was obtained from all survey participants, ensuring their anonymity and explaining the purpose of the survey, the use of their data, and the potential risks involved. The survey was conducted following ethical standards for working with people, and ethical approval was obtained from the relevant ethics committee.

The structured questionnaire, developed for precision, served as a key tool in gathering quantitative data. To maintain ethical standards, confidentiality of participant responses was ensured. The acquired data was analysed using spreadsheet software and statistical analysis, as suggested by N. Gavriluță *et al.* (2022). Soran University, selected for its strategic managerial and geographical significance, was prioritised. Situated in Soran city across three provinces, especially Erbil, the political capital, the university's prominence as of 2024 aligns with the study's focus on entrepreneurship.

The study addressed all graduates of Soran University from 2010 to 2023. The sample, collected using snowball sampling, consisted of 134 participants for the year 2023. Face validity was ensured by presenting the questionnaire to experienced teachers in the business and accounting management department, and content tests were administered to Soran University Students for question clarity. Due to time constraints and a lack of comprehensive data on the entire graduate population, systematic random sampling was not employed.

To gauge variables, a questionnaire survey comprising three parts was utilized. Part one captured respondent profiles and their faculties, while parts two and three addressed independent and dependent variables, respectively. A Likert-scale of 1 – strongly disagree to 5 – strongly agree

measured the extent of agreement or disagreement, adopting the works of N. Meyer (2014), K. Chienwattanasook & K. Jermsittiparsert (2019) and U.C. Okolie *et al.* (2021).

The collected data were analysed using the Social Science Statistical Package (SPSS V25), employing four key data analysis techniques. Firstly, Descriptive Data Analysis was employed to summarize respondent profiles and faculties. This initial step provided an overview of the study participants. Secondly, Regression Analysis was used to analyse the impact between variables, elucidating the nature of their relationship.

In investigating the impact of entrepreneurship and unemployment, various dimensions of entrepreneurship play significant roles. Innovation, encompassing novel products, processes, or ways of thinking, holds a dual role in unemployment dynamics. Therefore, based on this, the current study among Soran University Graduate Students from 2010 to 2023, proposes the following hypotheses:

- H1. Innovation has a statistically significant impact on solving unemployment problems;
- H2. Risk-taking has a statistically significant impact on solving unemployment problems;
- H3. Proactiveness has a statistically significant impact on solving unemployment problems;
- H4. Opportunity recognition has a statistically significant impact on solving unemployment problems;
- H5. Resource leveraging has a statistically significant impact on solving unemployment problems.

## RESULTS AND DISCUSSION

In the context of Innovation, entrepreneurs actively pursue novel ideas, taking risks to ensure the success of business, thereby contributing to addressing market demands and fostering organizational growth. This emphasis on Innovation is a primary aspect of entrepreneurial success. Moving to risk-taking, an inherent trait in entrepreneurship, entrepreneurs willingly embrace significant risks to explore the business potential and foster innovation, underscoring the entrepreneurial ability to navigate uncertainty and unknown consequences (Yamada, 2004). Proactiveness, as another critical dimension, characterizes entrepreneurs who take initiative, stay ahead of the competition, and act proactively to understand market prospects, showcasing the importance of perceiving market demands and seizing opportunities before others (Kirzner, 2015). Entrepreneurial Opportunity Recognition, a dimension described by I.M. Manev *et al.* (2005), emphasizes an individual's capacity to identify and capitalize on potential business opportunities, reflecting a strategic approach to finding resources for innovative outputs. Lastly, Resource Leveraging, as outlined by M.H. Morris *et al.* (2002), highlights the entrepreneurial skill of utilizing resources effectively by identifying unseen resources, leveraging the resources of others, complementing resources, and extending them beyond conventional limits. These dimensions collectively form a comprehensive framework guiding effective entrepreneurial strategies to address unemployment challenges.

The demographic composition among Soran University Graduate Students from 2010 to 2023 indicated a significant gender imbalance, with 67.2% of respondents identifying as male and 32.8% as female. In terms of age distribution, the majority falls within the 26-30 years bracket (45.5%), closely followed by those aged 22-25 years (42.5%). Respondents above 30 years constituted a smaller percentage at 11.9%. Family status among the participants reveals that 50.7% are married, while 49.3% identify as single. Moreover, the Soran University Graduate Students from 2010 to 2023 exhibited diverse profiles across faculties, graduation years, and entrepreneurial status. In terms of faculties, most respondents graduated from the Art faculty (36.6%), followed by Law, Political Science, and Management (20.9%), Science (29.1%), Education (10.4%), and Engineering (3.0%). This showcases the varied academic backgrounds within the surveyed

group. Addressing graduation years, 25.4% graduated between 2013 and 2016, 47.0% between 2017 and 2020, and 27.6% after 2020, offering insights into the university Graduate Students of their academic experiences. In terms of employment, a substantial 75.4% identify as employed, while 24.6% are unemployed, providing a nuanced perspective on the entrepreneurial landscape among Soran University Graduate Students from 2010 to 2023. Simple linear regression has been used to accept or reject hypotheses (H1 to H5).

Table 1 shows the regression coefficients for the model examining the impact of innovation on unemployment are presented. The resulting coefficients provide insights into the strength and direction of the relationship between innovation and unemployment, highlighting the significance of innovation in influencing unemployment dynamics. As a result, the first hypotheses were accepted (H1).

**Table 1.** The impact of innovation on unemployment

Model	Unstandardized coefficients			Standardized coefficients	t	Sig.
	B	Std. error	Beta			
1	(Constant)	2.890	0.324		8.908	0.000
	Innovation	0.195	0.080	0.249	2.442	0.016

**Source:** compiled by the authors

Table 2 illustrates the impact of risk-taking on unemployment, the coefficient for this dimension is 0.242. This implies that for every one-unit increase in risk-taking, the dependent variable is expected to increase by 0.242 units, holding other variables constant. The t-value of 3.012 indicates that this coefficient is statistically significant, and the p-value (0.003) is less than 0.05, confirming the

significance. The standardized coefficient (Beta) of 0.256 indicates the strength and direction of the relationship between risk-taking and the dependent variable in standard deviation units. Therefore, risk-taking has a statistically significant impact on solving unemployment problems among Soran University graduates from 2010 to 2023, which supports the second hypothesis (H2).

**Table 2.** The impact of risk-taking on unemployment

Model	Unstandardized coefficients			Standardized coefficients	t	Sig.
	B	Std. error	Beta			
1	(Constant)	2.288	0.422		10.421	0.000
	Risk-taking	0.242	0.080	0.256	3.012	0.003

**Source:** compiled by the authors

Table 3 demonstrates a statistically significant and positive impact of proactiveness on solving unemployment problems among Soran University graduates from 2010 to 2023. The coefficient of 0.226 suggests that for each unit increase in proactiveness, there is a corresponding positive impact of 0.226 on the resolution of unemployment issues. With a t-value of 2.119 and a p-value of 0.036, the impact of

proactiveness is deemed statistically significant at the 0.05 level. The standardized coefficient (Beta) of 0.190 reinforces this positive impact. Consequently, the results support the third hypothesis (H3), indicating a statistically significant and positive impact of proactiveness on resolving unemployment problems among Soran University graduates from 2010 to 2023.

**Table 3.** The impact of proactive on unemployment

Model	Unstandardized coefficients			Standardized coefficients	t	Sig.
	B	Std. error	Beta			
1	(Constant)	2.016	0.522		7.837	0.000
	Proactive	0.226	0.107	0.190	2.119	0.036

**Source:** compiled by the authors

Table 4 shows a statistically significant and positive impact of opportunity recognition on solving unemployment problems among Soran University graduates from 2010 to 2023. The coefficient for “Opportunity recognition” is 0.320, indicating that for each unit increase in recognizing opportunities, there is a corresponding positive impact of 0.320 on resolving unemployment. This relationship is underscored by a t-value of 3.021 and a p-value of 0.003,

demonstrating statistical significance at the 0.05 level. The standardized coefficient (Beta) of 0.287 further emphasizes the meaningful positive impact of opportunity recognition. In summary, the findings affirm the fourth hypothesis (H4), suggesting that higher levels of opportunity recognition significantly contribute to the effective resolution of unemployment issues among Soran University graduates from 2010 to 2023.

**Table 4.** The impact of opportunity recognition on unemployment

Model	Unstandardized coefficients			Standardized coefficients	t	Sig.
	B	Std. error	Beta			
1	(Constant)	1.998	0.461		8.329	0.000
	Opportunity recognition	0.320	0.106	0.287	3.021	0.003

Source: compiled by the authors

Table 5 demonstrates a statistically significant impact of resource leveraging on solving unemployment problems among Soran University graduates from 2010 to 2023. The p-value of 0.030 is less than 0.05, leading to the rejection of the null hypothesis and acceptance of the alternative hypothesis that the regression coefficient is not equal to zero. This implies that resource leveraging has a meaningful effect on unemployment problem

resolution ( $\alpha < 0.05$ ). The coefficient for “Resource leveraging” is 0.242, suggesting that a one-unit increase in resource leveraging results in a positive impact of 0.242 on solving unemployment problems. As a result, the findings affirm the fifth hypothesis (H5), indicating that resource leveraging significantly contributes to addressing unemployment issues among Soran University graduates from 2010 to 2023.

**Table 5.** The impact of resource leveraging on unemployment

Model	Unstandardized coefficients			Standardized coefficients	t	Sig.
	B	Std. error	Beta			
1	(Constant)	1.639	0.538		5.046	0.000
	Resource leveraging	0.242	0.110	0.215	2.196	0.030

Source: compiled by the authors

The analysis of entrepreneurship dimensions in addressing unemployment issues among Soran University graduates from 2010 to 2023 demonstrates the complex interplay between entrepreneurial activities and unemployment dynamics. In this discussion, the results will be compared with those of other authors, drawing on the literature review section to provide a comprehensive analysis.

Beginning with the impact of innovation (H1), the findings align with the perspectives of J. Schumpeter & U. Backhaus (2003). These scholars have emphasized the positive relationship between innovation and job creation. The study further supports this assertion, highlighting innovation as a significant factor in addressing unemployment problems among recent graduates. However, it is essential to note that technological advancements, a subset of innovation, pose challenges by contributing to increased unemployment due to dynamic shifts in the workforce. This nuanced perspective contrasts with some prior studies that may primarily focus on the positive aspects of innovation.

Moving on to the role of risk-taking (H2), the results resonate with discussions by J.O. Ajamobe (2021) and

S. Sugandha & N. Singh (2022). Responsible risk-taking in entrepreneurship is a critical factor in creating job opportunities for recent graduates. This aligns with broader discussions on the importance of mitigating risks while fostering an entrepreneurial mindset. However, it is worth noting that different authors may emphasize distinct aspects of risk-taking, such as financial risk or market risk, providing diverse insights into its impact on unemployment dynamics.

Considering the significance of proactiveness (H3), the findings align with existing literature, including works by S.T. Certo *et al.* (2009) and M. Hosseini & F. Eskandari (2014). A proactive approach is highlighted as a significant aspect for recent graduates in navigating the job market. This consensus underlines the positive relationship between proactiveness and employment outcomes. However, variations in the emphasis on specific aspects of proactiveness, such as market-oriented proactiveness or strategic proactiveness, may differentiate the findings across studies.

Turning to the impact of opportunity recognition (H4), the study aligns with foundational principles

discussed by B. Oghojafor *et al.* (2009). Recognizing and utilising opportunities are identified as crucial drivers of job creation for recent graduates. This consensus reinforces the enduring significance of opportunity recognition as a key factor in employment outcomes. However, differences in the conceptualization of opportunity recognition and the specific contexts studied may lead to nuanced differences in the findings.

Lastly, the results regarding resource leveraging (H5) align with perspectives from M.H. Morris *et al.* (2002) and D. Politis *et al.* (2011). Efficient resource utilization is emphasized for job creation and business growth. This insight underscores the importance of resource leveraging in effectively addressing unemployment challenges. However, differences in the definition and measurement of resource leveraging across studies may contribute to variations in the reported findings.

In summary, this discussion has systematically compared the study's results with insights from existing literature, highlighting both commonalities and differences. This comparative analysis provides a nuanced understanding of entrepreneurship dimensions in addressing unemployment issues among Soran University graduates from 2010 to 2023. The varied perspectives from different authors contribute to a comprehensive view of the topic, inviting further discussion and exploration.

## CONCLUSIONS

The findings of this study shed light on the pivotal role of entrepreneurship dimensions in addressing unemployment challenges among Soran University Graduate Students from 2010 to 2023. Each dimension (Innovation, risk-taking, Proactiveness, Opportunity Recognition, and Resource Leveraging) reveals a unique contribution to the complex interplay between entrepreneurial activities and unemployment dynamics. The positive and statistically significant impacts underscore the potential of fostering an entrepreneurial mindset to empower graduates and alleviate unemployment issues. As the study validates the hypotheses, it confirms that embracing entrepreneurship can be a transformative force in the lives of Soran University Graduate Students from 2010 to 2023, not only fostering individual growth but also contributing to regional economic development.

The implications of this research extend beyond academic discourse to practical considerations for various stakeholders. Educational institutions should consider integrating entrepreneurship education into their programs. This will equip Students with the skills and mindset needed for entrepreneurial success, contributing to their employability and job creation. Policymakers should formulate

and implement policies that support and incentivize entrepreneurship. This includes providing funding opportunities, and mentorship programs, and creating a regulatory environment that fosters entrepreneurial initiatives. Employers should recognize and value proactive traits in employees. Creating a work culture that encourages initiative, innovation, and risk-taking can lead to increased job creation and economic growth. Institutions and support organizations can provide resources and guidance on efficient resource leveraging. This can empower entrepreneurs to maximize the impact of available resources, contributing to sustainable business growth and job creation. Continued research in the field of entrepreneurship and unemployment is essential. Collaboration between academia, government bodies, and industry stakeholders can lead to the development of comprehensive strategies that address the evolving challenges in the job market.

In conclusion, the recommendations outlined above aim to create a holistic approach towards addressing unemployment issues among Soran University Graduate Students from 2010 to 2023. By fostering entrepreneurship education, implementing supportive policies, and encouraging a proactive and resourceful workforce, stakeholders can collectively contribute to mitigating unemployment challenges and fostering economic development. The study lays the foundation for understanding the intricate relationship between entrepreneurship and unemployment among Soran University graduates from 2010 to 2023. Exploring the long-term impact of entrepreneurship education programs on graduates' entrepreneurial endeavours and employment outcomes could provide valuable insights. Additionally, investigating the role of government policies and support mechanisms in promoting entrepreneurship and reducing unemployment remains a crucial area for further exploration. A comparative analysis of entrepreneurship initiatives across different academic disciplines and their varying impacts on employment prospects could contribute to a more nuanced understanding. Lastly, delving into the influence of socio-cultural factors on the entrepreneurial aspirations and outcomes of Soran University graduates could offer a comprehensive perspective. By addressing these areas, future research can contribute to the development of effective strategies and policies for fostering entrepreneurship and mitigating unemployment challenges in the specified context.

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## CONFLICT OF INTEREST

None.

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## **Вплив вимірів підприємництва на вирішення проблем безробіття серед аспірантів університету Соран з 2010 по 2023 роки**

**Анотація.** Підприємництво є потужною силою у вирішенні проблеми безробіття та сприянні економічному зростанню. Однак залишається прогалина в розумінні конкретного впливу підприємництва на рівень безробіття серед аспірантів університету Соран в 2010-2023 роках. Таким чином, дослідження має на меті надати інформацію для розробки політики та заходів, спрямованих на заохочення підприємництва та пом'якшення проблем безробіття серед аспірантів у зазначений період. Під час дослідження було використано описово-аналітичний підхід та кількісний метод, в якому взяли участь 134 учасники. Таким чином, дослідження встановило помітну позитивну кореляцію між підприємництвом та зниженням рівня безробіття. Аналіз розкриває ключові моменти щодо ключової ролі навчання підприємству, доступу до фінансування та сприяння в отриманні ресурсів для ефективного вирішення проблем безробіття серед аспірантів університету Сорана. Результати дослідження підкреслюють важливість надання випускникам можливості формувати свій успіх, що сприяє не лише особистому зростанню, але й регіональному економічному розвитку. Такі висновки дослідження також підкреслюють важливість впровадження проактивних стратегій сприяння підприємству. Все це підтверджується якісним літературним оглядом попередніх публікацій. Практична цінність дослідження полягає в тому, що, сприяючи розвитку підприємницького мислення та надаючи необхідну підтримку, інституції можуть відігравати ключову роль у зниженні рівня безробіття та вирішенні нагальних проблем

**Ключові слова:** вплив підприємництва; зменшення безробіття; економічний розвиток; розпізнавання можливостей; прийняття ризиків; залучення ресурсів

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## Possibilities of creating clusters in the weaving industry of the Republic of Azerbaijan

**Abstract.** The formation of industrial clusters is a form of a systematic approach to the development of industry and related fields and is of high relevance as one of the directions of economic development at the current stage. The study aims to determine the possibilities of creating clusters in the weaving industry of Azerbaijan and to present proposals for their realization. To achieve the goal, methods of comparative and statistical analysis, competitive rhombus and logical conclusion were used. The article emphasizes the need to establish cooperation with foreign companies to form and develop clusters, notes the prevention of illegal interference in business activities and addresses the importance of integrating the weaving industry and clothing production. To form clusters, it is proposed to create a more favourable business environment in specific territories and provide favourable conditions for doing business, create clusters to produce profitable imported products, and further increase the preferential opportunities provided to cluster products in government procurement. The importance of establishing business connections between cluster participants and government authorities, forming on a reasonable basis the state's attitude towards business and the role of its guardian is emphasized. The practical value of the study lies in the recommendations provided to protect the domestic market from imported products and to strengthen customs control over the importation of imported products, as well as to stimulate the export of finished products

**Keywords:** clustering process; clustering potential; actual consumption; import dependence level

### INTRODUCTION

The main task of the Azerbaijan government on the economic development is to become independent from oil revenues through the development of the non-oil industry sector. Regional and sectoral clusters as one of the directions of development are prioritised. In this regard, the formation of clusters in the weaving industry plays an important role in ensuring the of development non-oil sectors of the industry of Azerbaijan. The research relevance is determined by the presence of clusters in the real economy and their importance in future economic development.

According to T. Aliyev (2019), a cluster is a concentration of small, medium, and large business entities, scientific and educational organizations, financial institutions,

standardization bodies, logistics systems and other related associations in one territory. These organizations have suitable geographical and field characteristics and close corporate relations, stimulate innovative development, aim to produce competitive products, and have modern communication and innovation infrastructure. It is worth noting that both theoretical and practical issues related to industrial clusters were addressed, and the proposals are not scientifically substantiated due to their empirical nature.

T. Huseynov (2019) defines industrial clusters as a group of enterprises located in the same area that are technologically connected and contribute to the creation of a value chain. He analysed clusters as a set of enterprises

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involved in the technological process from raw materials to finished products. In both approaches, he addressed the characteristics of forming a value chain and being a union of technologically connected enterprises. I. Aliyev *et al.* (2019) considered the cluster as an economic process based on the criteria of high competitiveness and economic efficiency. Thus, they equated clusters with the process of clustering. It is worth noting that the cluster is not a process, but the result of the process, but clustering is a process. In the clustering process, one can be formed not one, several clusters.

T. Aliyeva (2021) noted that the role of oil clusters in economic development is in the efficiency of the oil refining and petrochemical technology chains. According to her study, clusters become competitive in three ways: enhancement of the productivity of cluster companies, introduction of innovation to the sector, and promises of new business in the industry. Processes formation of the technological chain in oil refining were addressed. She analysed oil clusters in a narrow context. F. Ahmadov *et al.* (2021) analysed the competitiveness of Azerbaijan's tourism sector and revealed existing problems in the clustering process. They noted the importance of applying the cluster approach for the development of the tourism sector in Azerbaijan. According to them, the application of the cluster approach will remove dependence on oil revenues, and increase national income and overall prosperity.

A. Aliyeva (2020) noted that one of the essential methodological issues is the role of government in the formation of clusters. She noted that the growing influence of the state on the clustering process can be attributed to factors like market weakness, increase in the volume and value of government goods, the priority of public interest in the context of globalization, and the need for protection of the internal market. E. Mamedova & A. Mirgeydarova (2023) noted that the cluster strategy is one of the important aspects of state policy in the field of increasing the competitiveness of the national economy. According to the authors, the formation of clusters in developed countries is achieved through the implementation of complex programs. They determined innovation clusters as effective in such industries as the energy industry, mechanical engineering, textile, and the field of nanotechnology. According to them, creating an innovative environment will encourage innovation.

M. Korabaev (2022) highlighted clusters as a mechanism covering all processes from the cultivation of agricultural products to their processing. Noting the regular activity of the enterprises included in the clusters in the creation of the value chain, he evaluated those enterprises as independent economic subjects. Y. Sadikhov (2019) studied the current state of Azerbaijan's agricultural processing sector and determined the importance of creating clusters in the regions to ensure the future development of the sector. He noted that the creation of clusters in regions will affect the development of agriculture.

R. Aghayev (2022) studied the development prospects of territorial clusters in Azerbaijan and highlighted the important role of regional demand in the formation of clusters.

He noted that providing a cheap labour force in the regions of Azerbaijan, contrary to the city of Baku, creates great potential for the development of labour-intensive clusters in the regions. He added that despite the mention of clustering in state documents as one of the mechanisms of economic development, there is a great need for major studies to be made for its success. Sh. Sadikhov (2021) noted that cluster development is one of the means of economic development. As such, industrial clusters are groups of enterprises that are interconnected and complement each other in the process of producing products or providing services. The concentration of enterprises included in clusters in a single area depends on the nature of the produced product and the provided service. A cluster may be formed on the production of leather products, tea, ferrous and non-ferrous metals, furniture, nuts, cigarettes, etc. in Azerbaijan. At the same time, he investigated the competitive development potential of Azerbaijan's weaving and leather production areas and proposed the application of the cluster approach in their complex development. The creation of clusters provides a systematic approach to economic development and a unified team activity. The role of the state is to create favourable conditions for the joint activity of the enterprises included in the clusters, to help solve their problems (Sadikhov, 2022).

It is possible to conclude that none of the Azerbaijani researchers have assessed sufficiently the clustering potential regionally and sectoral based on statistical data. As such, theoretical issues of clustering, clustering process and clustering potential assessment were prioritised. Although the clustering potential of Azerbaijan from a regional point of view has been assessed at a superficial level, studies have not been conducted from a field point of view, thus defining the study's aim.

## MATERIALS AND METHODS

The study dates from the end of 2022 to the beginning of 2023. Given that the final statistical data for 2023 can only be obtained in October 2024, it was not possible to include data for this period. For this reason, the study used only statistical data for the period 2018-2022. In this research, both theoretical and field data on cluster, clustering and clustering potential assessment were studied. A comparative and statistical analysis method was used during the study of field data. The balance method was used to determine the indicators of local demand, actual consumption and import dependence for weaving products.

In practice, the three-star and competitive rhombus methods are used in the assessment of cluster potential (European Commission, 2020). Each of these methods has advantages and disadvantages. The use of the three-star method is acceptable for countries that are industrially developing and many business entities on their territory. It is appropriate to use the competitive rhombus method to assess the cluster potential of countries that are small in territory, have few economic subjects, and are poorly developed in terms of industry. Thus, this method requires more detailed analyses to assess cluster potential.

Therefore, the competitive rhombus method was used to assess the clustering potential of the weaving industry. Using this method, the production factors of the field, the demand potential of the republic, and import and export data were studied. When analysing the “production factors” indicator, factors such as the availability of raw materials and qualified personnel for product (service) production, the state of production and social infrastructure, access to basic services, and the availability of investment resources are studied and evaluated. The “Company strategy and competitive environment” indicator includes the assessment of all the potential of companies operating in the field selected as a cluster target. During the assessment of these indicators, the level of professionalism of the enterprise management, the state of application of special reporting standards, the tendency to apply innovations, the possibilities of attracting investments, the level of professionalism of the personnel, the desire to attract investment, personnel training, the targeting of access to foreign markets, preference for healthy competition and competitive tactics are addressed. The “demand potential of the region” indicator denotes the volume of demand for the cluster products in the region. Thus, before being sold abroad, the produced product is directed to the consumption of the population and the business sector within the region. The greater the volume of regional demand, the higher the possibilities of clustering. Thus, regional demand is the driving force of production. The “current state of related and supporting sectors” indicator is also important for the implementation of clustering potential in the arbitrary region. In international practice, related sectors are referred to as areas that include suppliers of raw materials for product (service) production, and service (logistics, communication, finance, consulting, etc.) subjects. Supporting structures include state and local self-government structures, civil societies, research institutes and universities that regulate and assist cluster development. During the assessment, the physical presence of all these structures within the region and the quality aspects of their activity should be addressed. The logical conclusion method was used in the study to follow the sequence, to summarize the conducted analyses and to reach the conclusion.

## RESULTS

The experience of economic development of the countries of the world proves that the competitiveness of the region

and production complexes can be ensured by the implementation of cluster-oriented regional policy (Aliyev, 2019; Cherkashyna, 2022). Such a policy is implemented by the government. So, if the business entity is a seed, the government, by implementing a favourable economic policy, forms the fertile soil that ensures the germination, growth, and further development of that seed. If a favourable economic policy is not implemented, not only the development of business entities but even their existence will not be ensured. Opportunities may exist, but they won't be implemented unless appropriate government intervention is done. To form clusters, a cluster strategy is developed by the government. All processes related to the creation of clusters should be reflected in the cluster strategy prepared by the government. Within the framework of the relevant strategy, the competitiveness of specific products should be analysed, and the clustering potential of the field and region should be determined based on this indicator.

The industry of the Azerbaijan Republic consists of sectors of mining, processing, electricity, gas and steam production, distribution and supply, water supply, waste treatment and processing. In 2022, the value of the industrial product of Azerbaijan was 50,813.76 million dollars in actual prices, of which were shares of the mining industry – 74.95%, processing industry – 20.97%, electricity, gas and steam production, distribution, and supply – 3.49%, water supply and waste treatment and processing area – 0.59%. The share of the weaving industry in the total industry was 0.45%, which was approximately the same in 2018. In 2022, the number of enterprises operating in the weaving industry was 95, of which 27 are medium and large enterprises (The State Statistical Committee..., 2023a). Medium and large enterprises in the Republic of Azerbaijan mean business subjects with more than 51 employees and an annual income of more than 1,764.70 million dollars (Resolution of the Cabinet..., 2018) (1 USD = 1.7 AZN local currency (currency rate for 2018-2022)) (The Central Bank of Azerbaijan, n.d.).

The first indicator for evaluation of clustering potential according to the “Competitive Rhombus” method is the “production factors”. The production factors define the availability of raw materials and capital for production, the presence of qualified personnel, the state of infrastructure, and the state of access to basic services. Raw materials for the weaving industry are primarily cotton, wool, cocoon, and synthetic fibre. Information on the availability of raw materials for the weaving industry is shown in Table 1.

**Table 1.** Production of cotton, wool and cocoons in the Republic of Azerbaijan, tons

No.	Indicators	2018	2019	2020	2021	2022
1	Cotton	233,592.00	295,279.00	336,792.00	287,041.00	322,471.00
2	Wool	15,849.00	16,095.00	16,128.00	16,138.00	15,767.00
3	Cocoons	513.9	643.7	446.6	497.4	341.4

**Source:** compiled by the author based on materials of The State Statistical Committee of the Republic of Azerbaijan (2023b)

Data in Table 1 demonstrates the presence of raw materials to produce weaving products in Azerbaijan, and the

production of cotton, which is the main raw material, is increasing year by year. In 2018-2022, a slight decrease in

wool and cocoon production was observed. Wool and cocoon raw materials are used in domestic production, and since their use remained stable during the period under review, it did not stimulate the growth of raw material production. The main reason for the increase in cotton production is its partial processing and export in the form of cotton fibre and yarn. Therefore, the main reason for the increase in cotton production is not its use in local production, but export. It is worth noting that cotton fibre is exported to Turkey, Iran and Russia, and cotton yarn is exported to Turkey, Russia, Ukraine, and Bangladesh (The State Statistical Committee..., 2023c). Azerbaijan has enough qualified personnel and investment opportunities to create clusters in this field (Aliyeva, 2021). The production infrastructure is satisfactory and is improving day by day (Order of the President..., 2021). To implement projects in the non-industrial sector, the State Oil Fund of the Republic of Azerbaijan (2023) allocated 52.94 million dollars to the State Investment Company.

According to the “Competitive Rhombus” method, the second indicator that determines the clustering potential is “Company strategy and competitive environment”.

This indicator provides an assessment of the capabilities of companies working in the field selected as a cluster target. Regarding this indicator, in 2022, the number of medium and large-sized business subjects operating in the relevant field in Azerbaijan was 27 (The State Statistical Committee..., 2023a). Currently, leading enterprises such as Giltex LLC, Mingachevir Tekstil LLC, Azerpambig ASK LLC, and Azeripak LLC, which produce weaving products, operate in Azerbaijan. As such, Azerbaijan has some leading enterprises in this field. These enterprises can be the core of weaving clusters.

“The demand potential of the region” is one of the main indicators that determine the clustering potential. Before being exported, the produced products (services) are directed to the consumption of the business sector and population within the regions of the republic. The greater the volume of demand within the region or the republic, the higher the favourable opportunities for clustering in the region. Thus, regional demand is the driving force of production. Since the Republic of Azerbaijan is small in terms of territory, it can be considered a region. The availability of regional demand and other related information is demonstrated in Table 2.

**Table 2.** Actual consumption of weaving products and level of import dependence, million dollars

No.	Indicators	2018	2019	2020	2021	2022
1	Stock of finished products in warehouses of manufacturing enterprises (at the beginning of the year)	26.59	29.59	29.18	26.88	20.29
2	The volume of domestic production	146.00	179.00	141.71	217.35	228.59
3	Import volume	430.97	461.7	401.86	496.6	532.91
4	Export volume	135.21	185.43	182.12	303.02	246.68
5	Stock of finished products in warehouses of manufacturing enterprises (at the end of the year)	29.59	29.18	26.88	20.29	51.76
6	Actual consumption (1+2+3-4-5)	438.76	455.68	363.75	417.52	483.35
7	Import dependence with %, (import x 100 / production + import – export)	97.56	101.41	111.18	120.85	103.51

**Source:** compiled by the author based on materials of The State Statistical Committee of the Republic of Azerbaijan (2023a; 2023c)

Table 2 demonstrates that the amount of actual consumption in 2018-2022 changed in the interval of 363.75-483.35 million dollars. Therefore, there is demand within the republic. If, in 2018, import dependence was 97.56% and it increased by 5.95% in 2022 and reached 103.51%. Thus, the dependence on imports is increasing year by year. This is determined by local production not matching

the structure of domestic demand, the quality parameters of local products are lower than imported goods, and the price parameter is higher. Few nomenclatures of locally produced products why don't correspond to the structure of domestic demand. The aforementioned statements can be confirmed by referring to nomenclature and volume of production, which is shown in Table 3.

**Table 3.** Production of basic weaving products, in kind

Name of indicators	2018	2019	2020	2021	2022
Cotton fibre (carded and combed), thousand tons	61.0	85.0	71.6	92.5	91.0
Cotton fabrics, thousand sq.m	19,314.40	21,098.00	29,965.50	33,918.90	22,531.50
Silk fabrics, thousand sq.m	40.7	103.2	-	69.8	181.80
Cotton bed sheets, thousand pieces	580.7	610.5	268.1	350.9	45.70
Carpets and carpet products, thousand sq.m	2.4	3.0	1.3	13.0	5.6

**Source:** compiled by the author based on materials of The State Statistical Committee of the Republic of Azerbaijan (2023a)

As can be seen from Table 3, five main types of weaving products are produced in Azerbaijan. Local demand for weaving products cannot be limited to a product range. Due to the few product ranges, imports are inevitable to meet the domestic demand. It is worth noting that the export of weaving products from Azerbaijan is in the form of cotton fibre and cotton thread, and its import is in the form of finished products. Cotton exports amounted to 108.35 million dollars in 2018, and in 2022 this figure increased by 105.41 million dollars or 97.29% and reached

213.76 million dollars. The share of cotton in the total export of weaving products was 80.1% in 2018, it has increased by 6.55% and reached 86.65% in 2022 (The State Statistical Committee..., 2023c). Table 4 demonstrates import data, which can be used to determine the structure of local demand. Thus, the import structure by product groups provides more accurate information about domestic demand's structure and volume. The change in the structure of domestic demand directly affects the change in the structure of imports.

**Table 4.** Import of basic weaving products, million dollars

No.	Name of product groups	2018		2019	2020	2021	2022	
		sum	Special weight				sum	Special weight
	<b>Total weaving products' import</b>	<b>430.96</b>	<b>100</b>	<b>461.70</b>	<b>401.82</b>	<b>496.60</b>	<b>532.91</b>	<b>100</b>
	as well as not all but a major group of imported weaving products							
1	Chemical yarns, flat and similar yarns of chemical weaving materials	45.10	10.47	45.56	33.28	42.98	46.70	8.78
2	Cotton felt and non-woven materials; special thread; ropes and cables and products from them	13.72	3.18	23.12	29.43	47.86	44.95	8.43
3	Carpets and other weaved floor coverings	18.14	4.21	18.85	15.27	21.28	18.92	3.55
4	Machine and hand-knitted fabrics	13.80	3.21	20.55	20.74	32.61	36.75	6.90
5	Machine or hand-knitted clothing items and clothing accessories	153.6	35.64	153.34	114.50	164.46	167.55	31.44
6	Clothing and clothing items, other than knitted or crocheted by machine or by hand	118.5	27.51	123.36	91.82	97.44	123.1	23.10
7	Other finished weaving products; sets; used garments and textiles	36.1	8.37	33.85	57.36	49.06	40.36	7.57

**Notes:** for comparison purposes, special weight is taken for 2018 and 2022

**Source:** compiled by the author based on materials of The State Customs Committee (2023) and The State Statistical Committee of the Republic of Azerbaijan (2023c)

Table 4 does not demonstrate all weaving products imported, only products with a larger share in total. As can be seen from the data, the main weaving products imported to Azerbaijan belong to product groups of "machine or hand knitted clothing items and clothing accessories", "clothing and clothing items, other than knitted or crocheted by machine or by hand", "chemical yarns, flat and similar yarns of chemical weaving materials", "cotton, felt and non-woven materials, special thread, ropes, cables and products from them". Although the share of these product groups in imports has changed slightly in 2018-2022, they remain the main import products. Therefore, the main domestic demand is for these products. The table shows that the types of locally produced products are few, and they differ from the structure of imports. There is almost no domestic production of imported weaving products. From this point of view, when creating a cluster in the field of weaving product production, the structure and volume of domestic demand must be considered first.

In the domestic market, there are both locally produced and imported products for some types of products. Local production of headwear, bedding, and cotton fabric

has competitive advantages in terms of quality parameters compared to imported products. But for several product types (carpets, floor covers, socks) in the domestic market, local production loses to foreign products both in terms of price and quality. Thus, the domestic market is loaded with imported products of different price and quality parameters, and as a result, it hinders the development of local production. It is a reality that the products of the enterprises of the weaving industry, which are in the stage of reorganization, cannot compete with imported products. Nevertheless, in terms of health and hygiene, local products are of higher quality than imported. Thus, natural cotton, wool and cocoon are used as raw materials in locally produced products.

In local production, raw materials with chemical content are used in small amounts. The use of natural raw materials in local production leads to high parameters of product quality and price. If locally produced products are lagging behind imported products in terms of design and technological processing, this problem can be solved step by step by creating more favourable business conditions for local production. The indicator "Current status of related and supporting sectors" is one of the factors that determine the

clustering potential of the region. The situation in this field is satisfactory in Azerbaijan and there are enough business structures. On the other hand, the development of the main production area will also lead to the revitalization of related and supporting sectors existing within the republic. It is possible to conclude from the above that there is a potential for the creation of clusters in the weaving industry of Azerbaijan.

## DISCUSSION

Clustering, being a method of approaching economic development, has regional and sectoral characteristics. The purpose of creating industrial clusters is to ensure the development of the region, the field and the entire economy by using regional resources. By organizing industrial parks in the regions, the government creates a favourable business environment in those areas and thus brings technologically related companies to one centre. Being a part of the government's industrial and regional policy, the formation of industrial clusters in the regions ensures the systematic development of the economy. Although there are differences of opinion among researchers in the approach to the term cluster, there are several ideas that generalize them. Thus, the cluster has a regional character and brings together enterprises with sectoral characteristics that are technologically related and located in the value chain. These features are given in the definition of clusters by M. Porter, and among other scientists, his definition has fully revealed the nature of the cluster (Yevtushenko & Halimon, 2021; Yevtushenko & Gudz, 2022).

T. Aliyev (2019) made additions to the definition of clusters, such as stimulating innovation and aiming to produce competitive products (providing services). Innovations develop faster in enterprises included in clusters, but the production of competitive products is not a goal, it is a compulsion. The competitive environment forces them to produce a competitive product. However, taking competitive product production as a target cannot be attributed to the essence of clusters. The purpose of enterprises included in clusters is to produce economically profitable products that can be sold in both domestic and foreign markets. The author explained the "Three Star" and "Competitive Diamond" methods of assessing the competitiveness of regional clusters and cluster potential but did not indicate which of these methods is suitable for the Azerbaijani industry. Moreover, he considered only the theoretical aspects of the assessment of the competitiveness of regional clusters. The author put forward a joint decision of the participants as an important condition for the creation of clusters. It is worth noting that clusters can be formed even without such a decision. Thus, there cannot be any official document that brings the clusters together and concentrates them in a single centre. If this process takes place, the principles of a free market economy will be violated, as a result, the existence of private enterprises will be questioned. It is technological relationships and common interests that bring cluster participants together. In addition, clusters can include not only one, but

several parent companies, and a group of enterprises can be formed around them. Thus, to take advantage of the favourable conditions created in industrial parks, one or several parent companies can come here, thereby increasing the number of producers of the same product and, as a result, a competitive environment is formed. Clusters are not created but formed. Clustering is a process, and a cluster is a result of this process. Economic and industrial policies implemented by the government shape the strengths and weaknesses of clusters by influencing the clustering process. This does not happen in a short period.

In defining clusters, T. Huseynov (2019) noted its features of creating and completing the value chain as an advantage. The author also noted the importance of having a single legal document that regulates the relations between the enterprises within the cluster. Intra-cluster relations should be regulated not by a single legal document, but by contracts concluded between technologically related companies. I. Aliyev *et al.* (2019) addressed the territorial characteristics of clusters and defined them as a localized group. Clusters have territorial characteristics; however, sectoral enterprises are concentrated in the respective areas as well. The existence of a raw material base, a favourable environment and regional demand brings together field enterprises and concentrates them in a single area. Azerbaijan is small in terms of territory. Existing weaving enterprises can be taken as components of two industrial clusters. Thus, the existing large weaving enterprises are owned by two different owners. As a sales market can be taken local market in the initial stage and then the South Caucasus and other interesting areas. Market demand determines what to produce, enterprises determine how to produce, and government determines where to produce.

I. Alibayli (2023) studied the benefits of clustering in Azerbaijan and the economic problems it will create. He noted the benefits of clusters, such as reducing interregional economic inequality, attracting foreign investment to Azerbaijan, increasing economic productivity, providing access to innovations, reducing dependence on imports by increasing production, and increasing the number of national brands and export potential. As for the economic problems that will arise, he mentioned the conditions for the creation of cartels, higher than normal wage growth, the increase in the price of goods and services, and the increase in company costs. However the study was conducted purely theoretically, and the results were not substantiated. Therefore, the results indicated by the author cannot be considered realistic, as these economic problems have not yet been confirmed in practice.

E. Ibishov *et al.* (2020) noted that clusters are the group of interconnected enterprises in the region that serve to increase the wealth of the population through the export of goods and services. The geographical concentration of the clusters described by the authors in areas with a high flow of goods and services creates added value for the country's economy. Although the researchers analysed the export importance of the clusters for Azerbaijan and noted

the territorial concentration and specifics of value creation as outstanding aspects, it is worth noting that their study was conducted within a very narrow framework. In this case, the theoretical proposals of R. Aghayev & A. Mehtiyev (2021) can be accepted. They studied regional inequality in socio-economic development and proposed to introduce a cluster approach and develop appropriate strategies for regional economic development. The authors also noted that the cluster potential of regions should be analysed using quantitative and qualitative methods, which will allow us to assess the competitiveness of regions.

The above-mentioned researchers studied industrial clusters from a theoretical point of view and paid special attention to their importance at the macro level. This aspect unites the analysed works with the study conducted in this paper, as the results also cannot be considered justified from a practical point of view. Therefore, the conclusions drawn without studying the problems of specific enterprises that will participate in clustering cannot be considered complete, but they provide a reliable and accessible start for future research at the micro level.

### CONCLUSIONS

From the conducted research, it is possible to conclude that there is a potential for clustering in the weaving industry of Azerbaijan. To create and develop clusters in the weaving industry of Azerbaijan it would be reasonable to create a more favourable business environment in special zones and transparently fulfil government obligations in this area and ensure business conditions. It is sensible to form clusters on effective product types and for the creation and development

of clusters is important to establish relations with foreign companies and establish with them joint. It is appropriate interference in their business should be stopped and given priority to cluster products in public procurement. Protection of the local market on manufactured products should be ensured, customs control should be strengthened, and exports should be encouraged. To support the development of clusters and help solve their problems is logical to create a relationship between cluster participants and competent government structures, and the attitude of the government toward business should be established on a sound basis. To increase the sale of cluster products, quarterly sales fairs should be organized at the expense of the government, annual exhibitions should be held, and government support should be provided for participation in international exhibitions. To increase the sale of cluster products is appropriate their purchase promoted at the republic level. Exemption of some locally manufactured products from value-added tax will lead to a decrease in their prices, and as a result, local production will gain an advantage in the domestic market. In the study, investigations were conducted at the field level, but due to the lack of enterprise data, investigations at the micro level were not conducted. In the next study, the investigation will be conducted in the direction of assessing the production potential of Azerbaijan's food industry.

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### CONFLICT OF INTEREST

None.

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## Можливості створення кластерів у ткацькій промисловості Республіки Азербайджан

**Анотація.** Формування промислових кластерів є формою системного підходу до розвитку промисловості та суміжних галузей і має високу актуальність як один із напрямів розвитку економіки на сучасному етапі. Метою дослідження є визначення можливостей створення кластерів у ткацькій промисловості Азербайджану та надання пропозицій щодо їх реалізації. Для досягнення поставленої мети було використано методи порівняльного та статистичного аналізу, конкурентного ромба та логічного висновку. У статті підкреслено необхідність налагодження співпраці з іноземними компаніями для формування та розвитку кластерів, наголошено на запобіганні незаконному втручанню у підприємницьку діяльність та розглянуто важливість інтеграції ткацької промисловості та виробництва одягу. Для формування кластерів пропонується створити більш сприятливе бізнес-середовище на конкретних територіях та забезпечити сприятливі умови для ведення бізнесу, створити кластери для виробництва вигідної імпортової продукції, а також надалі збільшувати преференційні можливості, що надаються продукції кластерів у державних закупівлях. Підкреслено важливість налагодження ділових зв'язків між учасниками кластерів та органами державної влади, формування на обґрунтованій основі ставлення держави до бізнесу та ролі його опікуна. Практична цінність дослідження полягає в наданих рекомендаціях щодо захисту внутрішнього ринку від імпортової продукції та посилення митного контролю за ввезенням імпортової продукції, а також стимулювання експорту готової продукції

**Ключові слова:** процес кластеризації; потенціал кластеризації; фактичне споживання; рівень імпортозалежності

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## Strategic forecasts for circular economy transition: Evaluation of the role of technology in economic development

**Abstract.** The use of a circular economy, as opposed to linear production, allows for optimal waste utilization, reduces the shortage of resources, reduces the negative impact on the environment, and achieves competitive advantages through innovation. The driving force for this transition is a technological development that enables more efficient and rapid change. The study aims to assess the impact of technology on the transition to a circular economy, which gaining prominence amid challenges posed by population growth, climate change, and environmental degradation. A combination of quantitative and systematic analysis methods was used in the study, namely exploring, categorizing, and analysing case studies, and industry reports and conducting meta-analysis. The research identified key drivers for transitioning to a circular economy, including awareness of resource depletion, environmental concerns, technological advancements, changing consumer values, and government regulations. The study explored various circular economy definitions and categorized the development of its principles into stages from 1966 to 2023. The exploration into the complex role of technology demonstrated its potential to accelerate the adoption of circular economy principles globally. The research extended beyond conventional boundaries, illustrating technology's capacity to amplify the influence of sustainable practices. As industries balanced economic growth with environmental responsibility, the study provided empirical evidence of technology's efficacy in facilitating the transition to circular economies. This study contributed valuable insights into the critical link between technological development and the circular economy transition. Successful case studies and empirical assessments offered a pragmatic foundation for policymaking, corporate strategies, and ongoing research. The study holds theoretical significance in advancing the understanding of circular economy dynamics. At the same time, it practically informs policy formulation and corporate strategies conducive to sustainable economic transformation

**Keywords:** sustainability; circularity; closed loop economy; regenerative economic system

### INTRODUCTION

A primary issue of the modern world is the transition from the economic model of consuming finite natural resources. Substantial growth of the global population and annual expansion significantly increase the usage of Earth's resources, exceeding its regenerative limits. The

current trajectory of resource consumption under the prevailing linear economic model has a high risk of causing a disbalance, causing ecological and societal crises, as well as endangering business sustainability. In pursuit of establishing and maintaining equilibrium within the complex

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interplay of the planet's systems, the transition towards a circular economy becomes a promising model. Apart from pressing environmental concerns, this shift is assumed to be a major milestone for the progressive realization of multiple United Nations Sustainable Development Goals (United Nations, 2023). Scientific studies also mention valuable perspectives on the circular economy. These studies echo the evolving narrative on circular economy practices, sustainability goals, technological development, and their integration into various sectors.

N. Trushkina (2021) conducted a comprehensive review of the circular economy, covering its conceptual formation, evolutionary development, challenges, and prospects. The study explores the challenges of its implementation and provides insights into the unique context of the Ukrainian economic landscape. D. Bayura (2021) emphasizes the circular economy as pivotal to the future success of Ukraine, aligning with the broader discussion on the transformative potential of circular practices. N. Horbal *et al.* (2021) addressed the integration of the circular economy in Ukraine based on European experiences, adding a regional perspective to the global discourse. A. Shvets (2022) positions the circular economy as a new model for Ukrainian economic development within the European Integration Process, providing insights into the practical implications of circular principles at the national level. L. Deineko *et al.* (2019) explored the opportunities and barriers for the Ukrainian industry's transition to the circular economy. M. Dubel (2022) described a circular economy for achieving sustainability goals amidst globalization and digitalization, underscoring the importance of technology research for circular economy adoption. V. Loiko *et al.* (2021) addressed financial and credit activities in the context of circular economy principles, highlighting the intersection of economic practices with sustainability goals. S. Lyholat & L. Semeniuk (2021) analysed circular economy as a direction of industrial modernization and emphasised the transformative potential of technology in the implementation of circular practices.

The adoption of innovative technologies, ranging from advanced materials and manufacturing techniques to digital platforms enabling resource tracking and efficient supply chains ensures the transition towards circularity. By describing ways in which technology intertwines with circular economy strategies, humanity can transition from limited linear, wasteful practices. Moreover, technological interventions not only optimize resource use but also support novel business models that prioritize longevity, reuse, and regeneration. The future of circular technology lies in digital transformation, which not only enhances transparency but also expedites the shift toward a circular economy. Digitalization is progressively emerging as a predominant driver across industries. In alignment with the circular economy's resource optimization objectives, a notable relation between the two domains is present. Contemporary digital technologies, such as the

Internet of Things (IoT), Big Data, artificial intelligence (AI), 3D printing, and blockchain, are substantial in augmenting the circular economy (Tenyukh *et al.*, 2022).

Therefore, the study aimed to evaluate the role of technological advancements in the development of economic practices as well as the transition towards them based on example cases. The research tasks involved exploring, categorizing, and analysing technological factors that influence the circular economy transition, particularly emphasizing successful cases.

## MATERIALS AND METHODS

This study employs a methodological framework to formulate the theoretical, methodological, and practical methods to evaluate the role of technology in the circular economy transition. This framework is also used to address the strategic forecasts of such transition based on case studies. The research methodology for this study is characterized by a correlation of quantitative and systematic analysis, providing a comprehensive analysis of the intricate dynamics between technology adoption and circular economy strategies.

This study employs a multifaceted approach to meet the aforementioned goals. The study employed a combination of quantitative analysis to determine relationships and trends between technological advancements and circular transition and case example investigation to analyse real-world contexts to identify further trends. Furthermore, the inclusion of comparative case studies was used to describe contextual factors shaping the correlation between technology and circular economy practices. This approach allows for a nuanced understanding, acknowledging that the adoption of technology in circular transitions is not a one-size-fits-all scenario.

The methodological framework also incorporates systematic data analysis of industry reports to augment insights into the role of the technology in the roadmap to circularity. Industry reports serve as valuable sources of information, providing a broader perspective on the macro-level trends and challenges associated with the integration of technology in circular economy transitions. Additionally, the application of a meta-analysis methodology is chosen for its logical and abstract analysis facilitation. The meta-analysis methodology enables a comprehensive synthesis of existing research, unveiling broader patterns and correlations that transcend individual cases of circular economy transition.

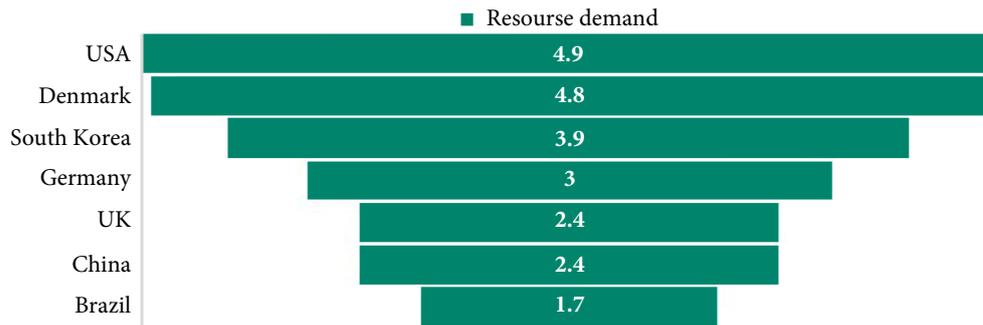
In acknowledging the study's inherent limitations, it is worth noting that while quantitative analysis offers statistical robustness, it may not capture the entirety of contextual nuances regarding circular economy transition, as it is a novel practice that requires further research. Additionally, case examples, despite their usefulness, were not employed in this study. The employment of a meta-analysis methodology, while capable, relies on limited available literature and might be constrained by data availability and quality. These aspects were used in the interpretation of findings, providing a holistic perspective on the study results.

## RESULTS AND DISCUSSION

Over the span of the 19<sup>th</sup> and 20<sup>th</sup> centuries, the Industrial Revolution has been predominantly governed by a linear production and consumption model. In this model, products are manufactured from raw materials, sold, utilized, and subsequently discarded either through landfilling or incineration. This evolutionary trajectory, enabled by technological development, substantially increased economic productivity and ensured the prosperity of society.

In its pursuit of expansion, this economic structure has incentivized heightened sales and the emulation of

economies of scale, thereby engendering a perpetual escalation in the consumption of commodities and services. This economic model exhibits a distinctive “take, make, waste” pattern. It is based on two foundational presumptions: the infinite availability of resources (both energy and raw materials) and the inexhaustible regenerative capacity of the Earth (Wautelet, 2018). As the economy develops, the demand for raw materials increases to meet increased production requirements, consequently resulting in the increased depletion of natural resources and generation of waste. This is illustrated in Figure 1.



**Figure 1.** Number of resources needed (in number of Earths) to satisfy 21<sup>st</sup>-century consumption levels by country  
**Source:** adapted by the authors from A. Fleck (2023)

Estimates from the NGO (Non-governmental Organization) Global Footprint Network (2023) reveal that if the entire global population adopted lifestyles akin to those of the United States, the planetary resources would be depleted at a staggering rate, requiring 4.9 more Earths to meet the demand within a year. The driving force behind this advancement is primarily attributed to industrialized nations, with countries like Qatar, Luxembourg, and Bahrain demonstrating even higher resource consumption, equivalent to 5.4 to 8.7 Earths if their lifestyles were universalized. Despite their significant resource demands, their smaller populations temper their global impact when compared to larger nations like the United States.

Across Europe and Asia, major industrialized nations reflect similar patterns, requiring 2.6 to 4.8 Earths to sustain their consumption if universally applied. China's living standards necessitate the use of 2.4 Earths. In contrast, Indonesia aligns closely with the allotted global resource capacity, signifying its responsible consumption practices, while India consumes only 0.7 Earths annually (Fleck, 2023). Consequently, this trajectory will cause increased CO<sub>2</sub> emissions and waste generation. The input from developed nations currently exceeds that of developing countries by over threefold (Hieminga, 2015). This leads to a significant fear for the future of the coming generations if the world does not change the current economic model.

The fusion of industrial and technological progress, coupled with widespread global trade, caused significant economic expansion, catalysing human well-being. Nonetheless, the foundational principles of the linear model are no longer applicable within the contemporary global

landscape. Several pivotal trends now imperil its sustainability, thus precipitating demand for an alternative economic paradigm (Wautelet, 2018). Since the 2010s, scientists around the world addressed this problem by investigating a novel economic paradigm known as the “circular economy”. Advocates of this concept contend that circular growth holds the potential to address the climate crisis while expediting the emergence of an inclusive green economy. Besides this, the emergence of the concept of a circular economy was driven by several interrelated factors that prompted humanity to reconsider traditional linear economic models. These factors are presented in Figure 2. Collectively, these factors necessitated the analysis and development of the circular economy as a viable alternative to traditional linear economic models. The circular economy's potential to address environmental, economic, and social challenges garnered attention from scientists, policymakers, and businesses alike, prompting the rethinking of established economic paradigms. The essence of this economic model was described in a 2019 study conducted by scholars from the University of Oxford (Haney *et al.*, 2019), describing interviews with participants of the Platform for Accelerating the Circular Economy (PACE). These experts concurred that the circular economy embodies a regenerative design, striving to retain most resources within products, their constituents, and materials. Unlike growth models based on the utilization of finite resources, the circular economy is not contingent upon such resource consumption. It fundamentally emerges as a progressive trajectory steering society toward sustainable development (Trushkina, 2021).



**Figure 2.** Factors driving reevaluation of traditional economic models

**Source:** adapted by the authors from S.A. Neves & A.C. Marques (2022)

The concept of the circular economy holds diverse perspectives within the realm of scientific literature. Typically, scholars tend to link this concept to such terms, as “circular economy”, “cyclical economy”, “renewable economy”, “closed-loop economy”, and “green economy”, among others. Some researchers state that the circular economy signifies a novel phase in the evolution of sustainable development particularly the green economy (Murray *et al.*, 2015). The circular economy introduces a novel economic paradigm rooted in cyclical business models. Rather than adhering to the conventional pattern of resource extraction, transformation into products, and eventual waste generation, the circular economy emphasizes the extension of product lifecycles and the reincorporation of raw materials, imbuing them with renewed utility.

However, a less frequent viewpoint regards it as an autonomous trajectory within the economic theory of the 1970s. Notably, the circular economy is not an alternative to the “green economy” but is an intrinsic element of it to

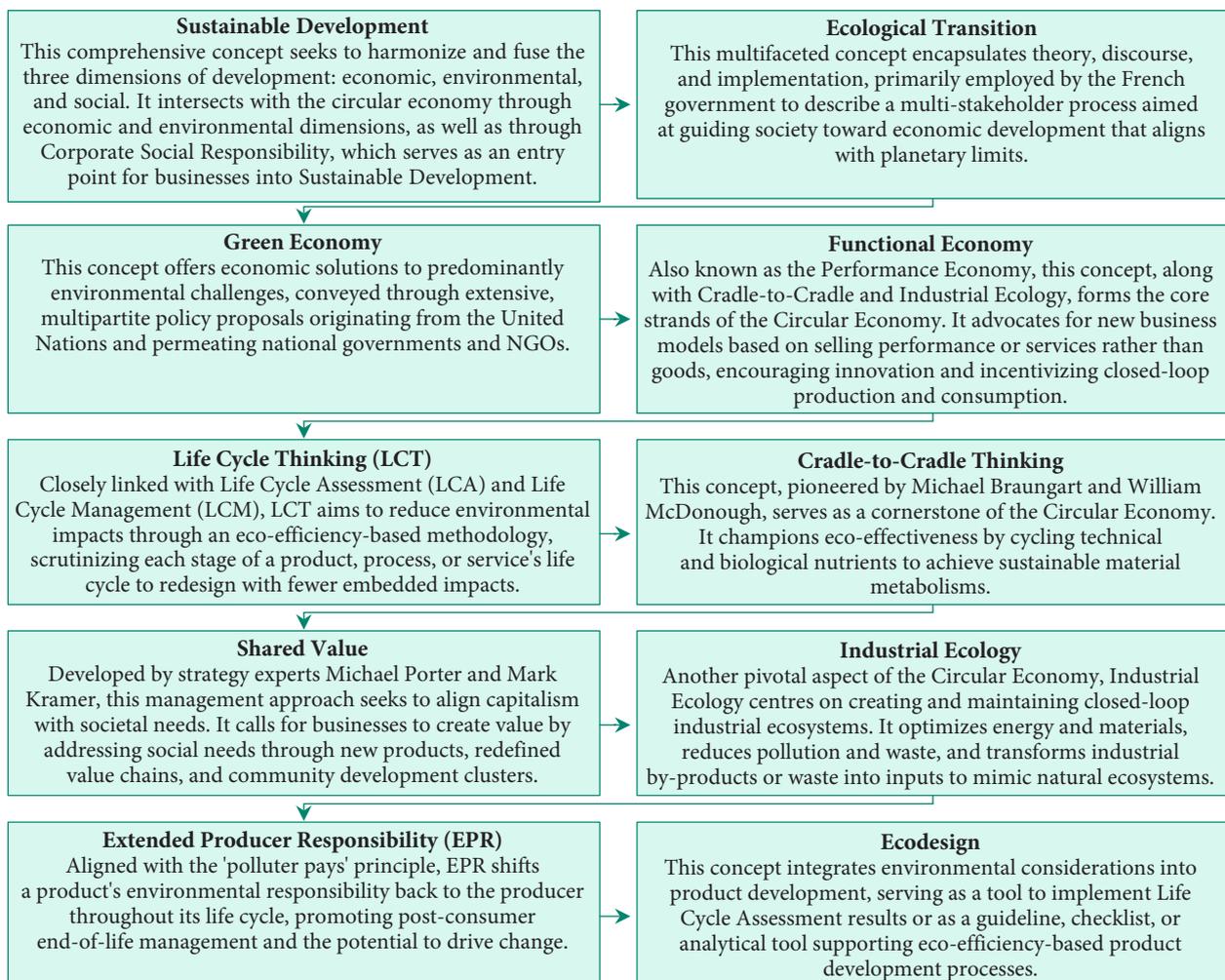
attain sustainable development (Trushkina, 2021). As for a more modern view, in the context of the U.S. Save Our Seas 2.0 Act of 2020, the circular economy is defined as a model that employs a systemic approach. This approach is based on renewable or regenerative industrial processes and economic activities. The core idea is to ensure that resources employed in these processes and activities retain their value for as long as possible, thus eliminating wastage (Hope, 2022).

Despite some differences, the diverse schools of thought share a common foundation: the current industrial economic system is unsustainable, necessitating the re-establishment of a harmonious relationship with the environment. Consequently, the ecosystem, encompassing the economy and society, must be viewed as just one of many ecosystems and an integral component of the environment (namely, the biosphere). Faced with these challenges, these schools of thought universally advocate for solutions drawing inspiration from nature, aiming to optimize resource

utilization while concurrently mitigating adverse environmental repercussions (Wautelet, 2018).

The idea of the circular economy is to mitigate the life cycle impact of materials, curbing the utilization of deleterious substances, and decreasing material consumption necessity for economic expansion. Moreover, this approach prioritises recycling, encompassing a broader spectrum of strategies to ensure sustainable resource utilization and waste minimization. Therefore, the following two definitions are the most comprehensive and accurate: “The circular economy refers to an industrial economy that is restorative by intention; aims to rely on renewable energy; minimizes, tracks, and eliminates the use of toxic chemicals;

and eradicates waste through careful design” (Ellen MacArthur Foundation, 2015) and “Circular economy represents a development strategy that entails economic growth without increasing consumption of resources, deeply transform production chains and consumption habits and redesign industrial systems at the system level” (Document of the European..., 2014). The array of defined concepts encompasses a broad spectrum of theoretical foundations from which the circular economy concept draws its origins. These ten concepts have all contributed essential building blocks to the comprehension of the circular economy, and they are arranged in Figure 3 according to their conceptual scope (from broader to more specific).



**Figure 3.** Underlying circular economy concepts

**Source:** adapted by the authors from Ciraig (2015)

Tracing the development of the circular economy is crucial as it provides invaluable insights into the development, adaptation, and impact of this transformative economic model. The evolutionary progression of the circular economy can be traced through three principal stages (Reike *et al.*, 2018).

**Stage 0 (1966) – Origin With Ecological Focus:**

The trajectory from an industrial to a post-industrial society during the 1960s, propelled by technological progress and innovative developmental models, laid the foundation for the circular economy concept. Originating with the ecological orientation, the concept transitioned to embrace economic dimensions (Boulding, 1966).

**Stage I (1970-1990) – Waste Management:**

During this phase, European nations and the United States enacted environmental legislation, spearheading the concept of the “3R” (Trushkina, 2021). These principles, such as reuse, remanufacture, and recycle, are considered fundamental for circular economy concepts. Despite their significance, the circular economy literature has not extensively focused on providing definitions and a specific order for these R-principles. This lack of consensus is evident in the presence of various R frameworks and definitions, rang-

ing from 3Rs to 10Rs. For instance, the term 3R includes the well-known “reduce, reuse, recycle” approach, which is accepted by Chinese scholars. However, the 3R concept can also encompass other triple combinations, such as “re-use, remanufacture, recycle” and “reduce, recovery, reuse” (Kirchherr *et al.*, 2017). To clarify the definitions of R-principles, Table 1 illustrates the classification of different Rs based on various layers and objectives. Each R-principle is illustrated within the context of a product system containing multiple components and recyclable materials.

**Table 1.** Classification of R-principles

	Original function	Better original function	Another function
Raw materials	Recycle	Recycle	Recover
Components	Repair, Remanufacture, Reuse	Remanufacture	Repurpose
Product	Repair, Resell, Reuse, Remanufacture	Refurbish, Remanufacture	Repurpose, Remanufacture

**Source:** adapted by the authors from J. Potting *et al.* (2017) and E. Uçar *et al.* (2020)

For instance, the implementation of remanufacture at the product-system level can retain the original product function, enhance this function, or even create an entirely new function. This visualization helps clarify the relationships and distinctions among the different R-principles in a structured manner. In the same period, the “polluter pays” principle was created, while waste management remained central. However, the absence of robust environmental consciousness led to a disposition where less affluent nations became destinations for waste disposal and recycling.

**Stage II (1990-2010) – Environmental Efficiency Strategies:**

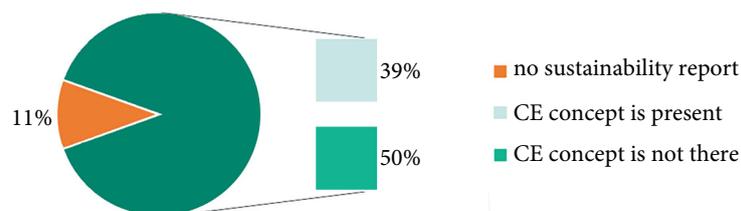
This stage witnessed the influence of environmental payments and pollution charges, which were used as a basis for circular economy principles. Environmental concerns were increasingly perceived as economic advancement opportunities. While waste-free production strategies emerged primarily in the industrial sector, global environmental challenges gained prominence, culminating in the recognition of global problems like ozone depletion and global warming.

**Stage III (approximately 2010-present) – Maximum Conservation in the Era of Resource Depletion:**

In this phase, the circular economy crystallized into its definitive form, merging theoretical research concepts with practical applications. The survival of humanity amidst

dwindling natural resources, escalating global populations, and escalating waste generation became a priority. Businesses were encouraged to adopt three cardinal principles: green innovations, alternative sourcing, and a transformation of the industrial paradigm. Presently, approximately 500 global companies have embraced the circular economy strategy (Trushkina, 2021).

To assess the extent to which the concept of circularity is integrated into the daily operations of corporations, an analysis was conducted on the first 100 companies listed in the Fortune Global 500. It is visually illustrated in Figure 4. Among these corporations, a significant 89% have chosen to either publish a sustainability report or an equivalent Corporate Social Responsibility (CSR) report. Notably, the content and scope of these reports exhibit a wide range of variation in terms of their depth and length. Furthermore, the study revealed that approximately 44% of these corporations had already implemented a circular economy concept or strategy. In contrast to the diverse nature of the sustainability reports, the landscape appears more consistent when focusing on initiatives related to the circular economy. As such, the corporations consistently elaborated on the application of circular economy tools, the advantages derived from their utilization, and the alignment of these tools within their overall business models (PriceWaterhouseCoopers, 2018).



**Figure 4.** Integration of circularity in top 100 companies from Fortune Global 500

**Source:** built by the authors based on PriceWaterhouseCoopers (2018)

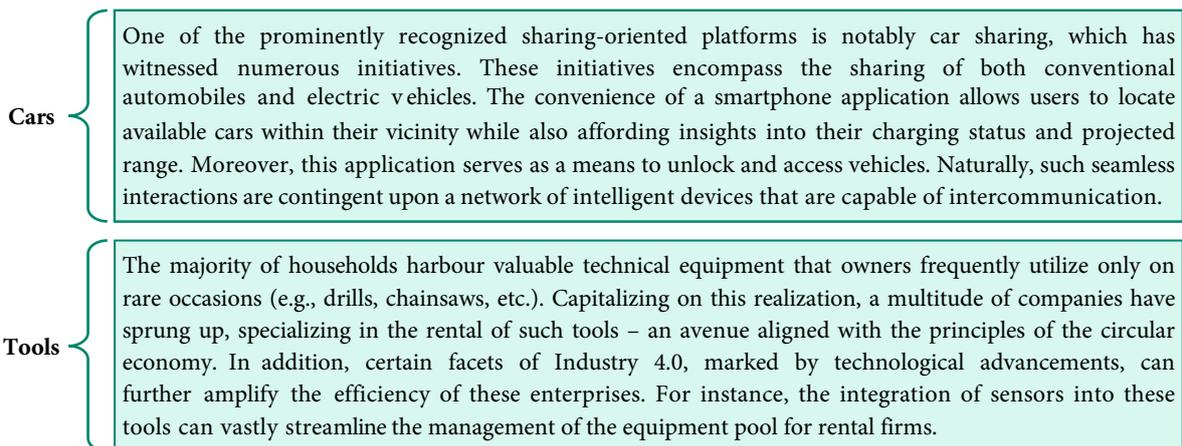
Upon closer examination of individual sectors, a heterogeneous pattern is notable. Among sectors displaying advanced initiatives linked to the circular economy, the fast-moving consumer goods (FMCG) manufacturers and vehicle industry companies took the lead. Conversely, the oil industry, financial services, and health sectors exhibited a lower degree of circularity adoption. However, it is noteworthy that even within these sectors, there exist exemplary corporations that have successfully woven the principles of the circular economy into their operational practices (Rizos *et al.*, 2020).

Expanding the analysis beyond the preliminary findings, it is evident that the adoption of circular economy strategies is an increasingly pertinent consideration for corporations across diverse sectors. While the degree of integration may vary, the presence of circular economy initiatives highlights a growing recognition of the need for sustainable and resource-efficient business practices. The circular economy is developed using key factors such as resource scarcity, population growth, and shifts in consumer behaviour. However, a vital prerequisite for its realization is the advancement of technology and the latest technological breakthroughs. The convergence of the physical, digital, and natural realms is giving rise to a new interconnected reality. The rapid expansion of technologies across these domains is providing the remarkable potential to reimagine how products and services are provided, reshape their supply ecosystems, and revolutionize how people monitor waste and value creation.

The Interplay between the fourth industrial revolution (Industry 4.0) and the development of the circular economy is synergistic. Tools that facilitate the rise of Industry 4.0 can expedite and facilitate the transition toward circular

practices. Concurrently, these tools are subject to continuous evolution, propelling the Fourth Industrial Revolution to new heights by engendering solutions that effectively curtail the wastage of valuable resources. These innovations thereby pave the pathway toward a waste-free economy. As the Circular Economy is inherently linked to the development of new business models that focus on reducing resource consumption, implementing reuse or closed-loop production, restoration, redesign, recycling, and secondary processing to ensure a sustainable lifecycle, it is undividedly dependent on technological advancements like big data, cloud computing and AI (artificial intelligence) (PriceWaterhouseCoopers, 2018).

Data plays a pivotal role in the competitive advantage offered by the circular economy. When combined with other digital technologies like IoT sensors, data enables real-time sensing of the surrounding environment, leading to valuable insights. Understanding the location, source, genuineness, state, and valuable materials contained within material assets is facilitated by the flow of information packets. This has far-reaching importance. Not only does understanding the location and potential reuse of assets provide multiple business benefits, but it also offers key sustainability advantages. Data analytics, for instance, can forecast the health of products and assets, minimize production downtime, facilitate predictive maintenance, proactively order spare parts, and optimize energy consumption (Lawson, 2022). Data serves as the foundation for measuring an organization’s sustainability level and progress towards transitioning to a circular economy, as well as reporting on these efforts. Figure 5 shows a few examples of how data and IoT technologies drive the circular economy forward.<sup>9</sup>



**Figure 5.** Data and IoT examples in the circular economy

**Source:** compiled by the authors based on J. Lawson (2022)

Utilizing IoT technology enables operational enhancements and post-activity oversight, effectively reducing waste stemming from maintenance oversights and quality assurance gaps. Sensors enable targeted maintenance interventions based on real-time operational data, minimizing

scheduled maintenance inefficiencies. Furthermore, IoT aids in detecting and addressing early-stage manufacturing errors, mitigating downstream waste. In the “Product as a Service” model, manufacturers retain ownership while offering hassle-free functionality to consumers, achieved

through continuous product monitoring. This concept allows devices to self-report issues and suggest repairs or replacements, when necessary, with end-of-life insights for recycling possibilities. Smart waste collection solutions, driven by IoT and data analysis, address inefficiencies in urban waste collection due to unpredictable consumer behaviour.

The transformative influence of Industry 4.0 on the shift from a linear to a circular economic model is notably manifested in the proliferation of automation, encompassing machine learning and robotics, alongside intelligent logistics driven by data analysis, the Internet of Things (IoT), and sensor networks. These advancements offer the potential to significantly curtail waste generation and facilitate the efficient reintegration of produced waste back into

the manufacturing cycle. The conventional boundaries of robotics have been expanded, and a new paradigm is being shaped by control systems rooted in artificial intelligence and learning algorithms.

This dynamic landscape provides many novel opportunities for developers and programmers to explore. This elevated level of robotics progress empowers manufacturers to apply mechanized operations across a broader spectrum of activities, resulting in heightened output yields, waste reduction, and elongated product lifespans. Illustrative case studies and instances that underscore the economic influence arising from the synergy between robotics, artificial intelligence, and waste reduction and recycling are noteworthy. The following Figure 6 depicts cases that illustrate these ideas.



**Figure 6.** Cases of synergy between robotics and waste reduction and/or recycling

**Source:** compiled by the authors based on J. Lawson (2022)

These robots demonstrate the symbiosis between technological innovation and waste management, revolutionizing industrial practices. Incorporating these technologies, the circular economy gains momentum, demonstrating its potential to minimize waste, enhance product design, and create sustainable alternatives. In this, 3D printing is a catalyst for the shift from linear to circular economy models. This technology enables on-demand production of replacement parts, enhancing device maintainability, product longevity, and manufacturing efficiency. By adopting sustainable and durable products, 3D printing aligns with circular economy principles. Furthermore, it significantly curbs manufacturing time and costs for intricate, low-volume items. Materials technology plays a vital role in waste reduction. Designing materials for either biological or technical cycles enhances circularity. Compostable materials align with the biological cycle, while recyclable polymers and alloys support the technical cycle. Additionally, material advancements can lead to efficient use of resources, such as creating lighter products with reduced crude oil dependence.

Maximizing the operational efficiency of the technology infrastructure is critical for achieving Net Zero and circular economic goals. Transitioning to the cloud is a

significant step towards a more environmentally sustainable technological framework. Cloud computing helps dematerialize value chains by optimizing the resource use of individual servers. Nevertheless, informational centres still have a significant environmental footprint. Google, for instance, has implemented measures in its data centres to combat this issue. They've utilized intelligent design and machine learning to optimize energy usage, generating substantial energy savings. The proprietary design of their infrastructure has enabled the refurbishment of server components to extend their lifespan. Google has also established secondary markets for the resale of excess components, creating additional revenue streams (Lawson, 2022).

Artificial intelligence (AI) contributes to designing products for modularity and tracking trends in big data, which is crucial for understanding material flows in a circular world. Integrating AI, twin technologies, and big data not only lessens design impact but also amplifies reusability potential. Simply put, technology plays a pivotal role in designing a sustainable future. Numerous companies are actively experimenting with the integration of blockchain technology to enhance the traceability of chemicals, particularly plastics, throughout their entire lifecycle. A col-

laborative effort between Mitsui Chemicals and IBM Japan aims to establish a resource circulation platform utilizing blockchain technology, ensuring seamless traceability from the initial raw materials, such as monomers and polymers, to the various stages of manufacturing, sales, utilization, and product recycling. Similarly, Porsche, Borealis, Domo Chemicals, and Covestro have initiated a blockchain traceability project. Furthermore, Solvay has commenced trials of blockchain technology to effectively track its products across the entire value chain in conjunction with Chem-chain (Lawson, 2022).

Overall, from a conceptual standpoint, the transition to a circular economy holds several potential advantages. These are mitigation of environmental pressures and consequences and cost savings related to materials, reduced susceptibility to price fluctuations, and enhanced supply security. Governments view the circular economy as an appealing alternative to the conventional linear economic model. This shift can uncouple economic growth from re-

source consumption, stimulating innovation and employment opportunities. For businesses, the transition offers practical benefits, such as diminishing the risk of resource shortages and creating new revenue streams, alongside technological advantages facilitated by emerging technologies that facilitate circular principles (Wautelet, 2018). From a social point of view, it means an increase in jobs and stable income that can guarantee maintaining the necessary level of life. Nevertheless, the circular economy is not ideal has some threats and could be subjected to small-scale failures due to being a new concept. For example, many linear economy workplaces could be lost in transition. Regular people should keep an emergency fund to offset these implications. Experts recommend having enough money to cover up for at least 6 months (Morgan, 2023). Illustrated in Table 2, this context delineates the business prospects emerging within a circular economy, the driving trends that expedite its integration, and the challenges that restrain its adoption.

**Table 2.** Opportunities and threats of circular economic transition

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>• Easing supply risks for critical resources</li> <li>• Amplifying government pressures and incentives</li> </ul> <p><i>Enabling Trends:</i></p> <ul style="list-style-type: none"> <li>• Urbanization</li> <li>• Evolving consumer perspectives on value and materialism</li> <li>• Emphasis on access over ownership and sharing economy</li> <li>• Proliferation of transformational technologies</li> </ul>	<ul style="list-style-type: none"> <li>• Competitiveness of linear business models</li> <li>• Competition from alternatives to scarce materials</li> <li>• Higher initial investment costs and longer revenue generation timelines for service models</li> <li>• Constraints of Waste Transportation Regulations</li> <li>• Insufficient awareness of the urgency to adopt sustainable production and consumption patterns</li> </ul>

**Source:** compiled by the authors based on PriceWaterhouseCoopers (2018)

However, it is worth noting that while digital technology is promising for transitioning to a circular economy, it is not a universal solution and is not without environmental consequences. The emergence of digital technologies has contributed to resource depletion, with the material footprint of digital equipment quadrupling between 1995 and 2015. Extracting raw materials, such as precious metals and rare-earth elements for this equipment caused significant environmental damage, including land degradation, water scarcity, and loss of biodiversity. Additionally, the production of digital equipment generates substantial waste, with a 3 kg laptop being responsible for producing 1,200 kg of waste. The frequent replacement cycle of such equipment exacerbates the waste issue. Furthermore, estimates suggest that digital technologies contribute to approximately 3.7% of global greenhouse gas emissions, and projections for France indicate that these technologies might account for 7% of total greenhouse gas emissions by 2040. Remarkably, the proliferation of digital technologies has correlated with an uptick in CO<sub>2</sub> emissions over the last half-century (Moigne, 2021). Consequently, the notion that the environmental drawbacks associated with digital technology can be balanced by the benefits they offer remains unconfirmed. Industries considering investments in new digital technologies must rigorously assess that any negative impacts throughout the lifecycle of these technologies fade with the gains they bring.

The concept of the circular economy has undergone a transformative evolution since 1980, gaining increased attention in the 21<sup>st</sup> century in both academic and non-academic literature. This surge in interest has primarily focused on macro and meso levels, delving into national and European scales, identifying obstacles and catalysts for circular economy adoption, constructing comprehensive policy structures, analysing the finance sector’s role, and understanding the ramifications of reverse loops on supply chains. Many scholars have contributed to the understanding of the circular economy’s implications for environmental and economic systems. Critical examinations by M. Geissdoerfer *et al.* (2017) and J. Korhonen *et al.* (2018) addressed sustainability, diverse perspectives, advantages, and potential limitations of circular approaches. These findings resonate with the conducted research, which also highlights the transformative potential of technology integration in fostering circular economy practices and promoting economic development.

The research findings underscore a compelling positive correlation between the integration of technology, circular economy practices, and economic development. The same opinion is shared by Y. Kalmykova *et al.* (2018). The study also reveals that as businesses adopt advanced technologies to embrace circular economy principles, significant improvements in various aspects are noted. These include enhanced resource efficiency, reduced waste generation,

increased recycling rates, and the creation of new revenue streams through innovative business models. N.M.P. Bocken *et al.* (2016) and M. Lewandowski (2016) addressed product design, business models, and practical implementation, showcasing the complex nature of the circular economy concept. In line with these studies, the conducted research also underscores the importance of a common understanding, collaborative efforts, and innovative strategies for facilitating the transition to a circular economy.

On a micro level, scholars have concentrated on prerequisites for product design within a circular economy context, outlining strategic approaches, establishing frameworks for business models conducive to circular thinking, and classifying circular business models (CBMs). Notably, this aligns with findings in the current study, where exploration into the multifaceted role of technology demonstrated its potential to accelerate the adoption of circular economy principles across various sectors. However, the practical limitations of achieving absolute circulatory perfection in the circular economy concept are acknowledged. Challenges include the difficulty of achieving zero loss of technical material, zero material inputs, endless loops, and endless energy for loops. These constraints highlight the complex interplay of factors hindering the complete elimination of waste. The study by D. Zhong *et al.* (2022) provides a specific example of the use of a business model following the circular economy in China. Although the authors devoted considerable attention to the prospects and recommendations for the development and favourable implementation of the model mentioned in the study, they also point out the unsatisfactory situation in the region, as well as market pressure from the world's leading countries.

Fundamentally, the investigation of the circular economy plays a pivotal role in formulating strategies and policies to mitigate environmental and economic challenges while harmonizing with sustainability paradigms. The study's results have notable policy implications, suggesting that governments can incentivize technology adoption, and corporations can strategically integrate technology into their operations to enhance resource efficiency and competitiveness. Collaborative efforts between the public and private sectors present an unparalleled opportunity for harmonizing economic expansion, environmental custodianship, and societal well-being within the global interconnected fabric.

## CONCLUSIONS

The study findings demonstrate the transformative potential of technology integration in fostering circular economy practices and promoting economic development. The insights gained provide valuable guidance for policymakers, businesses, and researchers seeking to accelerate the adoption of circular principles and technologies for a sustainable

future. Through a systematic approach, the study defined the prerequisites for the necessity of transitioning toward a circular economy, such as awareness of resource depletion and mounting environmental concerns stemming from the traditional "take-make-dispose" model. Technological advancements also act as a pivotal driver, shifting economic systems away from fossil resources.

The conducted study allowed to distinguish several separate stages of its development. Stage 0 was around 1966, and Stage 1 encompassed 2 decades: the 70s and 80s, Stage 2 was in place between 1990 and 2010, while the present Stage 3 is still on. Several interconnected concepts and frameworks have been determined to add to the holistic vision of sustainable development within the circular economy discourse, aligning economic, environmental, and social dimensions. The ecological transition guides economic development within planetary boundaries, while frameworks advocate innovative business models and eco-efficient product cycles. Cradle-to-cradle thinking supports sustainable material cycles, shared value aligns capitalism with societal needs, and industrial ecology emphasizes closed-loop systems.

The study findings extend beyond conventional boundaries, illustrating how technology can amplify the global influence of sustainable practices. As industries grapple with the challenge of harmonizing economic growth with environmental responsibility, this research provides empirical evidence of technological efficacy in facilitating the transition to circular economies. Given the growing urgency to address environmental concerns, this study contributes to the existing body of knowledge by shedding light on the critical link between technological development and circular economy transition. The insights gleaned from successful case studies and empirical assessments offer a pragmatic foundation for policymaking, corporate strategies, and future research endeavours. The research underscores the practical viability of transitioning to circular economies by harnessing the power of technology to achieve sustainable economic growth.

Future research directions should include the long-term impacts of technology integration on circular economy practices and economic outcomes. Sector-specific analyses can provide deeper insights into the challenges and opportunities unique to various industries. Additionally, investigating the social and behavioural aspects of technology adoption and circular practices can provide a more comprehensive understanding of the transition process.

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## CONFLICT OF INTEREST

None.

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## Стратегічні прогнози переходу до циркулярної економіки: оцінка ролі технологій в економічному розвитку

**Анотація.** Використання циркулярної економіки, на відміну від лінійного виробництва, дозволяє оптимально утилізувати відходи, зменшити дефіцит ресурсів, знизити негативний вплив на навколишнє середовище та досягти конкурентних переваг за рахунок інновацій. Рушійною силою цього переходу є технологічний розвиток, який уможливило більш ефективні та швидкі зміни. Метою дослідження є оцінка впливу технологій на перехід до циркулярної економіки, яка набуває все більшого значення на тлі викликів, спричинених зростанням населення, зміною клімату та погіршенням стану довкілля. У дослідженні було використано поєднання кількісних та системних методів аналізу, а саме: вивчення, категоризація та аналіз тематичних досліджень, галузевих звітів та проведення мета-аналізу. Дослідження визначило ключові рушійні сили переходу до циркулярної економіки, зокрема усвідомлення вичерпання ресурсів, екологічні проблеми, технологічний прогрес, зміна споживчих цінностей та державне регулювання. У дослідженні проаналізовано різні визначення циркулярної економіки та класифіковано розвиток її принципів на етапи з 1966 по 2023 рік. Вивчення комплексної ролі технологій продемонструвало їхній потенціал для прискорення впровадження принципів циркулярної економіки в усьому світі. Дослідження вийшло за межі традиційних кордонів, проілюструвавши здатність технологій посилювати вплив сталих практик. Оскільки галузі збалансували економічне зростання з екологічною відповідальністю, дослідження надало емпіричні докази ефективності технологій у сприянні переходу до циркулярної економіки. Це дослідження дало цінне розуміння критично важливого зв'язку між технологічним розвитком і переходом до циркулярної економіки. Успішні тематичні дослідження та емпіричні оцінки запропонували прагматичну основу для формування політики, корпоративних стратегій та поточних досліджень. Дослідження має теоретичне значення для поглиблення розуміння динаміки циркулярної економіки. Водночас воно практично сприяє формуванню політики та корпоративних стратегій, що сприяють стійкій економічній трансформації

**Ключові слова:** сталість; циклічність; економіка замкнутого циклу; регенеративна економічна система

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## Essence and modern trends in the formation and management of international reserves

**Abstract.** World financial markets development indicates an increase in the role of intentional reserves for international capital markets. The study aims to address, evaluate and analyse the international reserves, as well as their impact on the national economy. During the research data of graphical and statistical analysis, as well as the selection of information for analysis, generalization and methods of regulation of international reserves were used. The study analysed and systematised the goals and objectives, principles, risks, structure, functions of international reserves, factors that affect the international reserves, policy directions for the management of foreign exchange reserves, stages of the management process, as well as factors that depend on the number of intentional reserves. The dynamics of changes in Ukraine's intentional reserves; dependence of the change in the level of the foreign exchange reserves of Ukraine on the change in inflation via the analysis of macroeconomic data using the elasticity coefficient were analysed, and costs and sources of replenishment of the intentional reserves were analysed to determine the optimal size of foreign exchange reserves for the period from 2010 to 2023. One of the criteria for the adequacy of the international reserves was systematized, namely the coverage of at least three months of future imports of goods and services. The importance of the role of the international reserves in the economy of Ukraine is substantiated. The study identified the most important problems, as well as methods and ways of more effective management of intentional reserves are suggested. The practical value of the conducted research is that it allows for an increase in the efficiency of the management of international reserves in the context of ensuring financial security

**Keywords:** foreign exchange reserves; National Bank of Ukraine; inflation; monetary policy; interest rate; economic growth; national monetary unit

### INTRODUCTION

A sufficient amount of international reserves is one of the factors that ensures an appropriate level of financial and currency security, contributes to the stable development of the economy, as well as increases confidence in the national monetary unit. Moreover, the management of foreign exchange reserves (hereinafter, FX reserves) takes a leading place in the national economy, whereas the integration

of national economies is under the influence of external factors. Besides, sufficient volumes of foreign exchange reserves enable the monetary authorities to localize the effect of any factors that cause imbalances in the financial market through intervention measures, while international reserves are one of the tools for balancing financial markets of the negative impact of external risks. Therefore, in

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conditions of financial instability, the regulation and effective management of international reserves is one of the most relevant issues for ensuring financial and macroeconomic stability. In addition, the optimal structure of FX reserves is a guarantee of international payments.

T. Derkach (2019a) notes that gold as part of FX reserves serves as a strategic financial asset. Therefore, to ensure the economic stability of Ukraine's economy, it is necessary to develop a long-term policy based on state control over gold mining and its circulation, as well as increase the motivation of state structures in the accumulation of gold reserves. The author concluded on the geographical concentration of FX reserves, namely that more than half of the total amount of worldwide reserves consists of only six countries. N. Kuryacha & V. Mairer (2020) addressed the trends of currency regulation of international reserves, their structure and dynamics, and determined the influence of macroeconomic indicators on the size of international reserves, as well as the change of components in the structure of FX reserves depending on the economic situation. Empirical analysis of several indicators of FX reserves worldwide by V. Koziuk (2021) showed intersystem demand for gold tied to the general trend of increasing reserves, as well as demand for gold determined by specific reasons.

N. Tataryn *et al.* (2020) determined that a high level of uncertainty, significant dollarization, instability of the exchange rate and devaluation of the hryvnia, as well as a low level of FX reserves, interfere with effective monetary regulation. D. Diakovskiy (2020) analysed the essence of FX reserves and their purpose. The scientist determined that the main purposes of FX reserves are to protect the national currency system from speculative capital movements, and global financial and currency crises; improve public debt management; export promotion; inflow of direct foreign investments and lending by international financial institutions of production industries; innovative economic development, slowing of inflation.

M. Korol *et al.* (2022) found that the correct formation and effective use of FX reserves ensure the stable functioning of the financial system. The scientist indicated that one of the main tasks of the National Bank of Ukraine is the effective management of FX reserves to ensure the coverage of the balance of payments deficit and the influence on the exchange rate through foreign exchange policy, as well as the influence on the dynamics of the money supply to achieve price stability as a strategic goal of monetary regulation. A. Hrytsyshyn (2021) analysed the empirical studies of the determinants of international reserves, the criteria for the adequacy of reserve assets and their structure, as well as the activities of the central banks of the European Union (hereinafter, EU) in the field of management of international reserves following the norms of the national legislation of each country. Yu. Harkusha (2023) suggested optimizing the structure of international reserves by diversification and expansion of the list of reserve currencies; increasing the share of monetary gold as

a reliable asset; expanding the directions of international reserves investment, considering the possibility of investing funds in securities of countries with sustainable economic development.

The study aimed to research, assess and analysis of foreign exchange reserves, and their impact on the state of the national economy, highlighting the main trends in the formation and use of official reserves, as well as determining the optimal level of FX reserves.

## MATERIALS AND METHODS

The study was conducted on data of statistical and graphical analysis. The methodology used for the research includes the selection of information for the generalization, analysis and methods of state regulation of international reserves. The main characteristics of international reserves were analysed and systematized based on information data from "Economic Truth" (n.d.) and Minfin (n.d.) portals, as well as obtained from the official website of the NBU (National Bank of Ukraine, 2024).

Since the risk of high rates of accumulation of FX reserves is an increase in inflationary pressure, the dependence of the change in inflation on the change in the level of the international reserves of Ukraine was considered, based on the analysis of macroeconomic data for the period from 2010 to 2023, using the elasticity coefficient:

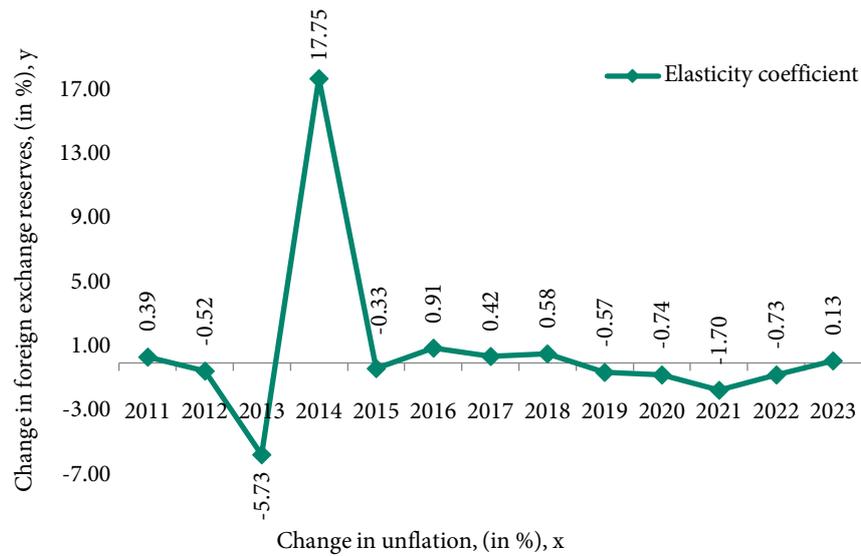
$$Exy = \left[ \frac{dlny}{dlnx} \right] = \left[ \frac{dy}{dx} \cdot \frac{x}{y} \right], \quad (1)$$

where  $y$  – a change in amount of official international reserves;  $x$  – a change in inflation.

Since the formation of an optimal international reserve structure is necessary for efficient management, an analysis of costs and sources of replenishment of FX reserves covering the period 2010-2023 was carried out based on annual time series data obtained from the official website of the National Bank of Ukraine (2024) to determine the optimal size of FX reserves. FX reserves are the dependent variable in the study and indicate that the volume of international reserves decreased in the period 2010-2014 and steadily increased in the period 2015-2023. Actions aimed at obtaining new scientific results of the study involved the use of the indicators of the FX reserves in Ukraine, obtained based on the annual reports of the NBU for the period from 2010 to 2023.

## RESULTS

Since one of the three criteria for the adequacy of foreign exchange reserves is the coverage of at least three months of future imports of goods and services, the number of months of future imports financed by the current volume of FX reserves as of the 2010-2023 period was analysed. The dependence of the change in inflation on the change in the level of the FX reserves of Ukraine was addressed. Due to the limitations of open data, economic aspects for the period from 2011 to 2023 were analysed using the elasticity coefficient formula (Fig. 1).



**Figure 1.** The elasticity coefficient of inflation and international reserves changes

**Source:** compiled by the authors based on National Bank of Ukraine (2024)

The results of the assessment of the influence of the macroeconomic factor of inflation on the volume of international reserves showed that the most significant elasticity level was only in the period of economic

turbulence, as of 2014, as well as pre-crisis 2013 with fewer fluctuations, while in other periods changes in inflation had a relatively small impact on the volume of FX reserves (Table 1).

**Table 1.** Elasticity coefficient between changes in FX reserves and inflation

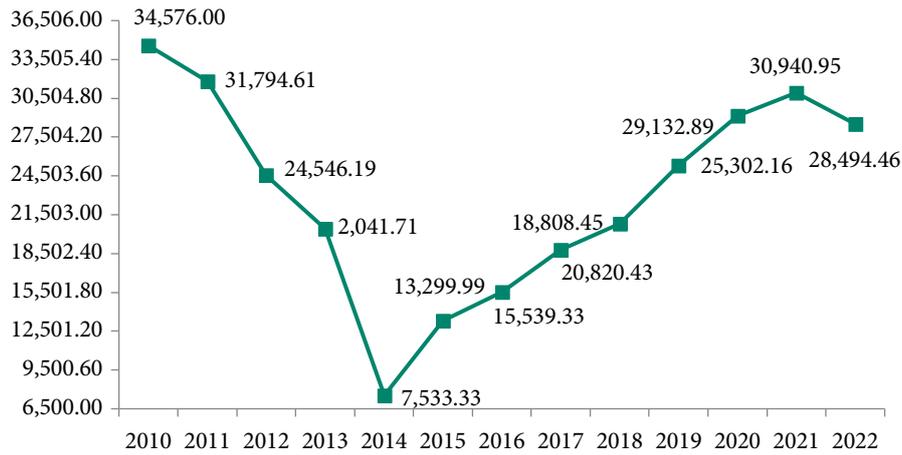
Year	Change in FX reserves, (in %), $y$	Change in inflation, (in %), $x$	Elasticity coefficient
2010	30.45	9.1	
2011	-8.04	4.6	0.39
2012	-22.8	0.2	-0.52
2013	-16.83	0.5	-5.73
2014	-63.1	24.9	17.75
2015	76.55	43.3	-0.33
2016	16.84	12.4	0.91
2017	21.04	13.7	0.42
2018	10.7	9.8	0.58
2019	21.53	4.1	-0.57
2020	15.14	5	-0.74
2021	6.21	10	-1.70
2022	-7.91	26.6	-0.73
2023	42.16	5.1	0.13

**Source:** compiled by the authors based on National Bank of Ukraine (2024)

Hence, since 2011, international reserves were allocated in support of the exchange rate due to the growing balance of payments deficit, as well as external debt repayment, which increased during the 2008 global crisis. The drop in the volume of FX reserves during the specified period was caused by the strict monetary policy to support the stability of the hryvnia, which was carried out in 2011-2012; significant capital outflow in 2013-2014; repayment of external debt obligations of Ukraine to foreign creditors, in particular, to the International Monetary Fund (hereinafter, IMF); as well as rapid devaluation of the hryvnia.

Nonetheless, after 2014-2015 FX reserves dropped to a catastrophically low level when a huge amount of

foreign currency was withdrawn by non-residents, the population and Ukrainian businesses, the further recovery was facilitated by the financial assistance of international institutions and the equalization of the balance of payments due to the reduction of imports. An important feature of this stage is the transition to a floating exchange rate, inflation targeting, as well as to gradual currency liberalization. The transition to a floating exchange rate allowed the NBU to spend less funds from reserves on interventions to maintain the hryvnia exchange rate. Meanwhile, in 2017-2019, some economic growth was achieved, which contributed to the increase in reserves (Fig. 2).

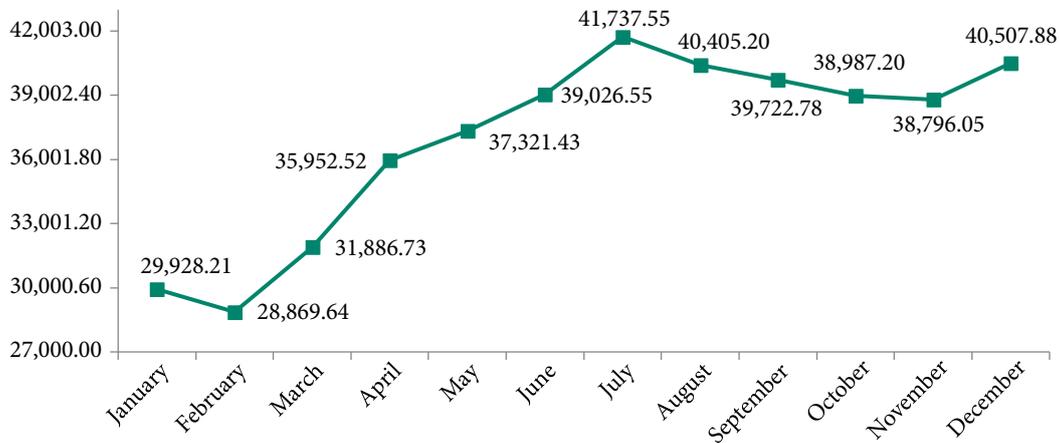


**Figure 2.** Foreign exchange reserves of Ukraine (2010-2022, million USD)

**Source:** compiled by the authors based on National Bank of Ukraine (2024)

In 2019, international reserves increased from USD 20.82 billion to USD 25.3 billion, i.e., by USD 4.48 billion. However, during the last month of 2019, the NBU made a record purchase of currency from the interbank market, acquiring about USD 3 billion. Meanwhile, in 2022, Ukraine received about USD 3.1 billion due to currency government bonds. Furthermore, in June 2023, the international reserves of Ukraine increased by 4.5% to almost USD 39 billion, which is the highest indicator in the entire history of Ukraine’s restoration of independence. Moreo-

ver, in July 2023, Ukraine’s international reserves broke the historical record, reaching USD 41.72 billion. Nevertheless, as of October 1, 2023, the international reserves of Ukraine amounted to USD 39.7 billion (Fig. 3), which is 1.7% less compared to September 2023. The reason for the decrease in reserves was debt payments in foreign currency and the NBU’s intervention in the sale of foreign currency, which were partially compensated by proceeds from DGLB; macro-financial assistance from the EU; grants from the USA and the World Bank (National Bank of Ukraine, 2024).

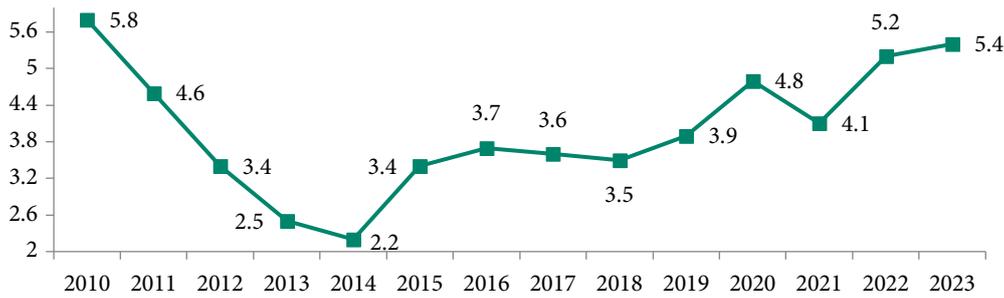


**Figure 3.** Foreign exchange reserves of Ukraine (2023, million USD)

**Source:** compiled by the authors based on National Bank of Ukraine (2024)

Subsequently, in 2023 the NBU predicted the volume of foreign direct investment in the amount of USD 44.7 billion in 2024 and USD 45 billion as of 2025. Due to international aid, Ukraine can also finance a significant current account deficit, as well as able to maintain a high level of international reserves and balance the currency market (National Bank of Ukraine, 2024). In addition, international reserves

must cover at least three months of future imports of goods and services. Notwithstanding that war caused a drop in the sufficiency of military supplies to the lowest level since the early 1990s: 1.2 months of imports, however, the recuperative growth of the volume of reserves against a drop in imports led to the fact that in 2015, the FX reserves accounted for 3.4 months of imports of goods and services (Fig. 4).



**Figure 4.** The number of months of future imports financed by the current volume of FX reserves

**Source:** compiled by the authors based on National Bank of Ukraine (2024)

The second criterion for the adequacy of FX reserves is the ratio of their value to the monetary aggregate M2. Hence, in 2008, the state budget was not used to maintain the hryvnia exchange rate, therefore the national currency devalued. Comparatively, in 2004-2007 and 2009-2011, reserves could ensure the maintenance of a stable exchange rate of the hryvnia through currency interventions. However, in 2012-2023, FX reserves were rapidly spent to support the hryvnia exchange rate. Finally, the third criterion for the adequacy of reserves is

their volume concerning the sum of external state and non-state debts. Subsequently, Ukraine’s external debt is the main threat to its international reserves. Additionally, characteristics of international reserves, such as principles, risks, functions of FX reserves, goals and objectives, structure, stages of the management process of FX reserves, as well as factors that influence the volume of international reserves, such as those on which the volume of international reserves depend have been systematized and analysed (Table 2).

**Table 2.** Characteristics of international reserves

The structure of FX reserves of Ukraine	special drawing rights; reserve position in the IMF; monetary refined gold in bars (gold reserve); securities (except shares) paid in foreign currency; foreign currency in the form of banknotes and coins (a basket of international reserve currencies consists of the US dollar, euro, British pound and Japanese yen) or funds in accounts abroad.
Goals, functions, tasks and directions of FX reserves management policy	currency policy implementation; maintaining economic stability; formation of a currency basket; rational placement of assets abroad; diversification of currency reserves; fixing the ratio between foreign currency and gold; financing the deficit of payment and trade balances; maintenance of FX reserves in a highly liquid form; making a profit when conducting financial transactions; selection of the ratio between components of the reserve; financing of the negative net of the balance of current operations; guaranteeing the state solvency when making international payments; determination of the optimal amount of international payment methods; participation in capital formation and activities of international organizations; ensuring international trade-economic and credit-financial relations between states; partial holding abroad in non-resident banks for possible use during currency crises; maintaining market participants’ confidence in the state’s ability to fulfil its external obligations; control of state authorities that ensure currency and monetary policy and conduct currency regulation; assistance to the government in meeting its needs in foreign currency when fulfilling obligations under foreign debt; ensuring trust in the national currency and the financial policy regarding the management of monetary aggregates and the exchange rate; limiting the impact of negative external factors by keeping liquid funds in foreign currency to neutralize shocks during crisis events; maintaining a reserve in case of force majeure; implementation of foreign exchange interventions for the purchase and sale of foreign currencies in exchange for the national currency to stabilize the national currency exchange rate, form a reserve of liquidity and the ability to fulfil state external obligations, as well as expenses from operations with monetary metals and other internationally recognized reserve assets.
Factors affecting the amount of FX reserves and factors that affect the international reserves	inflation rates; export capacity; legislation, taxes; capital movement; investment climate; exchange rate mode; amount of external debt; currency restrictions mode; scales of foreign economic activity; national currency exchange rate mode; dynamics of official currency reserves; equilibrium of the balance of payments; currency interventions of the central bank; own mining of precious metals, including gold; participation in international division of labour; reserve position in the IMF, special drawing rights; the state of foreign trade (conjuncture in world markets); currency and monetary policy (the currency restrictions mode, the nature of the policy of interventions, the regime of exchange rates).
Principles of FX reserves	liquidity, reliability, and profitability.

Table 2. Continued

Risks of FX reserves	external market risk (liquidity risk, credit risk, market risk, currency risk and interest rate risk); operational risk (the risk of making a control system error, the risk of making a financial error, the risk of submitting incorrect financial data and losing potential income).
Stages of the FX reserves management process	planning; organization and implementation; efficiency analysis; accounting and control.

**Source:** compiled by the authors based on O. Yaremenko (2011), I. Karakulova (2011), T. Derkach (2019b)

The mode of formation and use of FX reserves is one of the components of the national currency system and is manifested in the preservation of the independence of the central bank in national monetary policy conducting. Thus, there are two main purposes of international reserves: transactional (making international settlements, payments for external obligations related to the import of goods and services, servicing the external debt and capital) and interventional (aimed at supporting the external and internal value of the national currency to regulate the exchange rate of the national currency) (Bodrova, 2014). Similarly, the formation and management of FX reserves is a component of the currency policy of the National Bank. The creation of sufficient reserves, and therefore the provision of the national bank with the appropriate tools and resources for conducting an effective monetary and currency policy, can contribute to sustainable economic development (Dikovskiy, 2020).

Initially, when forming the central banks were guided by the principles of liquidity and reliability by placing the FX reserves in highly liquid and low-risk financial instruments (freely convertible currency, bonds of international organizations, government bonds). However, over time, Central Banks began to place international reserves in more profitable assets (corporate bonds, shares, derivatives) (Stetsenko & Bezvukh, 2017). In addition, the structure of FX reserves depends on the level of economic development, and the stability of the national currency (Bereslavskaya, 2014). Equally, the optimal size of the FX reserves is sufficient to prevent significant devaluations and revaluations of the national currency and to maintain the stability of the national monetary unit; meanwhile, the limited size of the international reserves is the amount that prevents default on the state's external obligations (the minimum amount of reserves must not be less than the amount consisting of

the cost of covering imports and the amount of the cost of payments from the external state debt); finally, critical is the size of reserves, which are smaller than the value of three-month imports (Karakulova, 2011).

Elsewhere, if the revenue from export operations is exchanged for the national currency, it will be used for domestic investment and will contribute to economic growth. Moreover, the risk of high rates of accumulation of FX reserves is an increase in inflationary pressure. The costs of holding international reserves are especially high for countries with high inflation and a fixed exchange rate. The diversification of excess international reserves can prevent macroeconomic imbalances and the possibility of a financial crisis. Thus, if the central bank does not conduct currency intervention promptly, the national currency may begin to fall, which will lead to inflation. The excessive growth of reserves due to the constant overloading of external revenues over expenses contributes to the increase of the money supply in circulation, which stimulates inflation and leads to a significant outflow of funds from the sphere of production to the monetary sphere (Bodrova, 2014).

A sufficient volume of international reserves is a sign of effective economic growth and confidence in the national monetary unit. The formation and maintenance of an optimal level of FX reserves is the key to effective monetary policy and stable economic development (Yaremenko, 2011). Subsequently, the main task of the central bank in the process of implementing currency policy is the effective management of FX reserves (Kuryacha & Maier, 2020). Effective management of international reserves involves determining the optimal amount of reserves and maintaining them at the appropriate level to ensure financial security (Karcheva & Syrytsia, 2015). To determine the optimal size of FX reserves, expenses and sources of the reserve fund for the period 2010-2023 were analysed (Table 3).

**Table 3.** Sources and expenses of FX reserves

Year	Sources of FX reserves	Expenses of FX reserves
2010	Sale of currency to the population, non-residents and exporters; demand for the main goods of Ukrainian export; inflow of foreign funding; currency exchange of funds received from the IMF.	Ensuring payments for external obligations and, in particular, in the sphere of energy import (imported gas); support of foreign exchange reserves of the NBU; replenishment of the government's treasury account to support the state budget.
2011	Placement of Eurobonds in securities of foreign companies, as well as in deposits and current accounts of foreign banks.	Maintenance of the exchange rate (to support the hryvnia from devaluation).
2012	Receipt of funds from five-year Eurobonds by the government; high demand for dollars.	Planned payments for state loans; settlement of loans, foreign debts, gas payments, and debts; maintenance of the exchange rate (stable hryvnia).
2013	Foreign exchange interventions on the interbank foreign exchange market (receipt of funds from the government securities: foreign and domestic loan bonds denominated in foreign currency).	Payments by the government of Ukraine for external and internal obligations, including payments to the IMF, as well as support of the hryvnia exchange rate.
2014	IMF loan tranches.	Payments of debt in foreign currency, including payments to the IMF.

Table 3. Continued

Year	Sources of FX reserves	Expenses of FX reserves
2015	Income from swap operations with foreign banks, NBU interventions (foreign exchange operations at auctions and targeted interventions to state-owned enterprises “Naftogaz of Ukraine” and “National Atomic Power Generating Company “Energoatom”), income from Canadian funds, assistance programs from the IMF and other financial donors.	Payments to the government for repayment of state and state-guaranteed debt in foreign currency, including foreign state loan bonds and government securities, as well as payments to the IMF.
2016	Receipts of Japanese yen; receipts from the European Commission; the NBU currency interventions: auctions for the sale of foreign currency (net currency sale); placement of government bonds denominated in foreign currency; IMF tranche under the Extended Fund Facility (EFF), as well as official financing related to the IMF program; placement of Eurobonds by the Ministry of Finance under the guarantee of the US government.	Payments for service and repayment of the state debt in foreign currency (payments to the Government and the NBU for debt to IMF; the government’s Eurobonds; borrowed funds under the swap operation).
2017	Income from Eurobonds; sale and purchase of currency through foreign exchange interventions; income from a favourable situation for domestic exports on world raw material markets; receipt of funds from Domestic government loan bonds (hereinafter, DGLB) denominated in foreign currency, as well as from the European Commission; receiving IMF financing.	Foreign debt payments: payments to the IMF; for repayment of state and state-guaranteed debt in foreign currency (including sovereign Eurobonds; under Domestic government loan bonds as well as External government loan bonds (hereinafter, EGLB)); for borrowed funds under the swap operation.
2018	Net purchase of currency by the NBU on the interbank foreign exchange market; proceeds from the export of a record crop of agricultural products; net sale of currency; receiving external financing (income from the IMF, the EU and the World Bank); increase in the value of financial instruments (change in market value, exchange rate of the hryvnia); sale of DGLB denominated in foreign currency.	Payments to the Government and the NBU for the repayment of the state debt in foreign currency (for the DGLB, as well as payments to the IMF).
2019	High level of supply of agricultural products; proceeds from DGLB; external financing from state and private companies; purchase of surplus currency by the NBU, active sale of currency by the private sector, state-owned companies, as well as foreign investors; revaluation of financial instruments (change in market value and exchange rate of the hryvnia).	For Government operations on public debt management; for repayment of the state debt in foreign currency (for DGLB, for other obligations to foreign creditors and international financial organizations).
2020	Increase in the value of financial instruments (as a result of changes in the market value and exchange rates); positive balance of operations of the NBU on the interbank foreign exchange market (income from DGLB and Eurobonds (i. e. EGLB)); revitalization of business activity (activation of importers).	Repayment of state and state-guaranteed debt (including DGLB denominated in foreign currency, as well as payments IMF); repayment of external and internal obligations and operations of the NBU.
2021	External financing and purchase of currency by the NBU on the foreign exchange market; receiving SDR; tranches from the IMF and funding from the European Commission; Foreign exchange receipts for the government (in particular from Cargill Financial Services International, Inc. as well as from the DGLB); revaluation of financial instruments (due to changes in market value and exchange rates).	Government payments for repayment of state debt in foreign currency (Eurobonds (i.e. EGLB); payments to the IMF).
2022	Foreign exchange receipts from international partners (from the USA (through the World Bank trust fund); the EU; the DGLB; the World Bank; the Government of Canada; as well as other international creditors); interventions of the NBU on the net sale of currency in the interbank foreign exchange market to maintain a fixed exchange rate; activation of budget expenditures; high demand of business and population for the import of alternative energy sources; revaluation of financial instruments (due to changes in market value and exchange rates); currency bonds; stable foreign exchange earnings from exporters (primarily agro-industrial complex).	Receipts for government and payments for repayment of the state debt in foreign currency (to the EBRD (hereinafter, European Bank for Reconstruction and Development); as well as to the IMF).
2023	Income from: international partners (macro-financial assistance from the EU and the World Bank), NBU operations on the foreign exchange market of Ukraine; from DGLB; and revaluation of financial instruments (due to changes in market value and exchange rates).	NBU interventions to support exchange rate stability; receipts for government and payments for repayment of the state debt in foreign currency (debts to the European Investment Bank, the World Bank, the EBRD, IMF).

**Source:** compiled by the authors based on information from the National Bank of Ukraine (2024), information portal “Economic Truth” (n.d.), Minfin (n.d.)

Diversification of foreign currency reserves can be used to minimize risks, as well as to invest funds in promising financial assets of developed countries (Harkusha, 2023). It is worth noting that the collapse of the Bretton Woods fixed exchange rate system in the early 1970s initiated the flexible exchange rate system. Initial excessive overvaluation of the US dollar in the early- and mid-1980s, and its devaluation in the late 1980s led the G7 countries to coordinate formal intervention to stabilize the value of the US dollar. Comparatively, monetary authorities engage in the sale of foreign exchange to reduce the volatility of exchange rates affecting international trade, international financial flows, and foreign investment, or, to strengthen the national macroeconomic fundamentals, to influence the value of its currency. Furthermore, monetary authorities have adjusted the level or volatility of their currency prices by buying and selling foreign exchange (Lee & Yoon, 2020). The higher the level of stability of the national currency, the greater the percentage of gold in its FX reserve. The weaker the national currency, the greater the percentage of strong world currencies in the international reserves (Kuryacha & Maier, 2020). Thus, as part of the agreement with the IMF, Ukraine is gradually liberalizing currency relations, which is enshrined in the Law "On Currency and Currency Transactions" (2018).

It is worth tracing the process of management of FX reserves in Ukraine, which began with the creation of the NBU in December 1991 and was conducted in six stages. The first stage (1991-1992) saw the creation of the NBU, the infrastructure for managing FX reserves, as well as domestic international reserves. The second stage (1992-1995) was characterized by the creation of the Currency Exchange, the rapid growth of FX reserves due to the introduction of the mandatory sale of a part of foreign exchange earnings, and the beginning of cooperation with IMF. The third stage (1995-1998) is associated with the rapid growth of FX reserves at the expense of IMF loans and short-term portfolio foreign investments and ended with the 1998 financial crisis. In the fourth stage (1998-2008) initiation of reforming the NBU reserve management mechanism and the significant accumulation of international reserves took place. The fifth stage (2008-2014) provided for the management of international reserves in the crisis and post-crisis period and was characterized by a sharp drop in the volume of international reserves. The sixth stage (2015-2024) was characterized by the recovery of the growing trend in the volume of reserve assets of Ukraine, and fluctuations in the size of FX reserves (Korol *et al.*, 2022).

Thus, the study revealed that the purpose of accumulating FX reserves is to support and regulate the exchange rate of the national monetary unit in the long term, as well as to counter the spread of global financial and currency threats and crises of financial and macroeconomic stability since international reserves should ensure the financial stability of the national monetary system, as well as increase the reliability of banking system, protect the economy from external shocks, while a sufficient amount of international

reserves is a sign of economic growth, effective economic development and confidence in the national currency.

The study determined that the creation of sufficient reserves, and therefore the provision of the national bank with the appropriate resources and tools for conducting an effective monetary policy, contributes to sustainable economic development since the structure of international reserves depends on the stability of the national currency and the level of state economic development. The importance of the diversification of reserves in foreign currency which makes it possible to minimize risks, as well as to invest funds in promising financial assets of developed countries was found. Six stages of the management and the structure of international reserves for the period 2010-2023 in Ukraine, as well as forecast data on this macroeconomic indicator for 2024-2025, were given.

## DISCUSSION

First of all, it is important to note that the NBU as the central bank of Ukraine, defines international reserves as highly liquid assets of the NBU in foreign currency and gold, which are used to ensure payments by state authorities, as well as conducting currency interventions (National Bank of Ukraine, 2024). J. Aizenman *et al.* (2023), as other aspects of investigated question, show the buffer effect of international reserves which is more pronounced in Europe and Central Asia and provide policymakers with advice to adapt reserve strategies to the country's financial system, by ensuring stability and sustainability in modern interconnected economy and shows that the level of development of financial institutions plays an essential role in explaining the buffer effect of international reserves to deal with the negative consequences of financial shocks on the real exchange rate. The authors also determined that the buffer effect is stronger in countries with intermediate levels of financial openness.

M. Korol & I. Lapa (2018) highlighted the essence of FX reserves and examined the structure, level and factors that affect their volumes, methods of management, as well as characteristic features. The authors analyse the process of formation of international reserves and methods by measuring their optimal level. The authors investigate the correlation between the structure of international reserves and economic development, as well as external debt and the stability of the national currency. The authors claim that a constant analysis of international reserves is necessary, therefore, monitoring of the main operations with reserve funds (operational, credit, interest, currency, liquidity) is needed. The authors consider the history of the emergence and change of components in the structure of international reserves depending on the world economy in general and national economies in particular. However, in this research work dynamics of changes in intentional reserves have been more widely analysed.

N. Stetsenko & S. Bezvukh (2017) review the components of the FX reserves management system, identify the goals and objectives of the formation and management of

reserves and propose promising ways to solve them, as well as analyse the criteria for determining the optimal amount of international reserves and conduct their calculation for Ukraine. Scientists note that during the formation and management of FX reserves, it is not necessary to strive to increase their volume, but it is important to ensure its optimal value, which will enable the NBU to perform its functions of regulating currency relations, primarily in terms of maintaining the balance of payments and the external stability of the national monetary unit. Scientists claim that the system of the monetary market should be more adaptive because the ability to quickly react to economic challenges, consistency with world trends and taking into account the cycles of economic development are key properties in modern economic conditions. In comparison, this scientific work significantly expanded the components of the foreign exchange reserve management system, as well as the goals and objectives of the formation and management of reserves.

J. Hernández (2018) contributes to the international reserves study by developing a quantitative model of sovereign default and international reserves to evaluate the different contingent lending arrangements put in place by the IMF and other developed countries' central banks. The author described a mechanism which explained the role of reserves in reducing spreads and the probability of debt crises. It was shown that for a given Net Foreign Asset position, additional reserves reduce the set of states that allow multiple equilibria regarding the repayment and rollover decisions to address the optimal portfolio choice of the government. V.B. Shatkovska-Shmorhay (2016) substantiated approaches to determining the adequacy of international reserves, taking into account the floating exchange rate mode in Ukraine, and also carried out a comparative analysis of approaches to determining the adequacy of intentional reserves. Meanwhile, to determine the optimal size of foreign exchange reserves analysis of the sources and costs of FX reserves replenishment was carried out in this scientific work.

The mentioned works were used to conclude that the problems of researching various aspects of foreign exchange reserves are quite broad. Scientists successfully find new niches for study, which makes it possible to implement new practical tools for international reserves management. However, despite the versatility of the study of foreign exchange reserves aspects, a comprehensive view of the modern world structure of international reserves; investigation of dynamics of changes in intentional reserves; dependence of the change in the level of the foreign exchange reserves on the change in different macroeconomic factors; as well as an analysis of the costs and sources of replenishment of the intentional reserves also necessary.

## CONCLUSIONS

While summing up the study of FX reserves, it is worth noting that to ensure the currency security of Ukraine, the volume of international reserves of Ukraine must be optimal and sufficient for the implementation of the main functions

of the NBU. Accordingly, it is necessary to take into account that the globalization of financial markets determines the necessity of FX reserves to protect the national economy from the negative impact of global financial and currency crises, to increase the ability to fast respond to economic challenges, as well as to counter financial and currency crises.

It is worth noting that the riskiness of financial markets determines the urgency to manage FX reserves to maintain a high level of liquidity. This should be facilitated by slowing inflation, innovative economic development, inflow of direct foreign investments, improvement of public debt management, export stimulation and crediting by international financial institutions of production industries. Therefore, one of the main tasks of the NBU should be the effective management of the FX reserves to ensure the coverage of the country's balance of payments deficit and influence on the exchange rate, as well as the volume of the money supply for price stability as a strategic goal of monetary regulation. In the future, it should also be taken into account that the improvement of the process of formation and use of international reserves by the NBU should include: optimization of the structure of international reserves through its diversification and expansion of the list of reserve currencies; increasing the share of monetary gold as a reliable asset; expansion of investment directions of international reserves, in particular consideration of the possibility of investing funds in securities of countries with sustainable economic development.

Moreover, it is also necessary to implement an effective exchange rate policy that will allow overcoming external imbalance. Subsequently, particular attention should be devoted to the management of strategic reserves to increase economic stability and mitigate the consequences of external economic shocks. Similarly, it is also necessary to constantly analyse the FX reserves through the monitoring of the main operations with funds, since international reserves are an element of financial bodies for economic maintenance, therefore ensuring their optimal value will allow the NBU to effectively support the balance of payments and the external stability of the national monetary unit. Therefore, a perspective direction for further research is the realization of a comparative analysis of the sufficiency of worldwide FX reserves, as well as searching for a model of the optimal structure of reserve currency assets.

Thus, in the future, it should be taken into account that FX reserves are a necessary element to protect the economy from external shocks, and therefore international reserve's structure requires constant analysis and monitoring. In addition, prospects for further research include conducting a comparative analysis of the sufficiency of worldwide FX reserves.

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## CONFLICT OF INTEREST

None.

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## **Сутність та сучасні тенденції формування та управління міжнародними резервами**

**Анотація.** Розвиток світових фінансових ринків свідчить про зростання ролі навмисних резервів для міжнародних ринків капіталу. Метою дослідження є розгляд, оцінка та аналіз міжнародних резервів, а також їх вплив на національну економіку. Під час дослідження були використані дані графічного та статистичного аналізу, а також підбір інформації для аналізу, узагальнення та методи регулювання міжнародних резервів. У дослідженні проаналізовано та систематизовано цілі та завдання, принципи, ризики, структуру, функції міжнародних резервів, фактори, що впливають на міжнародні резерви, напрями політики управління золотовалютними резервами, етапи процесу управління, а також фактори, що залежать від обсягу навмисних резервів. Проаналізовано динаміку зміни обсягу золотовалютних резервів України; залежність зміни рівня золотовалютних резервів України від зміни рівня інфляції за допомогою аналізу макроекономічних даних з використанням коефіцієнта еластичності; проаналізовано витрати та джерела поповнення золотовалютних резервів з метою визначення оптимального розміру золотовалютних резервів на період з 2010 по 2023 роки. Систематизовано один із критеріїв достатності міжнародних резервів, а саме покриття не менше трьох місяців майбутнього імпорту товарів і послуг. Обґрунтовано важливість ролі міжнародних резервів в економіці України. За результатами дослідження виявлено найбільш важливі проблеми, а також запропоновано методи та шляхи більш ефективного управління золотовалютними резервами. Практична цінність проведеного дослідження полягає в тому, що воно дозволяє підвищити ефективність управління золотовалютними резервами в контексті забезпечення фінансової безпеки

**Ключові слова:** золотовалютні резерви; Національний банк України; інфляція; монетарна політика; процентна ставка; економічне зростання; національна грошова одиниця

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## Entrepreneurial social cognition and new venture creation: Sociological perspective

**Abstract.** Entrepreneurs are under immense pressure to gain a competitive advantage in the global markets, but limited resources and opportunities are making it increasingly difficult. Despite this, there are still sociological and other factors that contribute to risk aversion among entrepreneurs. The study aims to present a global perspective on entrepreneurial social cognition and new venture creation. The study is based on a systematic literature review that identified various obstacles to entrepreneurial success. The study argues that successful entrepreneurship and business innovation are related to social cognition, risk perception, and agency. The results prove that the three mentioned variables are key in the establishment of new entrepreneurial ventures. Furthermore, literature analysis revealed that to foster a thriving knowledge-based economy, it is necessary to create a supportive social environment that encourages entrepreneurial endeavours. It emerged from the analysis of the literature that a rich social context, coupled with social cognition, significantly impacts the perception of entrepreneurial opportunities. The study emphasizes that external social factors such as political, socio-economic, and communal environments play a crucial role in shaping entrepreneurs' perceptions of new venture creation. The quality of knowledge ingrained in the social context helps to mitigate the perceived risks associated with starting a new venture. Moreover, the study highlights the importance of agency in reducing risk perception and promoting new venture creation. By analysing relevant literature, the article provides a theoretical framework that contextualizes the creation of new ventures in modern knowledge-based economies. The study proposes effective mitigation of the negative schema abstracted from the social-ecological context through knowledge derived from social communities of practice

**Keywords:** risk aversion; knowledge-driven economies; social-ecological narrative; social communities of practice

### INTRODUCTION

For decades, the study of entrepreneurship was relevant, with a specific focus on technological advancements and global economic patterns. However, one significant aspect that has been overlooked is the impact of sociological factors on entrepreneurial risk and the establishment of new ventures. While technological innovations and trends in the service and commodity markets are essential to entrepreneurial success, negative societal attitudes or insufficient

knowledge and exposure can fail many aspiring entrepreneurs. Sociological factors that influence entrepreneurial success include cultural norms and values, social networks, and access to resources like education and finance. Cultural values that prioritize job security and stability over taking risks and starting new ventures can significantly hinder entrepreneurial success. Similarly, social networks that lack diversity or do not provide access to entrepreneurial

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resources may limit the success of an individual in entrepreneurial endeavours. To overcome the sociological barriers that impede potential entrepreneurial ventures, this study proposes a scientifically informed approach. This approach will help aspiring entrepreneurs identify and overcome the obstacles that prevent them from succeeding in their entrepreneurial ventures. More importantly, the study states that by reducing the impact of sociological factors on entrepreneurial success, an environment that promotes economic growth and job creation will be established.

According to a study conducted by L. Altinay *et al.* (2022), there is a strong correlation between artistic and scholarly creativity and the development of entrepreneurial ventures. I.A. Usoro & C.D. Brownson (2023) state that these two factors are considered essential for entrepreneurs who are seeking to establish new businesses. In addition, the study emphasizes that personality traits are a crucial attribute for success in new business ventures. This position is also supported by A.T. Agbenyegah (2018), addressing the fundamental role of personality and agency in entrepreneurial success. The author also highlights the significant impact that entrepreneurship has on a country's socio-economic and political landscape.

While it is widely recognized that the sociological context can influence the probability of new venture creation, recent research by A.A. Maitlo *et al.* (2021) determined a gap in current scholarship regarding the complexity of social context and its subsequent impact on social environments. J. Nurhadi (2019) states that it is possible to gain a more comprehensive understanding of the social antecedents that shape the cognitive processes behind entrepreneurship intentions by examining diverse social contexts. F. Aureli & G. Schino (2019) contend that a combination of personal and environmental factors drives entrepreneurship intentions, indicating that individual variances and distinct social environments both play a crucial role in determining entrepreneurial dispositions. According to the article, a deeper understanding of the various social contexts can describe the diversity of factors that impact entrepreneurial aspirations. Following the empirical studies reviewed so far and the central premise of a study by A.O. Adeniyi *et al.* (2024), it is possible to state that both personal and environmental elements are pivotal in shaping personal inclination towards entrepreneurship. Additionally, the article reinforces the notion that there exists a robust link between individual personality attributes and entrepreneurial intentions.

The study aimed to gather an interdisciplinary perspective on the correlation between entrepreneurial risk perception and new venture creation. A systematic literature review methodology was used to explore various empirical studies from a variety of contexts. This methodology is an essential groundwork for primary research and is highly regarded by scholars as a reliable and self-contained form of empirical research. Information from various sources was collected and factors that impact entrepreneurial risk perception and new venture creation were determined. A lit-

erature review was used to establish broader emerging concepts related to risk perception and entrepreneurial new venture creation. The article critically analysed these concepts and synthesized them to create a theoretical model. To enhance the literature section, a synthesis matrix created by S. Jensen (2013) was employed. The literature review process involved five stages. Firstly, new venture creation was addressed. Secondly, the relevance of each paper was evaluated by reviewing its title, abstract, and keywords. Thirdly, inclusion and exclusion criteria, such as entrepreneurial risk perception and social cognition, were employed to identify key terms. Fourthly, articles that failed to incorporate two or more key terms were excluded based on their monolithic argument. Finally, following E. Murniarti *et al.* (2018) and G. Oosterwyk *et al.* (2019), full papers were evaluated for relevance, rigour, and credibility. The literature synthesis matrixes were presented through five matrixes that synthesized the enduring concepts extracted from the literature.

### **SOCIAL COGNITION AND ENTREPRENEURSHIP IN THE SCIENTIFIC LITERATURE**

Following F.V. Govindaraju (2021), social cognition theory is a framework that explains how individuals interpret the actions of other social actors to make decisions. This theory acquired wide acceptance in organizational behaviour literature but has not been extensively applied in entrepreneurship studies. To address this issue, E. Jayawickreme *et al.* (2019) explored the concept of entrepreneurial social cognition to describe the cognitive processes underpinning entrepreneurial actors. It is argued that this approach is more nuanced than the trait approach, which lacks a deeper elucidation of the cognitive processes that drive entrepreneurial behaviour. G. Ahmetoglu & T. Chamorro-Premuzic (2017) argue that individual differences also play a critical part in influencing the perception of entrepreneurs. J. Lenkauskaitė *et al.* (2020) assert that through social cognition, entrepreneurs base their interpretations and decisions on socially acquired knowledge derived from observing other actors. J. Code (2020) acknowledges the emergence of self-regulation and personal agency literature, also noting that these studies have never been subjected to proper scientific measurement. Social cognition theory suggests that social constructivism can facilitate learning, contrary to contemporary scholarship. T. Kusio & M. Fiore (2020) assert that universities are not the only source of entrepreneurial communities of practice. Entrepreneurs can learn from the environment to engage in entrepreneurial behaviour. However, there is limited literature that draws from social theory to deepen the connection between the socio-ecological narrative and the entrepreneurial appetite for new venture creation. In conclusion, social cognition theory provides a useful framework for understanding the cognitive processes that drive entrepreneurial behaviour. However, further research is required to explore the role of self-regulation, personal agency, and the socio-ecological narrative in the entrepreneurial process.

J.K. Aderibigbe *et al.* (2019) reveal that the process of risk perception among entrepreneurs is complex and influenced by a range of factors. Access to resources, such as capital and other necessities for launching and growing a new venture, is a key driver of risk perception. Additionally, individual risk perception heavily influences how entrepreneurs perceive and react to risks. Studies suggest that risk aversion can negatively impact an entrepreneur's perception of new venture creation. P. Zhang & K.W. Cain (2017) mention that risk-averse individuals tend to focus on potential downsides rather than potential benefits, leading to reluctance to take risks. Personalities also play a role in shaping risk perception, as different individuals have varying levels of risk tolerance, resulting in unpredictable patterns. Risk perception is based on two constructs: intuition and scientific deduction. Understanding these is vital for entrepreneurs to develop effective risk management strategies. E. Melin & J. Gaddefors (2023) demonstrate that external factors, such as fear of failure, lack of support, and limited resources may also contribute to risk perception. For instance, women from patriarchal societies may be discouraged from starting certain businesses, leading to negative outcomes in risk perception. Technological redundancy may also exclude some entrepreneurs from new venture creation and growth. C.A. Bonilla & M. Vergara (2021) assert that risk-averse entrepreneurs perform poorly compared to those who are willing to take risks. Risk aversion can lead to reluctance to innovate and adapt to changing market conditions, thus reducing competitiveness and profits. Moreover, access to funding and resources is essential for promoting entrepreneurship and new venture creation.

P. Roth (2022) defines social context theory as a framework within social psychology that offers an in-depth examination of societal structures and interactions within a given social environment. Y. Chandra & J.A. Kerlin (2021) contend that this theory posits that individualistic behaviour and thought processes within a particular environment are shaped by their immediate ecological context, which includes personal values, beliefs, and ethics. Social context theory focuses on how people learn from observing others in social interactions and through media intake and how this knowledge influences behaviour and thought processes, particularly in the realm of new business ventures. Entrepreneurs are influenced by their external surroundings, primarily their local environment, and this affects their approach to developing strategies for growth and creating new ventures. The ecological context, perceived through bounded rationality, can either enhance an entrepreneur's abilities for new venture creation or limit the conception of new ventures. According to D. Mahn & C. Poblete (2023), drawing from the knowledge spillover theory for entrepreneurship, note that societies that are rich in knowledge provide an advantageous environment for entrepreneurs to evaluate risk and pursue new business ventures.

E. Kibler & P. Muñoz (2021) argue that the social psychological aspect of the social context shapes the personality of individuals through their values, beliefs, and

ethics. They also suggest that the ecological context, from the perspective of bounded rationality, can either boost an entrepreneur's ability to create new ventures or hinder their ability to generate new business ideas. Moreover, they contend that the quality of knowledge embedded in the ecological context influences cognitive biases in risk perception associated with new venture formation. Following the above-mentioned premise, M.Y. Sağlam & Y. Şehitoğlu (2021) assert that the concept of risk perception is ingrained in the social-ecological context. Furthermore, if an entrepreneur is associated with a social context that employs traditional business models, their propensity to venture into new business will be limited.

N.A. Zidjaly (2009) and A. Widodo & B. Astuti (2024) state that social cognitive theory supports the idea of the emergent interactive agency, which suggests that human behaviour and actions should be defined within a social context. This means that individuals are not independent or solely influenced by their environment, but as K. Kolasi (2020) argues individual cognition is influenced by a combination of social structures, interaction, and individual agency. Based on this argument, it is possible to state that the desire to create new ventures and the perception of entrepreneurial risk are determined by a reciprocal causation between social structures, interaction, and individual agency. relationship between social structures and individual agency highlights the existence of a duality of structure. Entrepreneurial risk perception is influenced by cognition, interaction, and the social context. Entrepreneurs rely on social interaction, their social environment, and their conscience to conceptualize risk and to engage in new venture creation.

In addition, A. John & V.H. Storr (2018) identify two types of entrepreneurs: Kirznerian entrepreneurship and Schumpeterian entrepreneurship. The former type relies on information asymmetry and market imperfections to capitalize on opportunities for new ventures, while the latter type replaces inferior business models with contemporary ones. Information is crucial in creating new ventures, and its deficiency in the social environment may hinder the creation of viable entrepreneurs. As a result, it is important to explore the concept of knowledge societies, as information is a subsidiary construct of knowledge. According to the study, entrepreneurs may approach risks differently due to their limited access to information. To address this, the authors suggest that knowledge societies can play a vital role in empowering decision-making for new business ventures. The article drawing from a study by I.A. Simeoni *et al.* (2024) emphasizes that contemporary knowledge is complex and interdisciplinary, making it necessary for any entrepreneur as knowledge is embedded in scientific and cultural thoughts. By promoting new venture creation, knowledge societies can help transform the economy from a managed one to an entrepreneurial one, as noted by H. Hartono & E. Halim (2014). While entrepreneurship is critical to economic development, it is only with a strong knowledge foundation that entrepreneurs can

avoid stagnation and redundancy. P.E. Alonso-Galicia *et al.* (2024) further note the need for the establishment of knowledge societies or communities of practice outside of the college and university space to enable the creation of social transactional knowledge.

Thus, social cognition theory provides valuable insights into the cognitive processes underlying entrepreneurial behaviour, yet further exploration is needed to understand the roles of self-regulation, personal agency, and the socio-ecological narrative in entrepreneurship. Risk perception among entrepreneurs is influenced by various factors, including access to resources, individual differences, and external pressures, hence impacting venture creation and success. Social context theory emphasizes the importance

of societal structures and interactions in shaping entrepreneurial behaviour, highlighting the need for knowledge societies to empower decision-making and foster innovation in new venture creation.

### SOCIAL FACTORS UNDERPINNING ENTREPRENEURIAL NEW VENTURE CREATION

The combined synthesis matrix (Table 1) indicates the dimensional social antecedents that underpin entrepreneurial intentions to venture into business. Literature from various authors is concisely analysed to deduce a deeper understanding of the social dynamics of entrepreneurial new venture creation.

**Table 1.** Synthesis matrix

Matrix 1: Entrepreneurial risk perception and entrepreneurial intention of employed and unemployed in the context of entrepreneurial individual resources						
Author & Date	Purpose	Method	Sample	Finding	Similarities	Uniqueness
D. Fedáková <i>et al.</i> (2018)	Investigating the relationship that connects risk perception, entrepreneurial intentions, and entrepreneurial individual resources	Online questionnaires & survey agency panel	Sample size: 390; sampling approach: simple random sampling	This paper contributes to the field of entrepreneurship studies by proposing that individual resources are relevant in the research of entrepreneurial intention and risk perception	The perception of risk is driven by the access to resources by entrepreneurs	The paper explores the concept of access to resources to investigate entrepreneurial willingness to pursue new venture creation

Matrix 2: The entrepreneur from a cognitive approach						
Author & Date	Purpose	Method	Sample	Finding	Similarities	Uniqueness
J.C. Sánchez <i>et al.</i> (2011)	To explain entrepreneurial behaviour through cognitions. To review the contributions of the cognitive approach to the field of entrepreneurship and to identify some limitations and new lines of research in this area	Systematic literature review	Review of articles on cognitive approach to the study of entrepreneurs	The study established that entrepreneurial experts become experts based on the development of expert schemes that give them superior knowledge	The paper elucidates how the notion of cognition provides a lens through wherein entrepreneurs view business opportunities	The paper offers a broad view of the interconnectedness of social and psychological contexts in the field of entrepreneurship

Matrix 3: Entrepreneurial perceptions and intentions: The role of gender and culture						
Author & Date	Purpose	Method	Sample	Finding	Similarities	Uniqueness
R.S. Shinnar <i>et al.</i> (2012)	Explored the influence of culture, gender and the subsequent effect on entrepreneurial intentions and perceived barriers	Mixed methods: quantitative & systematic literature review	Sample size: 760; Consists of university students from China, the USA and Belgium. These nations have been identified in cross-cultural studies as part of distinct cultural clusters	Entrepreneurship has redirected attention away from the entrepreneur as an individual with unborn personality dispositions and more towards entrepreneurship competence as a composition of skills and attitudes that affect the perception of entrepreneurs	The paper shows how social systems can influence perception and the subsequent willingness of entrepreneurs to explore new business ventures	The paper has an elaborate focus on culture and gender which are topical social constructs that may act as perceived barriers that affect particularly female entrepreneurs

Table 1. Continued

Matrix 4: Cognitive biases, risk perception, and venture formation: How individuals decide to start companies						
Author & Date	Purpose	Method	Sample	Finding	Similarities	Uniqueness
M. Simon <i>et al.</i> (2000)	This study examines three cognitive biases that previous research has suggested may lower risk perception	Case study	Sample size: 191 students pursuing a Master of Business Administration. The study focused on their intentions for new venture creation	Risk perceptions may differ because of certain types of cognitive biases. (1) Overconfidence, refers to the failure to know the limits of one's knowledge; (2) Illusion of control; (3) The belief in the law of small numbers	The paper considers how cognition may influence a given view. This shows that the willingness of entrepreneurs to pursue new business ventures is influenced by cognition	The paper classifies cognitive biases into three classifications and explores how each of the cognitive biases may affect the conception of new business ventures

Matrix 5: Revisiting entrepreneurial intentions: A social cognitive career theory approach						
Author & Date	Purpose	Method	Sample	Finding	Similarities	Uniqueness
E.W. Liguori <i>et al.</i> (2013)	The research explored the dynamics of entrepreneurship educators and the researcher's data-driven insights into the impact of the motivational processes and the processes of identity transformation from student to entrepreneur, rooted in social cognitive career theory	Longitudinal study	18,081 students spanning over 70 countries and 400 universities	The study established that the beliefs of entrepreneurs are not concerned with the skills one has but with the judgement that one has	The study established that the concept of beliefs, which is founded on cognition, has a great influence on the willingness of entrepreneurs to engage in new business ventures	The study particularly focused on the social and psychological dynamics that underpin the transition of entrepreneurship students to become entrepreneurs. The study used the cognitive career theory as a lens

Source: compiled by the authors

The synthesis matrix exposed five critical concepts which the article drew from and subsequently synthesized the findings. The five papers explored provided the following findings:

- 1) Individual resources contribute to the notion of risk perception and new venture creation.
- 2) Entrepreneurial experts become experts based on exposure to knowledge which enables them to act in a superior way as compared to those who lack knowledge.
- 3) Entrepreneurship embodies over and above individual aptitude, dexterity, exposure, skills, talent and broad aspects of life that include the social context.
- 4) Entrepreneurs operate according to cognitive biases that may affect the judgment of entrepreneurs as far as business decisions and new venture creations are concerned.
- 5) Entrepreneurs' willingness to venture into new businesses and expansion is driven by the beliefs of the Entrepreneur over and above the skills they possess.

The above-mentioned key findings are summarized by the four key points briefly discussed below.

Individual resource contribution: According to recent research by A. Arbelo *et al.* (2021), modern resource management extends beyond simply managing similar resources. It also emphasizes how entrepreneurs can effectively transform similar resources into distinct ones. The management of resources is closely linked to cognitive abilities, as the capability to identify and seize opportunities is considered a crucial resource.

Entrepreneurship and knowledge: The degree of knowledge an entrepreneur holds has a significant impact on their inclination to undertake diverse business ventures. N. Tshikovhi & R. Shambare (2015) knowledge serves as a critical basis for the range of business prospects an entrepreneur can envisage. An entrepreneur's willingness to explore new business opportunities is determined by the level of knowledge. Moreover, their perception of risk is also shaped by their degree of knowledge. Inadequate knowledge may lead an entrepreneur to either overestimate or underestimate risks.

Entrepreneurship and social context: A.A. Maitlo *et al.* (2021) describe entrepreneurs as individuals who are influenced by their environment and are likely to identify new opportunities based on the actions of other actors. The social context in which they operate is often shaped by myths that form the foundation for their decision-making processes. Hence, entrepreneurs evaluate business opportunities and risks based on the prevailing social context.

Entrepreneurs' cognitive biases and judgment: T. Kusio & M. Fiore (2020) state that entrepreneurs make decisions based on some belief system (Schema) that acts as a lens in defining business opportunities and risk. These biases have both a negative and positive influence on the decision-making process of entrepreneurs. Entrepreneurs make decisions based on personal agency and the social context; this alludes to the duality of structure.

Drawing from the above discussion, a theoretical framework was created to condense the thrust of their argument which expresses the pivotal role played by

knowledge in modulating the notion of new venture creation. Figure 1 below projects the theoretical conceptualization of the statement.

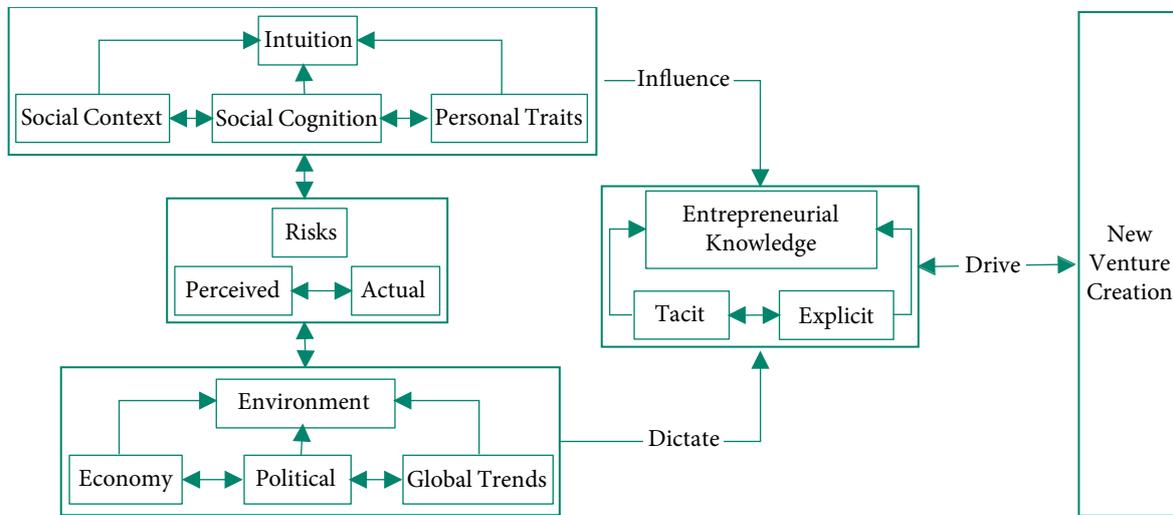


Figure 1. New venture creation

Source: compiled by the authors

Figure 1 shows that knowledge is founded on two perspectives which are tacit (intuition) and explicit (scientific deduction) knowledge. Explicit knowledge, as explained by J. Hordern (2021), can easily be noted and shared amongst individuals however it is imperative to combine both tacit (experiential and uncodified) with explicit (Codified) systematic knowledge. J. Sharma & D. Tarmali (2023) reveal that the challenge of establishing knowledge societies is predicated on the fact that actors should share tacit knowledge which is very difficult to share as they are experimental. D. Lane (2023) mentions that emerging knowledge-based economies are driven by the notion of industrial knowledge capitalism because the quality of knowledge an entrepreneur possesses determines their willingness and success to engage in new venture creation.

S. Terepyshchyi (2016) mentioned that the creation of knowledge societies has been regarded by scholars as a utopian fallacy because knowledge is used as a capitalistic instrument to exploit market imperfections. Knowledge societies can be built through a combination of experiential, social and structured learning which draw from both codified and uncodified stocks of knowledge. S. Dupré & G. Somsen (2019), following the concept of artisanal knowledge, state that consciousness and awareness are the primary sources of knowledge. D.B. Audretsch & M. Belitski (2021) further state that the immediate environment of an entrepreneur acts as a filter that may enable or impede the acquisition of new knowledge that is designed to mitigate the notion of risk perception. This implies that knowledge can be acquired through unstructured social experiences. Furthermore, V. Lungu (2019) suggests that governments can build knowledge-based societies by providing spaces and incentives for entrepreneurs to contribute their lived

business experiences. The networking of entrepreneurs can be done through technology which provides elaborate platforms wherein entrepreneurs can share information and business strategies.

Thus, revealed critical concepts per synthesis matrix, underscore the importance of knowledge in shaping entrepreneurial decisions and actions, emphasizing the need for a combination of tacit and explicit knowledge to drive innovation. The theoretical framework constructed from these concepts highlights the pivotal role of knowledge societies in fostering entrepreneurship and mitigating risk perception, suggesting that governments can facilitate this process by providing platforms for knowledge sharing among entrepreneurs.

### CONCLUSIONS

In today's knowledge-based societies, entrepreneurs have a unique advantage because they possess the ability to evaluate risks by combining intuition, social awareness, and scientific reasoning based on both explicit and implicit knowledge. By combining scientific analysis with practical experience, entrepreneurs can make informed decisions and embark on new ventures that have a higher chance of success. However, structured knowledge alone is not enough to guide entrepreneurs about the risks of starting a new business. The implicit dimension of knowledge, which reflects the practical reality of business, can be shared through social interaction, and combined with explicit knowledge to form a comprehensive understanding of the subject. Entrepreneurs can acquire business principles from explicit knowledge, share their experiences, and learn from others to improve their decision-making capabilities.

A thorough review of relevant literature was conducted, providing an argument that highlights the significant role of social context in shaping an entrepreneur's perception of risk. They emphasize the importance of agency and knowledge societies in influencing this perception. Additionally, the authors acknowledge that personal experiences, societal influence, and media exposure also play a role in an entrepreneur's response to risk. Drawing from the concept of bounded rationality, the authors assert that the quality of knowledge present in the social context determines how entrepreneurial risk is conceptualized. Hence, the authors propose that the creation of new ventures is heavily dependent on an entrepreneur's perception of risk, which, in turn, is shaped by knowledge. They conclude by presenting a theoretical framework for creating knowledge societies that will directly impact risk perception and the creation of entrepreneurial ventures.

Future studies should aim to quantitatively triangulate findings from systematic literature reviews to better understand the impact of knowledge on entrepreneurship. Additionally, researchers may explore the role of

technology in building knowledge-based societies, such as the use of artificial intelligence and machine learning to extract insights from vast amounts of data. Furthermore, investigating how knowledge impacts risk perception can provide valuable insights into how entrepreneurs can make better decisions. Finally, a comparative study can be conducted to compare environments that only rely on implicit or explicit knowledge to influence entrepreneurship intentions. Such a study can help identify the strengths and weaknesses of different knowledge-based environments and provide insights into how entrepreneurs can thrive in such environments. Conducting such studies can help create a more supportive and conducive environment for entrepreneurs to start and grow successful businesses.

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None.

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## CONFLICT OF INTEREST

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## Підприємницьке соціальне пізнання та створення нових підприємств: соціологічна перспектива

**Анотація.** Підприємці перебувають під величезним тиском, щоб отримати конкурентну перевагу на глобальних ринках, але обмеженість ресурсів і можливостей робить це все більш складним завданням. Незважаючи на це, все ще існують соціологічні та інші фактори, які сприяють уникненню ризику серед підприємців. Дослідження має на меті представити глобальну перспективу підприємницького соціального пізнання та створення нових підприємств. Дослідження ґрунтується на систематичному огляді літератури, який виявив різні перешкоди на шляху до підприємницького успіху. У дослідженні стверджується, що успішне підприємництво та бізнес-інновації пов'язані з соціальним пізнанням, сприйняттям ризику та агентністю. Результати дослідження доводять, що три згадані змінні є ключовими у створенні нових підприємницьких підприємств. Крім того, аналіз літератури показав, що для процвітання економіки, заснованої на знаннях, необхідно створити сприятливе соціальне середовище, яке заохочує підприємницьку діяльність. Літературний аналіз також показав, що багатий соціальний контекст у поєднанні з соціальною свідомістю суттєво впливає на сприйняття підприємницьких можливостей. У дослідженні підкреслюється, що зовнішні соціальні фактори, такі як політичне, соціально-економічне та громадське середовище, відіграють вирішальну роль у формуванні сприйняття підприємцями створення нових підприємств. Якість знань, вкорінених у соціальному контексті, допомагає пом'якшити ризики, пов'язані зі створенням нового підприємства. Крім того, дослідження підкреслює важливість агенції у зменшенні сприйняття ризиків та сприянні створенню нових підприємств. Проаналізувавши відповідну літературу, стаття надає теоретичну основу, яка контекстуалізує створення нових підприємств у сучасній економіці, що базується на знаннях. Дослідження пропонує ефективне пом'якшення негативної схеми, абстрагованої від соціально-екологічного контексту, за допомогою знань, отриманих від соціальних спільнот практиків

**Ключові слова:** неохильність до ризику; економіка, заснована на знаннях; соціально-екологічний наратив; соціальні спільноти практик

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<https://orcid.org/0009-0005-5606-8957>**Peculiarities of investment support  
for industries in the current environment**

**Abstract.** The research relevance is determined by the need to study and solve problems related to investment support of industries in modern conditions to ensure sustainable and efficient functioning of the country's economy and strengthen its competitiveness in the international market. The study aims to analyse modern strategies of investment support of industries to identify their effectiveness and develop recommendations for optimizing this process in the context of current economic conditions. The study employed analytical, statistical and comparative methods. The study addresses the importance of investments for industrial development and their impact on the country's economy and its competitiveness in the international arena. The study emphasized that investments contribute to the expansion of production and the introduction of new technologies, which increases productivity and product quality. The main recommendations of the article relate to improving the investment environment, by simplifying administrative and legal procedures and fighting corruption, developing infrastructure, protecting investors' rights and stimulating innovation. The influence of economic, social, political and environmental factors on the investment climate in industry was addressed. The study noted that technological competition, environmental requirements and political instability are key challenges that affect investment support for industry. The investment situation in Ukraine was examined on the example of Metinvest and Kernel. Both companies are successfully attracting investment to develop their infrastructure capabilities and improve services. The article concludes that it is necessary to create favourable conditions for investment and accelerate industrial development in Ukraine by improving the investment climate, stimulating innovation and attracting foreign investment. The practical significance of the study lies in the development and implementation of strategies and measures aimed at improving the investment climate and ensuring the sustainable development of industries, which will contribute to the growth of the country's economy and increase its competitiveness

**Keywords:** competitiveness; innovative development; economic crises; strategic directions; globalization

**INTRODUCTION**

In a world where economic conditions are unpredictable and constantly changing, investment is becoming not only important but also a key factor in stimulating industrial development. Raising capital is becoming a prerequisite for launching new businesses, expanding production, introducing the latest technologies and maintaining sustainable growth. In this context, the relevance of studying the peculiarities of investment support for industries in modern

conditions becomes evident. The globalization of the economy and growing competition is forcing companies to make investment attraction an effective and strategically pressing task. At the same time, the development of technology and the emergence of new innovative solutions in the industry make it necessary for companies to constantly modernize and improve their production processes, which requires significant investment. In addition, conditions are

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changing due to the impact of environmental, social and economic factors, which requires new approaches to investment and sustainable development of the industry.

The study covers a wide range of aspects, including the identification of factors that influence investment decisions, the development of innovation strategies in industry, the effectiveness of government and corporate policies in this context, and the identification of promising areas for investment in industrial sectors. Given the constant changes in economic, technological and social conditions, the study of this topic is important for understanding current trends and determining optimal strategies for the development of the industrial sector aimed at achieving sustainable growth and competitiveness. Understanding and analysing the investment support of industries is critical for the successful operation of companies in the current economic environment. The problem of investment provision of industries faces many challenges that stimulate active research on this issue in economic science.

The analysis of the authors' research results provides a deep understanding of the current trends in the field of investment support for industries. J. Li & S. Li (2020) and O. Filatova (2021) emphasize the importance of efficient allocation of investment resources to achieve sustainable development of enterprises in a changing economic environment. They highlight different approaches to optimizing investment strategies and the role of such strategies in ensuring the competitiveness of enterprises. Studies by J. Meckling & J. Nahm (2019) and V. Levytskyi *et al.* (2022) also address the effectiveness of public investment policy in industry. They identify key factors that influence the success of these policies, such as the level of industry support and the regulatory climate. O. Besprozvannykh & P. Pererova (2020) addressed the possibility of optimizing state support, through fiscal incentives and policy support. S. Albukhitan (2020) and J.M. Müller *et al.* (2021) addressed the importance of developing innovation strategies in the industry. They highlight the role of innovation in ensuring the competitiveness of enterprises and the development of the industry. M. Yu & N. Wang (2023) studied the impact of geopolitical and environmental factors on the investment provision of industry, identifying their potential impact on investment decisions and the development of industrial sectors. Some studies, such as K. Piwowar-Sulej (2021), note the importance of human resource development in industry. Effective training and support of skilled personnel play a key role in ensuring an innovative and competitive industrial sector. It is noted that investing in education and training contributes to the development of new technologies and the efficiency of production processes.

The analysis of various approaches and conclusions of these researchers allows to cover a wide range of problems arising in the field of investment support of industry, providing a comprehensive view of such aspects as the effectiveness of investment strategies, sustainability of industry development and adaptation to changes in the economic environment. Due to growing competitive pressure and

economic changes, industrial enterprises are facing new challenges, which require continuous improvement of investment strategies to ensure the stable development of the industry in an increasingly competitive environment. However, the risks (political, economic and financial) that could significantly affect the success of investment projects in the region remain unexplored. There are also no generalized investment strategies, which can make it difficult to make effective investment decisions. It is important to develop and implement consolidated approaches to investment that address various aspects of business operations. The study aimed to conduct an in-depth analysis of various aspects related to investment support for industrial sectors in the current environment.

## **MATERIALS AND METHODS**

This study analyses various sources of information to assess the investment climate and industrial development in Ukraine. For this purpose, a detailed analysis of investment processes in the industrial sector was carried out. Official reports, statistics, and analytical reports were carefully studied (The investment attractiveness..., 2021; Minfin, 2024). This analysis provided an in-depth understanding of the dynamics of the industrial sector and identified key factors affecting its investment attractiveness. Data from official sources was used to conduct an objective analysis of the country's economic situation and investment trends. Analytical reports and research publications provided additional insight into the complex processes taking place in the industrial sector. The analysis focused on key aspects such as economic growth potential, the level of investment in various industries, and factors affecting the country's competitiveness in the international market.

In addition, specific examples of successful investment attraction in Ukrainian industrial enterprises were analysed. One example was the mining and metallurgical company Metinvest (n.d.), which mines ore and coal, produces coke and smelts steel and produces rolled products, pipes, etc. (Metinvest intends to..., 2022). Another example was the agro-industrial company Kernel (Kernel is the world's..., n.d.), the largest producer and exporter of sunflower oil in Ukraine (Kernel has invested..., 2023). For this purpose, information from official sources, press releases and other available documents was used. This analysis demonstrated how successfully enterprises are attracting investment to develop their operations and influence the country's economic growth.

This study applied a comprehensive approach to analysing the investment climate and its impact on industrial development. The initial stage of the analysis involved a detailed study of various aspects of the investment climate and industrial development in Ukraine. This review included not only a general description of investment volumes but also their structure by different sectors of the economy and information on regional specifics. During this stage, the main trends observed in these areas were noted. The next step was to compare the investment environment and industrial

development in Ukraine between companies. This stage not only identified trends and features of the investment climate in Ukraine but also potential ways to further improve the economic environment. Understanding the differences between investment approaches and industrial development results of different companies has become an important prerequisite for further analysis and formulation of recommendations to improve the efficiency of investment support.

After that, the cause-and-effect relationships between various factors and phenomena in the economy were analysed. Particular attention was devoted to the impact of political stability, legal system, tax policy and the level of corruption on Ukraine's attractiveness to investors. This study identified key factors that influence the development of industry and the efficiency of investment projects in the country. The study also examined various types of risks that may affect the success of investment projects, such as political, currency, economic and technological risks. The degree of uncertainty that can influence investors' decisions and their willingness to take risks in deciding on their investment strategies was also investigated.

## RESULTS

Investments are an important catalyst for industrial growth, playing a key role in shaping a country's economic well-being and international competitiveness. First and foremost, investment provides funding for the expansion of production and technology upgrades in the industry, facilitating the introduction of new technologies, improving productivity and product quality, and expanding the range of goods and services (Qiu *et al.*, 2021). In addition, investments contribute to job creation and infrastructure development, including the construction and development of transport, energy and communication networks, which makes industry more accessible and provides convenient access to markets and raw materials.

The investment climate of a country is an important factor that affects the attractiveness of a country for investors and the level of their interest in placing capital. This climate is shaped by the interaction of various factors covering the political, economic, legal, infrastructural, social and environmental aspects of a country. Political stability is a key component of the investment climate. Countries with a stable political situation are considered to be less risky for investors, as they provide a predictable and stable legal environment for business. At the same time, economic policy has a major impact on the investment climate. Transparent, consistent and supportive economic policies aimed at stimulating economic growth and business development attract more investment.

A legal system that guarantees the protection of property rights and the enforcement of contracts is important for the investment climate. Quality infrastructure and access to markets also affect the investment climate. An efficient transport network and infrastructure reduce production costs and make the country more attractive to investors. Social and environmental contexts also matter (Prokopenko, 2019).

High living standards, access to quality education and environmental protection attract investors. These factors shape policies for attracting investment and developing the country's economy. Modern industries face a variety of economic, social, political and environmental challenges that affect their investment and, consequently, their development. The COVID-19 pandemic has had a significant negative impact on the global economy, leading to production cuts, business restrictions and a decline in demand for many products. This has created significant economic difficulties for industrial sectors, forcing them to revise their development strategies and look for new ways out of the crisis.

Increasing requirements for environmental friendliness and product reliability are another important factor. Civil society is increasingly aware of environmental issues and insists that industrial enterprises reduce emissions, use renewable energy sources and take a balanced approach to their interaction with the natural environment. This challenges businesses to quickly adapt to new requirements and implement environmentally friendly production technologies (Ahmad *et al.*, 2024). Technological competition is another important aspect that affects the investment supply of industry. The rapid pace of technological development creates a need to constantly update production processes and introduce new technologies to increase productivity and improve competitiveness. Industrial enterprises that fail to keep up with these trends risk falling behind competitors and losing their market position (Bal & Erkan, 2019). Strategic investments in innovative technologies and environmentally friendly production processes are becoming essential for industrial enterprises seeking to ensure their successful development in today's environment.

Political instability and trade conflicts in today's world pose a serious challenge to the investment climate in industries. These factors could lead to a decrease in investor confidence and create uncertainty about the future business environment. Trade conflicts, such as the imposition of tariffs and other trade restrictions between countries, can lead to higher production costs and reduced international trade, which negatively affects the profitability of industrial enterprises and reduces their attractiveness to investors (Igwe *et al.*, 2018). On the other hand, effective regulatory policies and tax incentives provided by the government can stimulate investment activity in the industry. For example, lowering tax rates on investments, providing financial incentives or creating favourable business conditions can make a country more attractive to investors and promote industrial development. The impact of political and regulatory factors on the investment climate in industry cannot be overstated. These factors can determine the success or failure of investment projects and influence the overall economic development of a country.

The impact of technological innovation and digital transformation on the investment climate in industry is a key factor in the modern world. New technologies are penetrating all areas of production, changing production, business management and customer interaction. This determines the

competitiveness of enterprises and their ability to adapt to changes in the economic environment. Technological innovations allow businesses to increase productivity and efficiency. The introduction of automated systems, robotization of processes, and the use of artificial intelligence reduce costs and improve product quality (Appio *et al.*, 2021). This makes businesses more competitive and attractive to investors, as it increases their potential profits and reduces risks. Digital transformation is driving innovation and expanding the scope of businesses. The introduction of advanced technologies, such as the Internet of Things, cloud services and data analytics, allows companies to create new products and services, expand their markets and improve customer experience, which opens new investment opportunities and attracts the attention of potential investors. Technological innovations contribute to the development of environmentally friendly and sustainable production processes (Slattery & Zidar, 2020).

Investment in Ukraine's industries is one of the key components of the country's economic development. Ukraine, being a traditional industrial country, has significant

potential for investment in various sectors, such as machine building, heavy industry, chemical and petrochemical industry, agriculture and others. However, the investment climate in the country is complicated by the war (2024). Political instability and a lack of investor confidence in government agencies reduce the country's investment potential. On the other hand, Ukraine has considerable potential in high-tech sectors such as information technology, energy efficiency, alternative energy and others. Foreign investors may increasingly choose the Ukrainian market for capital investment, relying on a highly skilled workforce and access to European markets.

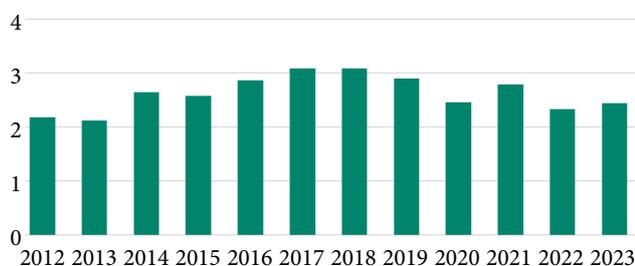
In general, investment support for industries in Ukraine requires a comprehensive approach and joint efforts of the state, business and society. Only a stable political and economic environment, effective regulation and stimulation of investment activity will allow for significant progress in the recovery and development of the country's industry. Table 1 shows foreign direct investment in Ukraine from 2012 to 2023.

**Table 1.** Foreign direct investment in Ukraine in 2012-2023 (millions USD)

Year	Direct investment in Ukraine	Direct investment from Ukraine		Balance
2012	8,401	1,206	7,195	3%
2013	4,499	420	4,079	-43%
2014	410	111	299	-93%
2015	-458	-51	-407	-236%
2016	3,810	16	3,794	1,032%
2017	3,692	8	3,684	-3%
2018	4,455	-5	4,460	21%
2019	5,860	648	5,212	17%
2020	-868	82	-950	-118%
2021	6,687	-198	6,885	825%
2022	1,152	529	494	-91%
2023	4,096	6	4,089	556%

**Source:** compiled by the author based on Minfin (2024)

Another indicator worth noting is the investment attractiveness index (Fig. 1). This indicator reflects the state of the business environment in Ukraine through an analysis based on expert opinions of leading representatives of European Business Association member companies.



**Figure 1.** Ukraine's Investment Attractiveness Index for 2012-2023

**Source:** compiled by the author based on The investment attractiveness... (2021)

This indicator uses a scale from 1 to 5, where levels 1-3 indicate a negative attitude toward the business, 3-4 – neutral, and 4-5 – positive. Between 2012 and 2023, the investment attractiveness index never reached a positive level. The highest values of the index were recorded in 2017-2018 when it reached 3.1 points, but the decline in 2019 indicates a deterioration in the business perception of the investment environment in Ukraine.

According to surveys conducted by the European Business Association, the main factors that worsen the investment business climate, according to investors, are political instability, high levels of corruption, insufficient implementation of land and judicial reforms, and a lack of qualified personnel. Among the positive changes in the country's investment business climate are the liberalization of currency legislation, the stability of the national currency, lower inflation, and cooperation with the International Monetary Fund (Venhurenko & Plakhotnyuk, 2020). However, the full-scale invasion has further deteriorated this indicator, leading to the suspension or closure of businesses in Ukraine.

Metinvest is a good example of successful investment attraction and sustainable development in Ukraine. Established in 2006, it is one of the largest private industrial enterprises in Ukraine, specializing in metallurgy and mining. The company owns numerous assets in the heavy industry, including coke plants, iron and manganese ore mining facilities and steel mills specializing in steel production. Metinvest has a broad product portfolio that includes steel and iron ore products, coke, sinter, iron concentrate and other products. The company implements modern technologies and quality standards to ensure competitiveness in the global market. Metinvest's development contributes to the growth of the Ukrainian economy and its industrial potential.

One of the key investment strategies is to introduce modern technologies and quality standards to improve the company's productivity and competitiveness. Metinvest

is constantly improving its technological processes to ensure efficient production and meet market requirements. In addition, the company is actively investing in expanding production capacity, modernizing equipment and developing infrastructure. This allows Metinvest to increase production volumes, expand its product range and maintain high-quality standards. Metinvest is implementing projects worth over USD 10 billion. The total amount of capital investment in the industry was USD 1.5 billion, which is 7.8% of the total amount of capital investment in the industry. Between 2017 and 2022, the group's average annual investment amounted to USD 700 million, which indicates the company's continued activity in developing and modernizing its production facilities (Metinvest intends to..., 2022). Table 2 shows Metinvest's key performance indicators.

**Table 2.** Metinvest's key performance indicators from 2018 to 2023

Indicator	2018	2019	2020	2021	2022	2023
Income, million USD	11,880	10,757	10,453	18,005	8,288	7,397
Adjusted EBITDA, million USD	2,513	1,213	2,204	7,044	1,873	861
EBITDA margin	21%	11%	21%	39%	23%	12%
Assets, million USD	11,178	13,837	13,454	15,980	8,785	9,133

**Source:** Metinvest (n.d.)

Between 2018 and 2021, the company's revenues and assets have grown significantly, which may indicate the success of its investment strategy and effective resource management. EBITDA margin (volume of profit before interest expense, taxation, and taxes depreciation and amortization) also shows some fluctuations, but overall, the high profitability in 2021 may indicate the efficient use of internal resources by the company. However, the decline in revenues and assets in 2022-2023 caused by the war in Ukraine indicates difficulties and changes in the economic environment, which affects the company's investment activities and stability.

Several measures can be considered to improve Metinvest's investment security. Diversification of investments can be a key step to reduce risks and increase the stability of a company's financial position. Expanding the range of investments into various industries, including energy, metals and construction, will mitigate risks and ensure a more stable income stream. Improving production efficiency through the introduction of advanced technologies and production processes is another key aspect. This will allow the company to increase productivity, reduce production costs and increase the profitability of investment projects. Attracting external investment can be an additional source of funding for a company. Active promotion of investment potential in the international market and search for opportunities to attract external investors will secure additional resources for development. Investing in the development

of transport, energy and information infrastructure will improve the conditions for the development of industrial enterprises and attract more investment.

Kernel is another good example of successful development and investment in Ukraine. The company is one of the largest agricultural holdings in Ukraine and represents a significant part of the country's agricultural sector. Kernel has been actively attracting investments to modernize and develop its agricultural technologies, expand its land holdings and develop new product lines. This allowed the company to maintain its competitiveness in the market and increase production volumes. In addition, the company actively implements innovative practices in its operations, such as the use of modern technologies in production, the introduction of efficient resource management methods and the implementation of environmentally friendly practices in agricultural production.

From 2007 to 2022, Kernel invested USD 2.5 billion in development. The company has been actively introducing advanced technologies in the agricultural sector, expanding and modernizing its logistics infrastructure, including elevators, factories and terminals. These measures contributed to the development of the agricultural sector and maintained the country's leading position as a producer of agricultural products on the global market. In addition, they brought additional revenues to the state budget and contributed to the creation of new jobs (Kernel has invested..., 2023). Table 3 shows Kernel's key performance indicators.

**Table 3.** Kernel’s key performance indicators from 2018 to 2023

Indicator	2018	2019	2020	2021	2022	2023
Income, million USD	2,403	3,960	4,107	5,595	5,331	3,455
Adjusted EBITDA, million USD	223	346	443	806	220	544
EBITDA margin	9%	9%	11%	14%	4%	16%
Assets, million USD	2,211	2,464	3,165	3,996	4,185	3,885

**Source:** Kernel is the world’s... (n.d.)

The company has demonstrated revenue growth, but there have been years when revenue has declined, which may reflect the impact of the war on the company’s operations. Adjusted EBITDA is a measure of net income from operations, and changes in this measure may indicate management efficiency and the impact of external factors on financial results. The EBITDA margin reflects the percentage of profit from revenue, which may indicate the efficiency of the company’s assets. Changes in this indicator also indicate the stability or instability of the company’s financial position during the reporting period. The volume of assets, in turn, reflects the scale of the company’s operations and can be an indicator of its potential for development and investment in the future.

Several measures could be considered to improve Kernel’s investment security. The Company may continue to expand its presence in the agricultural sector through the development of crops, food production and agricultural infrastructure. The use of advanced agricultural technologies, automation of production processes, and the introduction of digital solutions can increase production efficiency and provide competitive advantages (Wrzecińska *et al.*, 2023). The company may actively consider exporting its agricultural products to international markets and attracting foreign investment to expand its operations. Cooperation with government agencies is equally important. Kernel can engage in a constructive dialogue with government agencies to create a favourable investment climate and provide support for the development of the agricultural sector. Management and monitoring systems can be improved to optimize production processes and use resources more efficiently. It is also necessary to develop corporate responsibility programmes aimed at sustainable and environmentally friendly production.

In the current environment, improving the investment environment for industries in Ukraine requires a comprehensive approach and the implementation of several measures. Several recommendations have been made that could help improve this process. The government should actively ensure stability in the country, which includes a wide range of measures aimed at maintaining both economic and political stability. This means not only taking effective measures to fight corruption but also creating favourable conditions for business and foreign investors by improving legislation and ensuring reliable protection of property rights. Since small and medium-sized enterprises (SMEs) are the main source of economic and industrial development, it is important to provide them with financial and advisory support. This can be achieved by providing access to loans on favourable

terms, training and advice on business management and development. Infrastructure is a key element for attracting investment in industry (Gherghina *et al.*, 2020). In addition, infrastructure also plays a critical role in attracting investment in industry. To create favourable conditions for the development of industrial enterprises and attract more investment, the government should invest in the development of transport, energy and information infrastructure.

Ukraine should actively promote its investment potential internationally and pay special attention to attracting foreign investment by concluding favourable agreements and creating favourable conditions for foreign investors. This includes simplifying business start-up procedures to reduce administrative and bureaucratic obstacles, as well as ensuring that property rights are protected. Strengthening anti-corruption measures and creating a stable legal environment will also help attract foreign investors. Investing in research and development and creating a stimulating environment for innovation can help Ukrainian companies take a more competitive position in the global market. This can lead to increased industrial productivity, a wider range of products, better quality of goods and services, and lower production costs. Innovative technologies and improved production processes can be used by Ukrainian companies to produce more competitive products that attract attention on the international market. The implementation of these recommendations is aimed at creating favourable conditions for attracting investment and accelerating industrial development in Ukraine. This, in turn, will contribute to economic growth and improve the quality of life of citizens.

## DISCUSSION

The results of the study showed that investments have an impact on various aspects of industrial development, such as production expansion, technology modernization, job creation, infrastructure development and strengthening of the country’s economy. Investments stimulate the expansion of production and the modernization of technologies in industry. This allows companies to introduce new technologies that increase productivity and product quality, as well as expand the range of goods and services. For instance, attracting investment allows businesses to introduce automated systems, robotic processes and the use of artificial intelligence, which increases production efficiency and reduces costs.

S. Saidi *et al.* (2020) also analysed the importance of investment for the country’s economic growth and improvement of the quality of life. The study analysed various

aspects of the impact of investment on the economy, focusing on its importance in financing the expansion of production, introducing new technologies, improving productivity and product quality, and creating new jobs. The authors confirmed the conclusions of the current study regarding the importance of investment in industry for reducing unemployment and stimulating production, which in turn contributes to higher incomes. In addition, investments contribute to the development of infrastructure such as transport, energy and communication systems. This makes industry more accessible and provides convenient access to markets and raw materials. For instance, investments in the development of transport networks allow businesses to reduce logistics costs and expand their sales capabilities. Investments in the industrial sector not only strengthen the country's economy but also provide resources for social and environmental initiatives. Growth in production leads to an increase in tax revenues, which can be used to develop education, healthcare and infrastructure, stimulating economic progress and improving the quality of life of citizens.

J. Zhang *et al.* (2021) noted the importance of infrastructure development to attract investment. They stressed that the insufficient transport, energy and information base can deter investors from considering investing in the country. V. Aust *et al.* (2020) also confirm that a developed infrastructure contributes to the growth of a country's investment potential and promotes its economic growth. Comparing this with the results of the current study, it is possible to note that the author also supports the view that infrastructure development is important for attracting investment. The current study also confirms that infrastructure projects are key to attracting investment and helping to stimulate economic growth. F.J. Contractor *et al.* (2020), in turn, analysed the impact of national policy on the country's investment climate. They stressed that strengthening political stability, as well as the adoption of transparent and favourable economic laws, stimulates investment activity. The authors' analysis confirms that national policy plays an important role in attracting investment and influences the country's economic development. Analysing the results of the current study, it is possible to note that the author also reached a similar conclusion on the importance of national policy in stimulating investment activity. However, the research of the above authors emphasizes that a stable political environment and a transparent and favourable legal framework are the most important factors for attracting investment and promoting economic development.

C.A. Hartwell & T. Devlin (2021) addressed the impact of global factors, such as trade conflicts and political instability, on the investment climate. They discuss in detail how these factors can influence investor decisions and create uncertainty in the business environment. C.R. Kumar, J. & M. Majid (2020), in turn, also consider the possible effects of trade conflicts and political instability on the investment environment addressing the decline in investor confidence, the possibility of rising production costs and the difficulty

of predicting future business conditions. The findings of both authors confirm that these factors can significantly influence investors' decision-making and create uncertainty in the business environment, which can delay or even stop the flow of investment capital. Thus, their research highlights the importance of taking global factors into account when analysing the investment climate, which complements and confirms the findings of the current study.

J. Liu *et al.* (2021) focused on the importance of protecting property rights and the legal system for the investment climate. The authors emphasized that an effective and transparent legal system is a key factor in providing investors with confidence in their rights and contracts. They also showed that proper protection of property rights and an efficient legal system contribute to improving the country's investment climate and help attract more foreign investors. The research confirms that proper protection of property rights is a key element in creating a favourable investment climate. It should be added that investors are looking for countries with a reliable legal system that guarantees their rights and allows them to enforce contracts without hindrance. Thus, this publication confirms and complements the findings of the current study on the importance of the legal environment for investment activity. It is also necessary to actively promote the country's investment potential internationally and attract foreign investors by concluding agreements and creating favourable conditions for their activities. The development of international cooperation and partnerships may prove to be an important factor in attracting investment and making Ukraine an attractive destination for foreign investors.

S. Vaska *et al.* (2021) expressed their view on the importance of innovation and digital transformation for attracting investment. They examine in detail how innovative technologies can be a key factor in attracting investment, as they enable businesses to become more competitive and attractive to investors. V. Jafari-Sadeghi *et al.* (2021) similarly analyse the impact of innovation on the economic environment and note that enterprises that actively implement new technologies and digital solutions can gain a competitive advantage, which helps to increase investment potential. Similar to the current study, the authors' findings confirm that innovative technologies can play a significant role in attracting investment, providing enterprises with a competitive advantage and contributing to their growth.

Overall, it is possible to note that effective investment in industry requires a comprehensive approach and active cooperation of all stakeholders. Only through the joint efforts of the government, business and the public can significant progress be made in restoring and developing the country's industry. This will contribute to overall economic growth and improve the quality of life of the population, as efficient industry creates jobs, increases production and contributes to infrastructure development. This approach will guarantee stable economic development and have a positive impact on the socio-economic situation of the country.

## CONCLUSIONS

This study analyses in detail the impact of investment on industrial development and its importance for the country's economic condition and international competitiveness. The study highlighted those investments play a crucial role in the development of industry, providing financial support for the expansion of production and the introduction of modern technologies. This means introducing new technologies, improving productivity and quality of production, and expanding the range of goods and services. In addition, investments contribute to the creation of new jobs, which leads to a reduction in unemployment and an increase in living standards. The study also confirmed that investing in industry strengthens the country's economy and provides resources for the implementation of social and environmental programmes. Investments in industry lead to an increase in production, which in turn leads to an increase in tax revenues to the budget. These financial resources can be used to develop education, healthcare and infrastructure, which further stimulates economic growth and improves the quality of life.

The legal system is also a critical aspect of the investment climate. An effective and transparent legal system that guarantees the protection of property rights and the enforcement of contracts creates favourable conditions for investment and business development. The availability of quality infrastructure and access to markets are also substantial factors affecting the investment climate. In the current environment, investment in Ukraine's industry is an integral part of its economic growth. This requires a coordinated approach and joint efforts of the state, business and society. Only a stable political and economic environment, effective regulation and investment incentives can lead to significant progress in industrial development.

It is also important to actively promote Ukraine's investment potential on the international stage and attract foreign investors through agreements and the creation of favourable conditions for their activities. The development of industries in Ukraine requires a comprehensive approach and several measures, including ensuring stability, improving the business climate and protecting property rights. It is also necessary to provide support to small and medium-sized enterprises, develop infrastructure and actively promote Ukraine's investment potential on the international market. The study confirms the important role of investment in the development of industry and the economy. For the successful recovery and development of Ukraine's industry, it is important to carefully consider all aspects of investment activity and create favourable conditions for investors. It is necessary to continue working to improve the investment climate, develop infrastructure and support innovative projects to ensure sustainable economic growth and improve the quality of life of the Ukrainian population.

Further research could address the impact of global economic and political changes on the country's investment climate, as well as the role of innovative technologies in stimulating the investment process in industry. One of the limitations of the study is that it does not include a detailed analysis of the impact of socio-economic factors, such as unemployment and wages, on the decision-making process for investment in industry.

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## CONFLICT OF INTEREST

None.

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## **Особливості інвестиційного забезпечення галузей промисловості у сучасних умовах**

**Анотація.** Актуальність теми полягає в необхідності вивчення та вирішення проблем, пов'язаних з інвестиційним забезпеченням галузей промисловості в сучасних умовах, щоб забезпечити стале та ефективне функціонування економіки країни та зміцнення її конкурентоспроможності на міжнародному ринку. Метою дослідження являється проведення аналізу сучасних стратегій інвестиційного забезпечення галузей промисловості для виявлення їхньої ефективності та розробки рекомендацій щодо оптимізації цього процесу в контексті сучасних економічних умов. В процесі дослідження було використано аналітичний, статистичний та порівняльний методи. У статті досліджено важливість інвестицій для розвитку промисловості та їх вплив на економіку країни, та її конкурентоспроможність на міжнародній арені. Було підкреслено, що інвестиції сприяють розширенню виробництва та впровадженню нових технологій, що підвищує продуктивність та якість продукції. Основні рекомендації статті стосуються поліпшення умов для інвестицій, зокрема шляхом спрощення адміністративних та правових процедур та боротьби з корупцією, розвитку інфраструктури, захисту прав інвесторів та стимулювання інновацій. Досліджено вплив економічних, соціальних, політичних та екологічних факторів на інвестиційний клімат у промисловості. Зазначено, що технологічна конкуренція, екологічні вимоги та політична нестабільність є ключовими викликами, які впливають на інвестиційну підтримку промисловості. Було розглянуто інвестиційну ситуацію в Україні на прикладі компаній «Метінвест» та «Кернел». Обидві компанії успішно привертають інвестиції для розвитку своїх інфраструктурних можливостей та покращення послуг. Висновки статті полягають у необхідності створення сприятливих умов для інвестицій та прискорення промислового розвитку в Україні шляхом покращення інвестиційного клімату, стимулювання інновацій та залучення зовнішніх інвестицій. Практичне значення дослідження полягає в розробці та впровадженні стратегій та заходів, спрямованих на поліпшення інвестиційного клімату та забезпечення сталого розвитку галузей промисловості, що сприятиме зростанню економіки країни та підвищенню її конкурентоспроможності

**Ключові слова:** конкурентоспроможність; інноваційний розвиток; економічні кризи; стратегічні напрямки; глобалізація

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## HR management of enterprises under martial law, socio-cultural and technological challenges

**Abstract.** The study addresses issues related to the development of the personnel management system in the current conditions caused by martial law in Ukraine and socio-cultural and technological challenges that stimulate the need to improve the development of corporate culture and strengthen human resilience. The relevance of an effective response to these requests is determined by the theoretical and applied aspects of defining the subject segment of the HR management toolkit and its application. The study aims to highlight the security issues in personnel management and outline the directions for ensuring human resilience at an enterprise in modern conditions. To achieve this goal, the following methods were used: analysis and synthesis; systematic method; grouping and generalization; expert judgement; statistical method and surveys. The study determined the main factors influencing the efficiency of personnel management under martial law and contradictions regarding the sustainable development of personnel. The main directions of promoting the unity and development of the personnel of enterprises under martial law were formed. Global trends in the field of human capital and the combination of the performance of enterprises and people in achieving entrepreneurial success according to the following criteria were analysed: ensuring human resilience; increasing productivity; and stimulating the development of microcultures in the workplace. The study substantiated that the presence and development of many microcultures in one local enterprise in the national economy will inevitably lead to the threat of internal disruption (destruction) of the system and several negative consequences in the future. The study highlighted directions for creating responsible and harmonious HR management systems for modern and future enterprises. The conclusions drawn from the study have theoretical and applied content and may be useful for business entities in developing strategies for staff development and improving corporate culture as a source of creative inspiration and satisfaction of employees' needs

**Keywords:** remote management; teamwork; culture; productivity; talent acquisition; microculture

### INTRODUCTION

Human resource management in enterprises should be in line with modern challenges. For 2024, Ukrainian enterprises will face challenges primarily due to the Russian-Ukrainian war of occupation, but geopolitical and ideological challenges are no less important. The realities of

business activity should be adequately reflected in the processes of enterprise HR management. Therefore, the problems are changing, business and HR strategies that were effective in peacetime and the period of supply dominance in the labour market have lost their relevance and need to

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be adapted to the new realities of life. Therefore, there is a need to address the efficiency of enterprises by interpreting business goals in the language of analytics and HR strategies, as well as the adequacy of tools for budget planning.

For this reason, it is worth highlighting three main aspects of the issues outlined in this article. The first aspect is related to the peculiarities of staff work under martial law, awareness of the organizational challenges that enterprises and staff need to ensure their safe functioning and have the prospect of decent work and development in their independent Ukraine in the post-war period; the second aspect is related to the worldview and personal psychological and motivational settings of staff, the presence of stress during production and the establishment of resilience, which are integral elements of survival during the war; third aspect aims to maintain an appropriate level of balance between the human and technological development of enterprises to preserve jobs and positive dynamics of production and service provision. The answer to the question of which HR management models are relevant is not only of practical importance but also of theoretical significance, as it will allow to develop existing approaches to human productivity. The second and third aspects reflect the peculiarities of ensuring human dignity in remuneration and social responsibility of business entities and the formation of an atmosphere of corporate unity and trust in the process of managing the personnel of enterprises under the influence of current factors.

The analysis of previous studies and publications confirms the existence of a wide range of scientific achievements that reflect the theoretical, methodological, technological and applied aspects of the outlined issues. Researchers underscore the problems of labour resources management, which is evident due to their role in increasing the innovativeness of enterprises, as discussed in the joint article by N. Mitsenko *et al.* (2022), which states that “human resource management is crucial to support an enterprise (organization) to improve efficiency, manage corporate and ethical issues that go beyond economic efficiency, and support the future development of the enterprise (organization) and the direction of its innovation activities”. This idea is continued by O. Yakovenko (2022), considering the peculiarities of remote personnel management in modern conditions and focusing on the transformation of the personnel management process in terms of planning, recruitment, organization and direct management, motivation and communication. Following I. Gontareva *et al.* (2022), the HRM strategy is a structural element of the enterprise’s strategic management system, highlighting “... five mandatory principles for those who want to win the war for talented employees, managers and make talents a competitive advantage” of enterprises. O. Naumova (2021) continues this idea and deepens it by systematizing the peculiarities of employee behaviour under different types of HRM strategies. The functioning of enterprises during the war, identifying the problems faced by management in personnel management and identifying ways to solve them have also been the subject of research by several scholars.

V. Kudelia & V. Yakovenko (2023), among the current trends in the field of HR management, suggest the following main areas: teamwork, increasing the involvement of temporary workers in the organization, using new reward systems, using the potential of the older generation, creating staff welfare programmes. Similar thoughts are highlighted by A. Kotsur *et al.* (2022), emphasizing the peculiarities of HRM activities in wartime. Furthermore, the issue of personnel management under martial law in Ukraine is studied in the article by O. Cherep *et al.* (2023), which presents different approaches to the classification of socio-psychological methods of remote personnel management. The theoretical and empirical aspects of expanding the boundaries between HR and other disciplines are covered by J. Schwartz *et al.* (2020), which focuses on this process in two different dimensions: the scale of influence and areas of focus. An updated perspective on management through reengineering, digitalisation and flexible initiatives, as well as the change in the process in the context of the transition to remote employment, is offered by D. Gherson & L. Gratton (2022), who consider management issues in the context of creating successful teams rather than servicing them; training productivity rather than controlling tasks. R. Pells (2023) also analysed and reflected on why scientists are delving into the virtual world.

Thus, the latest scientific developments in the subject area of human resources management reflect the evolutionary path of transformation of methods and forms of labour organisation at enterprises. Dynamic changes in human life require supplementing these concepts and areas with new challenges, problems, and applied tasks, which formed the aim of the study.

## MATERIALS AND METHODS

The methodological basis of the study is formed following the purpose and includes a legislative and regulatory component, a theoretical component represented by scientific articles, monographic studies, statistical data, and the results of expert assessments in the subject area. To reveal the essence of the highlighted issues, as well as to highlight their content, legal acts of the Verkhovna Rada of Ukraine (Law of Ukraine No. 2136-IX, 2022; No. 2232-XII, 2022; No. 2352-IX, 2022) and information of the Cabinet of Ministers of Ukraine (800 enterprises relocated..., 2023), official materials of the State Statistics Service of Ukraine (n.d.) were used, which reflect the trends and forecasts of the socio-demographic and economic situation in Ukraine caused by the war and focus on the feasibility of improving HR management systems necessary to develop changes in the field of security measures and corporate unity. Analytical information on the dynamics of relevant trends in the development of HR management (Schwartz *et al.*, 2017) and a survey of employees on the main challenges of human sustainability (Cantrell *et al.*, 2024) became the basis for developing directions for creating responsible and harmonious HR management systems for modern and future enterprises.

The methodological basis of the research is a set of scientific methods that ensures the methodological integrity of the study, in particular: analysis and synthesis – for analysing modern features and reasons and generalizing their impact on the formation and development of HRM; systemic method – for revealing the essence of HRM through the prism of corporate culture, application of the latest technologies and growth of human productivity, that is, the unity of content (productive and creative human labour) and form (the process of development of corporate culture under the influence of new technologies), and for streamlining the areas of HRM; grouping and generalization – for developing In the context of global trends in the field of human capital, the directions for creating harmonious human resource management systems of enterprises based on the use of the method of expert judgement are proposed. The use of the statistical method and a survey made it possible to form a statistical base, highlighting informative data on the internal displacement of the population and enterprises under martial law, growing occupational stress and threats of job loss due to technological changes, the spread of practices and restrictions on the processing of employees' data, and trends in the development of microcultures.

## RESULTS AND DISCUSSION

In modern business, human-centric models in the HR management system are dominant for the vast majority of business entities in various types of economic activity. Employee focus is becoming an axiom of business management through the prism of the obvious interdependence of the long-term development of a business project and the satisfaction and personal growth of employees, which guarantee the success of the business mission. This awareness is not only a requirement of the times but also a crucial guideline in the process of building intellectual and knowledge potential, attracting talent and their professional and career development.

At the same time, the trends of modern socio-political and economic development in Ukraine and the world indicate the desire of enterprise personnel to expand the boundaries of personal freedom, and dynamic mobility and transfer the solution of various problems to the capabilities of digital technologies has been resisted in the realities of uncertainty during the war regarding job security, personal and collective security, economic and social dependence, psychological resilience, etc. From a scientific and managerial perspective, it is necessary to investigate how businesses and employees are adapting to the rapidly changing new reality of life. The study proposes to address modern trends in personnel management, which have become relevant in the context of the Russian-Ukrainian war, and which allow the development of theoretical and applied models for promoting unity and harmonious development of personnel.

The activities of the staff of Ukrainian enterprises under martial law are characterized by several peculiarities:

1) changes in labour legislation (the possibility of employers increase working hours from 40 to 60 hours per

week, or reduce them from 36 to 40 hours; limit rest for employees from 42 to 24 hours per week and the duration of annual leave to 24 days; change the start and end time of shifts; transfer employees to another job not specified in the employment contract without their consent without reducing their wages; refuse to grant unused vacation or regular leave to employees of certain enterprises; dismiss employees during temporary incapacity for work or leave due to the impossibility of providing employment due to the destruction of production or organizational conditions, means of production or property of the employer as a result of hostilities; at the same time, an employee may terminate an employment contract if there is a threat to life and health or the company is located in a hostilities zone; the ban on working on weekends, reduced working hours at night, reduced working hours on the eve of a public holiday, the need to notify employees of changes in essential working conditions and changes in remuneration conditions 2 months before their introduction, etc. are cancelled (Law of Ukraine No. 2136-IX, 2022; No. 2232-XII, 2022; No. 2352-IX, 2022);

2) long-term and chaotic migration of the population (according to the UN High Commissioner for Refugees, about 6.47 million people have left Ukraine since the beginning of the great war, as of 15 February 2024. Of these, 6.0 million people are in Europe and 0.476 million in other countries (Ukraine Refugee Situation, n.d.); at the same time, according to the State Border Guard Service of Ukraine, only 2.4 million Ukrainians have left and not returned to Ukraine since the beginning of the war (The data of the State Border..., 2023);

3) internal displacement of the population (the number of officially registered internally displaced persons (IDPs) in Ukraine reaches 4.9 million people (Ministry of Social Policy of Ukraine, n.d.). According to a study by the International Organization for Migration (IOM), only 40% of IDPs in Ukraine are employed, while 14% are actively looking for work and 6% are inactive. This means that IDPs have significant labour potential that they are trying to realize. For comparison, the employment rate among non-displaced residents is 50% (Ukraine – internal displacement report..., 2023);

4) evacuation and relocation of enterprises (the Government of Ukraine recommended that enterprises from the territories outside the control of the Government of Ukraine relocate to safer locations. As of 5 May 2022, 500 businesses have moved to safer locations, of which 300 have resumed operations. In March 2022, applications were received from 1,266 businesses; and in June 2022, only 79 businesses applied for evacuation (Uvarova & Saprykina, 2023). At the same time, Deputy Minister of Economy of Ukraine Tetiana Berezhna stated that “since the beginning of the war, 800 enterprises have been relocated from dangerous regions with the support of the state. As of the beginning of March 2023, 623 enterprises are already operating in their new locations. Another 239 are looking for a convenient location or mode of transport. More than 650 companies that planned to relocate their production facilities refused to move due to the de-occupation of the

territories where they are located. In addition, some businesses are now returning to their previous locations due to the improved security situation, particularly in Kharkiv, Chernihiv and Sumy regions. 44 enterprises have already returned” (800 enterprises relocated..., 2023));

5) mobilization of the population (“Up to 700,000 people are mobilized to the Armed Forces, up to 60,000 border guards, up to 90,000 National Guard, up to 100,000 National Police. In 2023, more than a million people in uniform will ensure the activities of the security and defence sector” (More than a million Ukrainians..., 2022));

6) logistical collapse, unavailability of energy resources, and the elimination of markets for goods and services also pose significant risks to the work of employees and households, as noted by A. Kotsur *et al.* (2022).

Along with national trends, the activities of personnel are also significantly influenced by current global trends that threaten human resilience. According to many researchers (Future Forum Pulse, 2023; Bracy, 2023), they include:

- unrestrained professional burnout;
- concerns that artificial intelligence (AI) will eliminate jobs;

- the rapid development of the need for skills;
- support for age-related and contract employees;
- poor conditions for employees in their first job (employees in their first job make up about 80% of workers worldwide (Technology can help..., 2022); at the same time, according to the authors N. Dhingra *et al.* (2021), E. Frauenheim (2022) and M. Gonzales (2023), they feel underserved by education. They are least expected to have the opportunity to work on targeted programmes, receive significantly lower salaries and fewer days of paid leave, and are most likely to lack health insurance;

• climate change and energy generation sources have a decisive impact on the workforce in most countries (according to P. Philip *et al.* (2022), more than 800 million jobs worldwide – 25% of workers – are highly vulnerable to extreme climate conditions that affect, for example, access to a clean environment (water, air), as well as the economic results of energy transformation).

Accounting for the above trends and new challenges, the main factors influencing the effectiveness of HR management under martial law and global expectations can be identified, as shown in Table 1.

**Table 1.** Factors influencing the effectiveness of HR management under martial law and global expectations

Factor	Influence
Hazards and emergency conditions	Personnel may face various hazards, such as attacks by enemy forces, shelling and bombing, air raids, traffic restrictions or power, water, heat and other situations, which require an action plan to protect, secure and move employees and their mental and physical readiness for change in advance
Communication	It is particularly valuable as it can affect the performance of staff and their safety. It is important to have an effective and reliable communication system that will allow employees to transmit information quickly, clearly and concisely and ensure information hygiene in communication
Stress	Staff can face high levels of stress and emotional strain, which can result in reduced productivity and performance. This factor should be addressed, and action plans should be in place to reduce stress and support employees
Discipline	A key factor in the behaviour and work of staff and employees are obliged to follow the rules and instructions to ensure safety
Leadership	The team leader (manager) performs a crucial function and should have a clear strategy and action plans for the staff, as well as be ready to make quick and informed decisions in dangerous situations
Restrictions on freedom of action and decision-making	During martial law, restrictions may be imposed on the freedom of management decisions and actions for business managers, which narrow the possibilities, efficiency and effectiveness of management processes
Emotional and mental	This group of factors involves the search for opportunities and resources to create a culture of staff support capable of ensuring the psychological comfort of employees, stabilization of mental health, emotional balance, and the preservation and reproduction of human potential

**Source:** compiled by the authors following Y. Sytnyk (2017), Team management in war conditions (2022) and O. Cherep *et al.* (2023)

The factors listed in Table 1 require managerial decisions in the HR management system that are equivalent to these challenges and will ensure workplace safety, implement operational changes to work schedules and operational processes, develop stress management programmes (measures), organize training and retraining, and advise employees on various issues of life under martial law.

In this context, conditions should be created for employees of enterprises and programmes should be developed (guaranteeing safety, supporting or motivating

development, career growth, social responsibility) that will promote their safe work, forming value orientations of unity and trust, and increase the effectiveness of their work. Therefore, N. Mitsenko *et al.* (2022) propose HR management based on the concept of sustainable development, in compliance with certain principles, in particular: human resources development with a long-term perspective; flexibility; employee empowerment; fair and equal opportunities; external partnerships; employee care; profitability.

Taking care of employees in times of war based on formalized uniform rules for all is the best way to build trust. Attitude to people, transparency of processes and decision-making, and salaries of employees at a level sufficient to provide for their families and restore their working capacity always create a culture of loyalty and morality in the company. According to N. Mitsenko *et al.* (2022), the creation of opportunities for employees to acquire various professional (technical) and interpersonal skills, social skills (volunteering, taking care of oneself, how to deal with stress, how to develop good nutrition habits, how to recover from work, etc.) is a complement to such a human-centred policy, which is especially relevant in the management of personnel of Ukrainian enterprises in the context of Russian aggression.

There are also organizational and managerial situations in which formal and informal restrictions do not allow companies to meet their staff development needs. N. Markova (2015) identified several reasons for the emergence of contradictions in the sustainable development of personnel, in particular:

- excessive requirements for employees who do not have an appropriate basis in terms of socio-economic

justification of their need to perform their professional duties as set out in job descriptions;

- non-compliance with the provisions of the laws and regulations of Ukraine governing relations in the field of hired labour management;

- organizational, economic, technical and technological limitations of the enterprise to meet the needs of employees in their development;

- organizational and bureaucratic barriers to the implementation of HR policy for staff development, due to low qualification of HR employees, limited financial resources for the implementation of current and future staff development plans, the complex organizational structure of enterprises with communication problems, etc;

- low level of staff motivation to improve their professional level, and expand their area of competence, responsibility, and career growth.

Addressing the reasons, limitations and opportunities of HR management in modern realities, it is advisable to formulate the main directions of promoting the development of personnel under martial law, as presented in Table 2.

**Table 2.** Directions for promoting staff unity and development under martial law

Direction	Influence
Support and compassion	It is important that owners and management effectively support and empathize with staff during martial law. It is advisable to extend care for staff to employees' families. This will build trust and a sense of belonging and support for each other
Financial incentives	Management must provide employees with the necessary material resources and tools for effective work
Learning and development	In times of war, employees may need new knowledge and skills to perform effectively. It is therefore important to ensure that employees are trained and developed in specific areas and a comprehensive manner so that they are prepared for various challenges and responsibilities. In this context, human resources policy should also provide for the development of spiritual and emotional intelligence, which will stimulate a new quality of thinking, increase self-awareness of one's mission, enable self-control over negative emotions, and develop the ability to link causes and effects into a single whole
Collaboration and communication	Management must create conditions for cooperation and communication between employees. This can help ensure effective coordination and real-time problem-solving based on key communication functions (informing; communicating; joint decision-making; planning; performance review; division of duties; and joint work and responsibility). In addition, it is advisable to develop a communication culture, as common values, mental attitudes and stereotypes are a unifying factor that can ensure harmonious communication, an effective atmosphere of cooperation and consolidation
Remote control	Human resource management in wartime may be caused by the need to interact and work with remote teams located in different locations, and may also be necessary to ensure the safety of employees during the war
Taking care of employees' well-being	All enterprise processes need to be built in such a way that employees feel organic (natural), the culture is built around people (in small enterprises according to the traditions of family life), the development of social compensation (health insurance, cheaper food, corporate transport, etc.), which will reflect the social aspect of management technology
Cultivating strength of mind and determination	Developing staff morale, i.e., a state of mind in which employees become free (do not focus on everyday problems), rising above the daily routine of life and work. Developing the mental component of staff behaviour based on national patriotism and psychological resilience, the desire to overcome obstacles, unwavering will, courage and determination
Publicity and transparency	Developing a tradition of open discussion of problematic and painful issues of the enterprise, division, and project team. Highlighting only the images of leaders and winners in the life of an enterprise leads to a distortion of reality and wrong decisions. Honesty and transparency with staff add energy and fairness to processes and reinforces trust as a core value

Table 2. Continued

Direction	Influence
Internal mobility	The development of internal staff mobility is an important tool for attracting and retaining talented employees. Promotion of career and professional opportunities is a key factor in employment, and their prolonged absence is a good reason to change employers. The following types of mobility should be developed: horizontal (change of functions within the current business function), cross-functional (transfer to another business function), vertical (transfer to a managerial position with new functions), and internal corporate
Filling the HR policy with a spiritual and cultural component	This direction will strengthen human resource management with humanistic content; through the mechanism of corporate culture, introduction of social and spiritual practices, cultivation of moral values, development of national and moral modes of behaviour, promote unity of corporate spirit, neutralize excessive technologization, balance technical rationality with spiritual maturity

Source: compiled by the authors following Y. Sytnyk (2017) and O. Cherep *et al.* (2023)

The areas listed in Table 2 ensure the formation of trusting relationships among the company’s staff, help them adapt to new challenges and business conditions, establish new forms of internal communication and training, introduce new management and motivation systems, strengthen the comprehensive connection of employees with the company, and help attract potential candidates for employment, etc.

A. Kotsur *et al.* (2022) believe that the main tasks of HR professionals in times of war are “adaptation of the HR management system and internal HR documentation to changes in legislation; ensuring the necessary number and quality of staff for effective operation in the context of large-scale

external and internal migration and mobilization of the population; retention of existing staff; use of remote employment and additional functions of accounting and control of remote work; creation of conditions for the operation of evacuated enterprises in the new territory, as well as proper housing, social and living conditions for their employees”.

In 2017, Deloitte Consulting surveyed HR managers to identify the current priority areas of HR development and trends in their change until 2022 (Fig. 1). During this period, several forecasts at the time were confirmed by the realities of 2023. Performance management, HR analytics staff experience, etc. have become less relevant in the HR management process.

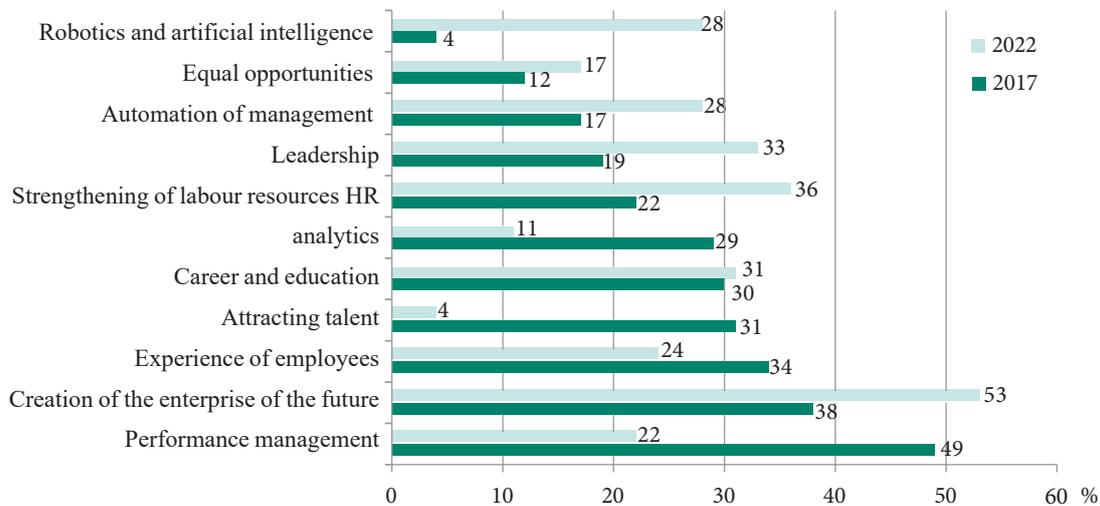


Figure 1. Dynamics of the most important trends in the development of personnel management

Source: compiled by the authors based on J. Schwartz *et al.* (2017)

At the same time, new challenges for HR management have emerged on the agenda of modern times due to technological and ideological changes. S. Cantrell *et al.* (2024) determined trust and sustainable human capital development as the most relevant. This study identifies seven global trends in human capital that demonstrate how the combination of business performance and people plays an important role in achieving entrepreneurial success. These trends include the following: ensuring human resilience;

increasing productivity; expanding transparency; overcoming the lack of imagination; developing digital gaming platforms; stimulating the development of microcultures in the workplace; and moving towards borderless HR.

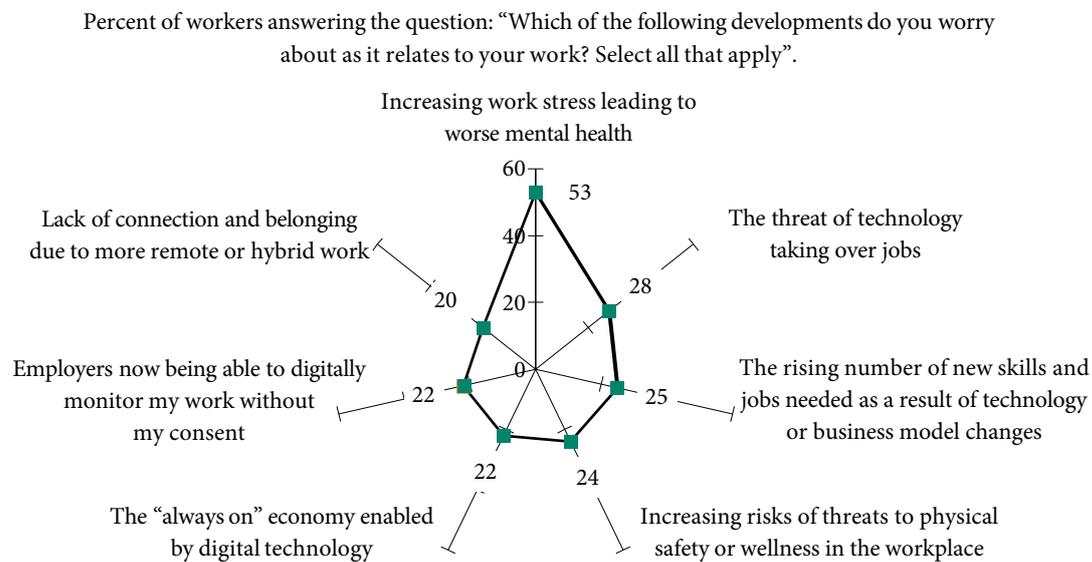
Some of them are worth discussing in more detail.

1. Ensuring human resilience. When people thrive, businesses thrive. To be sustainable, businesses need to create value for all the people associated with them. Moving towards sustainable human development implies a parallel

change in the concept of human resource management. This requires systematic management decisions from enterprises to ensure that they create synergies of value for the people they affect in multiple dimensions. Based on the results of research conducted by Z. Ton (2017) and the analytical work of S. Cantrell *et al.* (2024), the following impact dimensions can be identified: staff (fair wages and long-term financial well-being; skills, employability and career opportunities; equity and addressing systemic causes of inequality; physiological and psychological safety; social, cultural and mental balance); potential employees (training and development of staff for future vacancies; enhancing human outcomes for external supply chain workers; enhancing human outcomes for contract or informal workers); society (improving public health, including the impact

of the environment/climate on health; creating “good jobs” for the economy (e.g., paying fair wages that meet a decent standard of living); positive impact on communities; contributing to equity for groups that have historically been marginalized by race, gender or other identities).

At the same time, according to the survey, the relationship between employees and businesses is becoming increasingly complex amid large-scale contradictions in society and the business environment. Only 43% of employees believe that their working conditions at enterprises are better than at the beginning of their employment. Therefore, employees identified growing business stress and the threat of human jobs being replaced by technology as the main challenges for businesses that promote human sustainability (Fig. 2).



**Figure 2.** Workers identify top challenges to human sustainability

Source: S. Cantrell *et al.* (2024)

2. Increasing productivity and defining new indicators for assessing employee performance. As human performance takes centre stage, the question arises: are traditional performance measures sufficient? In the era of human-centric operations, modern database sources and artificial intelligence can help businesses move from measuring employee productivity to measuring human achievement. Therefore, to measure human performance, business results and human results should mutually reinforce each other. In this context, it is worth noting that “compliance with new global regulations on the use of personal data” entails excessive control over people through productivity indicators not only in their workplace but also in their private lives.

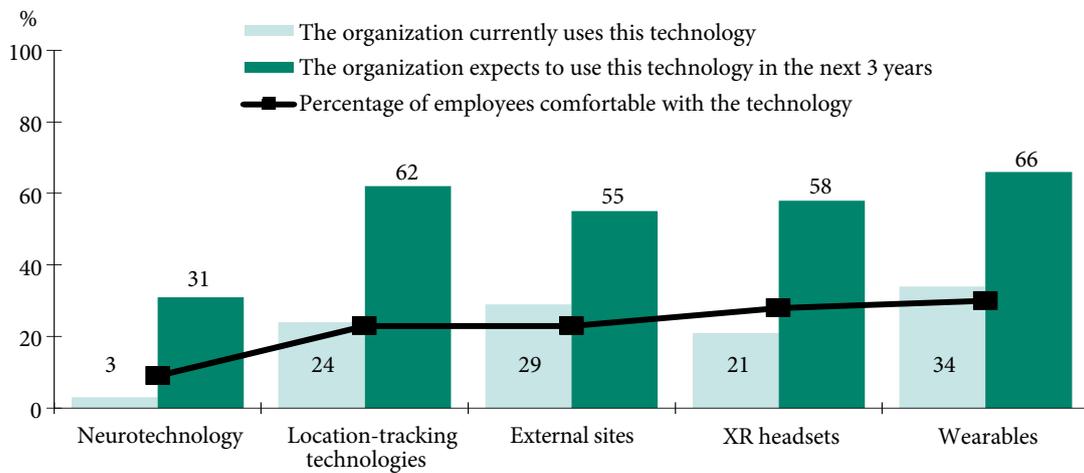
Therefore, from the perspective of human dignity, the representative indicators proposed by S. Cantrell *et al.* (2024) representative indicators should be treated with great care and caution, especially those that can be combined: 1) business results (customer satisfaction, efficiency, revenue growth and profitability, time to market and speed to market, innovation and its implementation, quality);

2) human achievements (employment opportunities and career growth, fair remuneration, ownership and belonging, physiological and psychological safety, personal goals and their content, gaining experience and skills, happiness and well-being). While artificial intelligence can be necessary for assessing, analysing and improving business and employee performance, it can also be damaging to people and an entity’s reputation if used inappropriately. Several researchers have expressed such views, drawing attention to the growing number of companies that are experiencing disputes with employees due to increased control. J.B. Leslie & K. Simmons (2023) note that “productivity paranoia – the fear that remote workers are unproductive – can lead to a state of surveillance and breach of trust, rather than management decisions aimed at achieving real workforce efficiency and productivity in modern workplaces”.

These trends are supported by enterprise surveys, which show that employees are loyal to the collection of additional data using familiar traditional technologies such as email or calendars but are mostly negative when it comes to

data collected using new technologies such as wearable devices and headsets. Only 9% of employees like the collection of personal data using neurotechnologies, 23% of employees like location tracking technologies, 23% like external

websites, and 28% like XR headsets (Cantrell *et al.*, 2024). At the same time, contrary to these staff sentiments, the majority of managers intend to implement such technologies for data collection in the coming years (Fig. 3).



**Figure 3.** Employee attitudes toward data collection using emerging technologies and managers' expectations for their use in the next three years

**Source:** Beyond productivity: The journey to the quantified organization (2023)

Such an administrative approach can cause conflicts between management and employees and threaten trust within the enterprise and among stakeholders. At the same time, business owners and managers need to understand that people cannot and should not lose their rights and freedoms for the sake of economic relations or the most advanced technologies. Therefore, one of the main tasks of HR professionals is to establish responsible practices and limitations for the processing of personal data and artificial intelligence, as well as to plan preventive measures to address employee concerns about the use of new technologies in the process of collecting and analysing professional and personal confidential data.

3. The idea that instead of striving for a common corporate culture, businesses should create a “culture of cultures” tailored to the needs of business units or local teams, compatible with the values of the entire enterprise, is gaining traction in many HR academics. At the same time, most large enterprises have developed standards of a unified corporate culture, to which new employees should harmoniously join, realizing their intellectual, creative and professional potential based on the principles and models of behaviour established by the standards. It is worth focusing on the understanding and unambiguous interpretation of the following definitions: culture, corporate culture, organizational culture, labour organization, and microculture.

Culture is a way and consequence of human activity that reproduces personal and social existence in all its manifestations. For instance, H. Zakharchyn (2011) notes that this can be used to interpret it as an ethnically specific paradigm of life creation, which, accumulating certain knowledge, meanings, creative abilities and skills of the people in

material and spiritual values, sign systems, and so on, acts as a special way of being of a certain ethnic group concerning others. In this context, for an enterprise, culture is the “way things are done” in an organization – sustainable patterns of behaviour over many years, supported by shared practices and experiences, values and principles of the enterprise (Beyond productivity..., 2023).

In the process of development of social and labour relations at the enterprise, according to T. Kytsak (2008), corporate culture manifests itself as a complex and multifaceted system of values, beliefs, business principles, norms of behaviour, traditions, which becomes an important intangible resource of the enterprise, as it provides social ties, communicative and informational communication, harmonizes relations between employers and employees and thus significantly affects the efficiency and competitiveness of the enterprise. At the same time, as argued by H. Zakharchyn (2009), unlike corporate culture, organizational culture is a system of relationships that have developed in an organization based on accepted values, basic ideas and norms of behaviour necessary to fulfil its mission. Therefore, the concept of “organizational culture” refers to the degree of organizational ordering of the operational and management process of an enterprise and is only one element of the organization’s culture.

Most researchers in their definitions name the organization’s values as a component of corporate and organizational culture, so it can be argued that values are the core of corporate culture. Thus, when the scientific discourse refers to “common” values, such as innovation, teamwork, excellence and safety, which should form the basis for the development of microcultures in enterprises, it is a classic

description of the constituent elements of organizational culture. Such value elements may have a significant differentiation in practice when it comes to multi-sectoral enterprises, as well as those with many thousands of employees structured into hundreds of units or geographically diversified.

In this regard, the diversity of microcultures at an enterprise should be interpreted not as the presence or “fueling” of the development of different worldview beliefs, spiritual moral and ethical principles and norms of behaviour, linguistic, cultural or national identities and traditions among the enterprise’s personnel, but as the development of approaches to improving the organizational and operational processes of economic activity among multiple units and teams of the enterprise. This understanding will help develop the flexibility and efficiency of the company’s divisions, a certain autonomy of functions and teams, unlock the intellectual and knowledge potential of employees and enable them to quickly adopt best practices and integration results. This trend is supported by the survey results, which show that almost 71% of respondents say that focusing on individual departments and creative teams as the best environments to foster culture, consistency and flexibility is key to the success of their teams. At the same time, 50% of managers indicate that an organization’s culture is most successful when it has a uniform degree of variation (Cantrell *et al.*, 2024).

An important aspect of harnessing the potential of microcultures is to focus on their development. The fundamental focus of microcultures should be on the coordination and unification of their manifestations and practices (e.g., diversity of creative ideas, innovations, flexibility and individual work patterns, etc.) around a unified and recognizable corporate culture). The idea of cultivating different models of staff organization and practices to promote employee development, in the context of martial law and technological transformation, can have a positive impact on the experience and sustainability of enterprises. The reasons for the increase in the number of new models of labour organization are as follows:

- expanding opportunities for hybrid or remote work. According to J. Wood (2022), 70% of employees worldwide prefer a hybrid structure, which will require expanding opportunities for team interaction outside of offices. At the same time, O. Pickup (2023) notes that employees of hybrid teams create closer ties within their units, but lose proper connection with the enterprise as a whole;
- the emergence of operational practices specific to individual teams, departments or functions (differences in the type of employment (full-time or part-time), working conditions (on-site, hybrid, remote));
- complex and unclear procedures for approving innovative projects and processes, as well as management approaches and decision-making styles (command and control, decentralized, consensus-based, distributed);
- the need to implement a special approach to attracting or retaining the best talent and intellectuals (preserving

the unique culture of the newly acquired company in the process of mergers and acquisitions; ensuring freedom and flexibility);

- changes to work schedules, shift duration, working week, etc;
- the size of the company and its organizational maturity.

The existence and development of many microcultures in one local enterprise in the national economy will inevitably lead to the threat of internal disruption (destruction) of the system and several negative consequences in the future, in particular

- intensification of internal competition between such microcultures for the right to dominate, and thus overcome and displace the weaker ones;
- formation of informal groups and environments that are not united by common business goals and objectives;
- imbalance in the system of staff motivation and a diverse understanding of the meaning of “justice”, “discipline”, “order”, “responsibility”, “duty”, “right”, “freedom”; “patriotism”, etc;
- disorientation of managers and leaders of the enterprise between different local approaches and teams, which will make it impossible to agree and achieve common goals of the enterprise;
- loss of the enterprise’s identity and unity and recognition of the employer brand in the labour market and among stakeholders as microcultures spread (grow);
- disintegration of horizontal and vertical links between structural units, as well as an imbalance between control and empowerment in the management system;
- dynamic growth and sharpening of disagreements between employees of different departments (teams, branches), and between employees and management, which will impede the achievement of results for business and staff;
- increased external instability around the enterprise, as a developed corporate culture – a “monoculture” – is a safeguard against vulnerability to stresses under martial law and various ideological, economic and technological challenges.

Corporate culture should not be an internal barrier to achieving the company’s goals and developing individual teams, but a source of inspiration and satisfaction for employees’ needs to support the well-being and focus of staff development.

Therefore, it is necessary to integrate the life cycle of each new talent into the corporate culture of the enterprise, and not vice versa, creating a microculture for the life cycles of individual talents. Therefore, recruitment processes, such as hiring, performance management, and development, should be clear to potential talent upfront so that they can quickly adapt to the company’s unique corporate culture, functions, and location.

Given the analysed trends in human capital, the creation of responsible and harmonious human resource management systems for modern and future enterprises should be carried out in the following areas:

1. *Overcoming egocentrism, fostering a culture of balanced interests and harmonizing relationships.* The excessive promotion (dominance) of theories and practices of developing global and personal values, and social profiles, and expanding the boundaries of personal freedom of personnel in the business environment and personnel management indicates the construction of a present and future society in which a person must constantly strive to satisfy personal interests. Satisfaction of personal interests at the company, not outside of it – in private life. This approach is the absolute opposite of aristocratic morality, marked with the seal of honour, which is characterized by the ability to act for the benefit of others (God, faith, nation, state, society, community, team, teammates, brothers, ladies, neighbours) contrary to personal interests. Therefore, in the strategic dimension, the goals and objectives of the enterprise HRM system should be to foster a culture of balanced interests between the participants of the business process – employees, owners of the enterprise and society. Human resources management should be focused on the constant search for ways in which they can complement and enrich the enterprise, personal and social life, without constantly seeking to gain personal benefits and enrichment at the expense of others.

2. *Filling professional and personal space with thinking, not information.* One of the problems of employees in post-industrial enterprises is the consumption of large amounts of unnecessary information that overwhelms their professional and personal space, leaving no room for thinking. The achievements of lifelong learning should be applied during active periods of work between regular professional development and staff training. Most employees involved in such constant processes of “learning for the sake of learning” do not have time to consciously apply the acquired knowledge and turn it into experience. However, over time, they realize that this knowledge is not useful to anyone, it has not changed the operational and management process at the enterprise (unit) and has not affected the level of their remuneration for their work. Such work is no longer productive. It creates an environment of simulacra, where “everyone has to be in business” and “be a leader”. Thus, according to J. Baudrillard (1994), humanity is losing touch with reality and enter the era of hyperreality – when the picture is more important than the content, the document (diploma, certificate) is more important than knowledge, and the connection between objects, phenomena and signs has long been broken. In the activities of enterprises, a system is being scaled up, the law and purpose of which is the production and overproduction of only certain words, signs and symbols (rituals). In this system, “information devours itself” – it destroys communications, social, human, true and national. The creation and dissemination of “information for the sake of information” staged communications, creating “illusions of communication and understanding” as well as thinking. Meaningless “knowledge” is accumulated that does not help to create anything real, material or spiritual – it does not bring any benefit to the subject of its possession.

This boom in “pumping information” on individual skills and functions is an attempt to direct the thinking of staff into a mechanistic plane and to show that individual elements of the whole process (enterprise) are linked by the principle of determinism and can exist independently of each other. That is, a specialist with a mechanistic (fragmentary) mindset sees only individual processes, events, and functions at an enterprise or in a department. Instead, it is necessary to develop holistic thinking among specialists so that they can build the most complete picture of what is happening at the enterprise, identify the links between production processes and management decisions, very different phenomena of the enterprise’s external environment, situations, events – their holistic perception of the business entity.

3. *Overcoming internal misunderstandings and a spirit of disagreement.* One of the threats to the development of socio-economic systems (enterprises, states) is internal misunderstandings and a spirit of disagreement. Aggravation of contradictions between different generations of employees regarding the role and importance of corporate culture and attempts to make it a secondary issue in business development, aggressive imposition of “progressive views” on various topics (gender ideology and sexual identity, etc.) on the vast majority of Christian workforces, ignoring the state language in business documentation and during training and education for mono-ethnic teams, a high level of bureaucracy and an overly complex staff evaluation system, as well as an unjustified gap in salaries and remuneration between management and employees, are among the main causes of disruption in modern organizations. Therefore, the leading idea is to maintain the unity of the company’s staff at all costs, based on the fundamental ideological principles of organizing the management process, without interfering with the private life of employees outside the company. This unity of teams should be built, first, based on national consciousness, for Ukrainian enterprises based on Ukraine-centricity, respect for the state, laws, national security, fair remuneration, moral values and national traditions of the region, decent attitude to people of different generations, and corporate culture.

4. *Personal and team discipline and responsibility.* Discipline helps learn fear, risk, danger, laziness, indifference, and bad habits control. Discipline can help develop a responsible personality and achieve harmony in professional and private life. Discipline is a combination of freedom and responsibility; it is the potential for inspiration.

Therefore, it is important to create human resource management systems aimed at overcoming egocentrism and maintaining a culture of balanced interests among business stakeholders. Filling professional and personal space with thinking is a key aspect of staff development, as it helps to avoid information overload and the creation of an environment where knowledge does not translate into action. Overcoming internal misunderstandings and teaching the team discipline and responsibility are important steps in maintaining unity and efficiency in an organizational environment.

## CONCLUSIONS

In the modern environment, companies are transforming their HR management systems to expand the scope of human capital development in line with the challenges. The analysed statistical information on long-term and chaotic migration of the population, internal displacement of enterprises and personnel, and mobilization of the population in Ukraine confirmed the need for new security measures and employee motivation and became the basis for the formation of directions for promoting staff unity and development under martial law. The emergence of new challenges for HR management caused by global trends in the field of human capital on the agenda today necessitates the development of the latest HR management tools. Accordingly, the article examines the role of people in achieving entrepreneurial success through the prism of ensuring human sustainability, productivity growth and the spread of microcultures in the workplace.

The dynamics of the processes show that effective HR management involves cultivating different models of organizing staff work and practices to promote employee development, in the context of martial law and technological transformations, which should have a positive

impact on the experience and stability of enterprises. Therefore, to develop positive trends in human capital, it is necessary to create responsible and harmonious human resource management systems for current and future enterprises. In the applied aspect, it is advisable to overcome egocentrism and foster a culture of balanced interests, fill professional and personal space with thinking, overcome internal misunderstandings and the spirit of disagreement, accustom yourself and your team to discipline, and avoid staff dependence on technology or economic relations on the way to progress. Prospects for further research will be the formation of an effective system of social guarantees and job security for different categories of personnel of enterprises in the context of the digitalization of the economy, ensuring conditions for their free professional development, and maximizing the creative potential of each employee.

None.

None.

## ACKNOWLEDGEMENTS

## CONFLICT OF INTEREST

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## **Управління персоналом підприємств в умовах воєнного стану, соціокультурних та технологічних викликів**

**Анотація.** У статті розглядаються питання, пов'язані із розвитком системи управління персоналом у сучасних умовах, зумовлених воєнним станом в Україні та соціокультурними й технологічними викликами, які стимулюють потребу вдосконалення розвитку корпоративної культури та утвердження стійкості людини. Важливість ефективного реагування на ці запити актуалізує в теоретичному та прикладному аспекті окреслення предметного сегменту інструментарію HR-управління та його застосування. Мета статті полягає у висвітленні безпекової проблематики в управлінні персоналом та окреслення напрямів забезпечення стійкості людини на підприємстві в сучасних умовах. Для досягнення поставленої мети у статті використано такі методи: аналізу і синтезу; системний метод; групування та узагальнення; експертних суджень; статистичний метод та опитування. У результаті дослідження виокремлено основні чинники впливу на ефективність управління персоналом в умовах воєнного стану та суперечності щодо сталого розвитку персоналу. Сформовано головні напрями сприяння єдності та розвитку персоналу підприємств в умовах воєнного стану. Проаналізовано глобальні тенденції в сфері людського капіталу та поєднання результатів діяльності підприємств і людей у досягненні підприємницького успіху за такими критеріями: забезпечення стійкості людини; зростання продуктивності; стимулювання розвитку мікрокультур на робочому місці. Обґрунтовано, що наявність і розвиток багатьох мікрокультур на одному локальному підприємстві в національній економіці неодмінно призведе до загрози внутрішнього розладу (руйнування) системи та низки негативних наслідків у майбутньому. У результаті дослідження сформовано напрями творення відповідальних та гармонійних систем управління персоналом для сучасних і майбутніх підприємств. Висновки, які отримано за результатами дослідження, мають теоретичне прикладне наповнення і можуть бути корисними для суб'єктів господарювання при розробленні стратегій розвитку персоналу та удосконалення корпоративної культури, як джерела творчого натхнення і задоволення потреб працівників

**Ключові слова:** дистанційне управління; командна робота; культура; продуктивність; залучення талантів; мікрокультура

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## The impact of focus group opinions on market competitiveness and economic success in film production: Analysis of sociological and marketing aspects in the context of efficient resource utilisation and budget optimisation

**Abstract.** The purpose of this study was to examine sociological and marketing aspects to identify effective strategies for resource utilisation and budget optimisation in the context of the film industry. For this, the various success factors of a film product were examined in detail, leading to practical recommendations for optimising budget and resources. The study covered the influence of sociocultural factors on audience preferences, which helped to explain the popularity of films of certain genres after events that took place in the real world. The study determined the significance of personal experience, preferences, and cultural context for the audience's perception of films, leading to the conclusion that focus group participants should be matched to the characteristics of the film's target audience to maximise film distribution profits. The films examined in this study, namely *The Shawshank Redemption*, *Blade Runner*, and *E.T. the Extra-Terrestrial*, showed that, generally, focus group opinions reliably indicated the prospect of a successful or unsuccessful film distribution, which, however, does not indicate the quality of the film. The advertising campaign of the film "Barbie" was also examined, covering its main aspects (social media, the colour pink, attracting public attention) that led the film to box office success. Recommendations were developed for ethical promotion of film productions, including extensive use of social media to communicate with audiences, effective use of resources, working with focus groups. The findings suggested the essential role of focus groups in shaping the competitiveness of films on the market, as well as the need to consider them when developing marketing strategies and optimising film production budgets

**Keywords:** advertising campaigns; audience; promotion strategies; pre-show; cultural trends; social media

### INTRODUCTION

Film production is one of the key sectors of the entertainment industry, attracting the attention not only of the general audience but also of researchers from various fields such as sociology and marketing. In modern world, the quality of films and their successful marketing play a key role in achieving competitiveness and economic success for studios and film producers. In today's information society, access to a variety of content is easy and fast, making the creation of a successful film even more challenging, requiring not only creativity but also a profound understanding of audience preferences.

One of the methods of analysing the market situation and consumer preferences in film production is the use of focus groups. Focus groups provide valuable insights from audiences, revealing their opinions, preferences, and expectations about films. However, it is vital to acknowledge that the impact of focus group opinions on market competitiveness and economic success in film production requires an in-depth analysis and understanding, especially in the context of sociological and marketing aspects. There are many challenges in this context. Modern film industry is facing an increasing level of competition, which leads to the

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need to not only create quality content, but also an effective marketing strategy to attract viewers' attention. That said, with the rise of digital technology and streaming content, there have been considerable changes in consumer behaviour, affecting the usual distribution and monetisation patterns of films. Another considerable issue is the uncertainty about the extent to which the opinions of focus groups can truly reflect the preferences and expectations of the general audience; it is essential to understand how representative these opinions are and whether they can be used to inform key decisions in the film making and promotion process. If these problems are not addressed, there is a risk of losing competitiveness in the film production market. Failure to adapt to changing audience demands and unnecessary use of resources on non-core strategies can lead to financial and reputation losses for studios and producers. In addition, a lack of confidence in the results of focus group research can lead to poor strategic decisions, which can adversely affect the commercial success of a film.

Sociological and marketing aspects in film production encompass many areas that play a major role in the development and successful promotion of films. Sociocultural trends are a key factor in understanding which topics and genres will be most relevant to audiences in a particular time. For instance, analysing social movements, fashion trends, or changes in public opinion can help identify the topics that will be most appealing to viewers. Budget and resource optimisation in film production involves cost analysis of the various stages of film production, as well as assessing the effectiveness of advertising campaigns and distribution channels. Optimisation of production processes and rational use of resources help to reduce costs and increase the film's competitiveness in the market. The problem of the influence of promotional strategies and various factors on audience preferences in cinema is considerable for modern film production. P.S.H.M. Shaiful *et al.* (2019) and D. Rubin *et al.* (2022) covered this topic in their research, identifying the significance of marketing techniques in shaping audience preferences and their effectiveness in the film industry, and the fact that a variety of film promotion strategies do influence consumers' choices. The researchers described a range of key aspects such as social and cultural factors, technological innovations, and the development of digital platforms that substantially influence the audience's perception of films. However, despite the significance of the findings of the reviewed studies, access to information on public preferences is limited, which may reduce the quality of the analyses conducted.

Another issue is the association of films with brands, whether it is the film itself as a brand, or other brands included in the film. G.S. Kohli *et al.* (2020) covered the role of cinema as a brand in the modern media space, while H.H. Park (2022) demonstrated that under certain conditions films can have a considerable impact on consumers' attitudes towards a brand. These conditions include the audience's level of engagement and their tendency to fantasise. However, the cited studies have a range of limitations.

Specifically, the influence of factors such as socio-cultural context or individual consumer preferences was not considered. I. Einberg & A. Hanifi (2023) covered the problem of revenue forecasting and profit maximisation and found that the use of random forest method based on pre-production data shows high accuracy in predicting film revenue, while P.P. Dewani (2020) stated that a thorough analysis of consumer preferences and behaviour is needed to determine the best pricing strategies and revenue enhancement activities in cinemas. X. Zhang *et al.* (2021) found that profit-maximising recommender systems run the risk of negative consumer outcomes such as limiting choice, loss of transparency and deterioration in the quality of offerings. J. Funk (2023) argued that the use of algorithms is effective in predicting revenue for different categories of films. Factors not considered in these studies, such as seasonal fluctuations in demand and the impact of external events on the film distribution market, require further investigation.

The studies reviewed demonstrated the multifactorial nature of the modern film business and the complexity of this process, but they did not fully cover the socio-cultural and marketing aspects of the success of films. The purpose of the present study was to identify the key factors that influence the success of film projects. To fulfil the purpose, the following tasks were set: to analyse the sociological factors affecting the market competitiveness and success of film projects; to assess the impact of cultural trends on the selection and budgeting of film projects; to analyse the effectiveness of various strategies for resource and budget management in film production.

## LITERATURE REVIEW

Modern film production is influenced by a range of factors, including sociological and marketing aspects, which play a key role in shaping and successfully promoting films. Often film marketing studies focus on many current trends and concepts that determine the success or failure of film projects. One substantial trend is the growing significance of digital technology and the internet in the distribution and marketing of films, as with the development of streaming services and social media platforms, film studios and film companies are faced with the need to adapt their distribution and advertising strategies to new platforms and consumer habits. This fact sparks debate about the effectiveness of conventional film promotions and the need for innovation in digital marketing. For instance, M. Suvattanalok & P. Foroudi (2021) found that social media helps to create positive attitudes towards a film by introducing information about it into a potential viewer's "personal space" – their mobile phone. C. Lam & J. Raphael (2018) uncovered a marketing ploy such as celebrity (often the starring actors in a film) interactions off set, including simulated romances to maximise audience attention and create excitement before the premiere of a film.

One of the key aspects in understanding film production is to make sense of the central terms and concepts used in the research. J. do Nascimento (2019) considers the

concept of socio-cultural factors as a set of social and cultural influences that determine audience preferences and behaviours in the context of filmmaking. S. Weingartner (2021) pointed out the role of social norms and values in shaping cultural products and their influence on viewers' perceptions. Among contemporary theories and concepts applied to film marketing, researchers have devoted particular attention to the investigation of target audience preferences. E. Arrigo *et al.* (2021) argue that the success of a project depends on how closely it matches the expectations and interests of the audience, while according to A. Lewnes & K. Lane Keller (2019), adapting to audience preferences is becoming a priority for marketers in all fields. Contemporary film production addresses essential aspects of economics and sociology that affect the commercial success and socio-cultural significance of films. Studies in film marketing and the sociology of culture cover current trends and challenges facing film studios and marketers. Y. Hong (2021) and D. Arditi (2021) confirmed the role of sociocultural factors in shaping audience preferences and film promotion strategies. Researchers point to the significance of adapting content to a variety of cultural contexts and viewer expectations.

A major aspect identified by researchers is the role of new technologies in the distribution and marketing of films. J.R. Saura (2021) and C. Corrado *et al.* (2022) covered the impact of digital platforms and social media on content distribution strategies and audience interaction. Researchers agreed on the significance of using digital tools effectively to maximise viewer reach and engagement. From an arts sociology standpoint, H. Chen *et al.* (2021) and S. Kim & S. Kim (2021) provided insights into how cultural products, including films, interact with state and social structures as well as individual preferences. These studies have uncovered the role of films in shaping cultural norms, values, and preferences, as well as their influence on social discourses and identities. C.M. McCormack *et al.* (2021) covered perspectives on the positive impact of cinema on the environmental thinking of viewers. Understanding such a phenomenon as digital technologies in film marketing can be interpreted in different ways. According to E. Sifaki & M. Papadopoulou (2022), it includes a wide range of digital tools and platforms used to promote and distribute films, while R. Hasan & J. Ferdous (2024) analysed the data and artificial intelligence technologies used in personalising marketing strategies. A key concept in the sociology of cinema is "cultural products". G.D. Rawnsley (2021) considered this concept as material and symbolic artefacts created by the cultural industry and influencing the development of cultural practices and identities in society. However, N. Archer (2020) uses the example of Brexit to argue that cultural products are also affected by commercial and political interests, which influences their content and dissemination. C. Iseli *et al.* (2020) stated the need to consider cinema not only in terms of marketing, economic efficiency, and technology, but also as an essential element of artistic heritage and a form of cultural development.

In the context of the subject under study, it is also important to consider researchers' views on the role of predicting the success of a film based on preliminary data in the context of contemporary marketing and advertising strategies. P.C. Murschetz *et al.* (2020) concluded that, despite the lack of precise algorithms that would guarantee the provision of reliable information about the potential strengths and weaknesses of a film, the use of all available information about the film (including data from pre-screenings, statistics from social networks, data on the success of comparable projects) will allow producers and marketers to develop the most effective strategy for the implementation and promotion of the project than if all this data were not considered. P. Merrington *et al.* (2019) hold a similar opinion. Researchers have stated the need to use an interdisciplinary approach in film audience research to obtain the most reliable and adequate information.

Modern film production is increasingly influenced by digital technology and internet platforms, which require film studios to innovate their distribution and marketing strategies to align with new consumer habits and the growing significance of streaming services and social media. Additionally, researchers emphasise the importance of understanding socio-cultural factors and audience preferences, as these elements are crucial for shaping successful film marketing strategies that resonate with target audiences. Interdisciplinary approaches and the use of preliminary data, including social media statistics and pre-screening feedback, are essential for predicting a film's potential success and developing effective marketing strategies.

## MATERIALS AND METHODS

This study examined and explored various aspects of film production and marketing in great detail to identify the key factors that influence the success of film projects. Initially, a literature review was conducted covering various aspects of film marketing such as film promotion strategies, the influence of socio-cultural factors on audience preferences, the use of digital technology and social media in marketing campaigns, the effectiveness of advertising and content distribution, and the significance of focus groups in the success of film projects.

The study explored changes in film production since 2000s in the context of current technological and cultural trends, covering a trend in the impact of LGBTQ+ and non-white actors on the diversity of stories and images in cinema. It was found that the involvement of a more diverse group of characters reflects the growing diversity of audience tastes and preferences, as well as a desire for a more open and inclusive cinematic experience; the representation of different cultural and gender perspectives on screen was identified not only as an essential element of socio-cultural reality, but also as a factor in attracting new audiences and strengthening the film's position in the global marketplace.

The impact of focus groups on film pre-testing, their role in marketing strategies, and audience reactions to pre-views and feedback were also explored. Consideration of

this aspect of the study has identified potential areas for optimising budget and resources in film production, aimed at improving the efficiency and competitiveness of films. The factors, aspects, and techniques associated with the involvement of focus groups in pre-testing of films were discussed in detail. Specifically, the influence of the participation of representatives of different audience groups on the development of the film's concept and its further perception by the general public was analysed. Furthermore, methods for analysing audience feedback and reactions to previewing versions of a film were revealed, considering current trends in filmmaking and changes in consumer behaviour, to identify potential ways to optimise the process of creating and promoting film productions.

A detailed investigation of film production processes has highlighted several areas of cost optimisation: the study conducted a detailed examination of opportunities to reduce the costs of marketing campaigns, which included an analysis of the effectiveness of various advertising strategies and the use of modern digital tools for precise audience targeting. Methods considered for streamlining production processes included studying surveying techniques, using more economical equipment and optimising labour resources. The coverage of financial flow management and budget control throughout the production and marketing stages of the film demonstrated that cost optimisation requires constant monitoring and analysis of financial transactions, allowing possible improvements and economically sound solutions to be implemented.

The systematic approach used in the study helped to develop strategies to improve marketing campaigns, adapted to changing trends and audience expectations, and to provide recommendations for optimising budgets and resources in film production, considering the identified factors influencing the success of film projects in the international market. This approach offered a better insight into the issues at hand and helped to achieve the set purpose and objectives of the study.

## RESULTS

*Influence of socio-cultural factors on audience preferences.* Sociocultural factors, including values, technological innovation, and internet media, play a key role in film production, influencing the themes, styles, and success of films. Globalisation and global cultural trends dictate audience preferences, while cultural differences can cause misunderstanding or even conflict. Social problems reflected in films become the object of public dialogue and can shape public opinion, while cultural stereotypes and values influence the content and format of films and their perception by audiences, determining the success of film production. Events in society can have a considerable impact on cinema. Since the terrorist attacks of 11 September 2001 in the United States, there have been many films reflecting the public anxiety and reaction to these events. For instance, the film *Extremely Loud and Incredibly Close* addressed the themes of terrorism, fear, and patriotism, attempting to interpret

and make sense of the tragedy and its aftermath through the lens of cinematic art. With a budget of USD 40 million, the film grossed USD 55.2 million at the box office, which can hardly be called a success, but the film reflected the current public sentiment and reaction to the events of 9/11; it served as a source of public dialogue and reflection and has stayed a landmark product in contemporary film culture.

Audience reactions to different genres and themes of films can be extremely varied and individual. For example, horror films may cause some viewers to feel adrenaline and thrill with suspense, while others may feel fear and anxiety. Comedies bring laughter and joy to most viewers, but some may find them boring or offensive. Dramas and films with a profound plot can make one think about life values and the fate of characters, while action and adventure films can generate excitement and delight from dynamic scenes. Audience reactions are strongly influenced by their individual preferences, experiences, and cultural contexts, as well as age constraints and life experiences, suggesting that it is important to consider the film's target audience when selecting focus group participants to better understand their reactions and interests.

*Changes in cultural preferences and perceptions of cinema.* Since the beginning of the new millennium, cultural preferences and perceptions of cinema have undergone considerable changes due to factors such as the rapid development of technology and the spread of the internet, globalisation, and a growing interest in niche films and cultural sensibilities. All this has influenced the emergence of new forms of content consumption, such as video streaming and online cinemas, which has created opportunities for greater access to diverse cinematic content and the proliferation of Hollywood standards and formats, the increasing popularity of Hollywood blockbusters (e.g., Marvel Studio films) and the trend towards standardisation of stories and images in cinema. Another major aspect of the change in cultural preferences is the growing interest in diverse stories, characters, and themes. Cinema has become more open to various socio-cultural and political issues, reflecting a wide range of voices and experiences from different communities. Through this openness, one can see the active integration of LGBTQ+ and non-white characters into the film industry.

Despite progress and diversity, contemporary changes in cultural preferences and perceptions of cinema can have negative consequences. Increased access to content via the internet and streaming services can lead to a simplification of the perception of cultural products and the loss of their value as art, turning cinema into a commercial commodity for mass consumption. The globalisation of the film industry can lead to the standardisation of content and the suppression of local cinematic traditions, limiting film production, while an overemphasis on socio-cultural and political issues can lead to the politicisation of the film process and the use of films to manipulate and incite conflict. Positive and negative changes in cultural film preferences have a substantial impact on focus group opinions.

Variety of stories and openness to different socio-cultural issues can increase audience interest, while commercialisation and politicisation of content can cause frustration and dissatisfaction. Considering these factors is important for creating attractive and relevant films.

*Previews and feedback.* This factor plays a significant role in the success of a film. Audience reactions can be varied but are crucial to film companies as they provide valuable insight into audience reactions to different aspects of the film. Previews allow film companies to gauge the audience's overall impression of the film, including emotional response to plot twists, quality of acting, special effects, and other essential aspects. Positive reviews may confirm the success of the film, while negative opinions may indicate that changes or improvements need to be made. Furthermore, audience feedback after previews can help film companies and directors identify concrete points that need to be improved or reworked, including the need to adjust the script, characters, or technical aspects of the film. Notably, audience response to previews can be subjective and depends on individual viewer preferences and expectations. However, given that the success of a film largely depends on the response of the target audience, previews and audience feedback play a key role in shaping the final product and its successful journey in the film industry market.

During test screenings of the film *E.T. the Extra-Terrestrial* (1982), focus groups emotionally connected with the story of a boy who befriends an alien. They found the *E.T.* character lovable and the film touching (Salmon, 2022). Director Steven Spielberg accommodated the feedback and introduced minor changes to keep the emotional impact intact. The film had a budget of approximately USD 10.5 million and was a massive success, grossing over USD 792 million worldwide. The 1994 film *The Shawshank Redemption* originally received conflicting reactions during test screenings. Some viewers appreciated its themes of hope, friendship, and redemption while others found it slow, but director Frank Darabont believed in the film's potential and kept the plot and characters intact. *The Shawshank Redemption* had a budget of about USD 25 million and box office receipts of USD 28 million, meaning the film really failed at the box office and did not pay off for the studio. Despite its failure at the box office, the film has nonetheless become a cult classic and is ranked number two on IMDb.

In relation to Ridley Scott's neo-noir science fiction film *Blade Runner* (1982), the opinions of the focus group were divided. Some found it confusing because of the complex storyline and ambiguous ending. In response, the director released a theatrical version with changes based on focus group feedback, but the later released director's cut version reflected his original vision. The film grossed USD 41 million on a budget of USD 28 million, and although the film initially flopped at the box office, over time, like *The Shawshank Redemption*, it gained a cult following. The opinions of focus groups play a major role in creating films, products, and marketing strategies. They provide valuable feedback, helping developers understand

how potential users perceive their product or idea. Focus groups can help identify strengths and weaknesses, suggest improvements, and even inspire new ideas, but it is important to remember that focus group opinions are just one tool, and decisions should always be made with other factors in mind.

Film companies use the results of focus groups to understand the preferences and expectations of their target audiences, allowing them to create more effective film promotion and advertising strategies. Analysing feedback from focus group participants allows identifying the key points that attract or, conversely, repel viewers, and use this information to create marketing campaigns that are as relevant as possible to the audience. Furthermore, focus groups can help film companies determine the best channels for distributing content and select suitable advertising platforms to attract attention to the film. For instance, if a focus group reveals that a certain segment of the audience prefers to receive information about films through social media, a film company may adjust its strategy and use advertising campaigns on such networks more actively. Focus groups can also identify topics popular with the target audience, which helps film companies tailor their advertising to these preferences. In this way, focus groups allow marketing and advertising strategies to be optimised, increasing the probability of successfully attracting audiences to a film project.

*Effectiveness of advertising campaigns and content distribution.* The evaluation of these indicators in cinematography is not only a technical analysis of quantitative data, but also a complex analysis of psychological and socio-cultural aspects. One of the non-obvious factors affecting the success of an advert is the contextual perception of the audience of the information presented. Viewers are increasingly critical of the conventional form of advertising and respond to content that is emotionally engaging and of real interest to them. In this way, effective advertising campaigns become not just a way to provide notice of upcoming premieres, but also an opportunity for audiences to engage with a brand or film on a deeper level. Another major aspect is the use of innovative technologies to personalise advertising content: modern artificial intelligence algorithms allow advertising messages to be tailored to the concrete interests and preferences of each viewer, which considerably increases the probability of their engagement and reaction to the proposed content. One of the most successful in the context of the 2023 advertising campaigns was the film *Barbie*. The advertising campaign for the *Barbie* film used a variety of advertising strategies, which consequently allowed the Warner Bros. film studio to generate impressive box office receipts. The studio team responsible for *Barbie* has forged partnerships with various brands, including a pink Xbox and a Balmain hoodie. These partnerships helped build anticipation for the film and strengthened its brand. Furthermore, a real *Barbie* dream house in Malibu was created, available for booking on Airbnb, as well as a themed cruise in Boston, which increased interest in the film (Rubin, 2023).

The colour pink, synonymous with Barbie, played a central role in the advertising campaign: the theme of girl power in the film was combined with this colour palette, allowing the marketing team to reinforce the brand identity and attract even more attention, as was the release of a phone application that allowed ordinary photos to be turned into images resembling a Barbie doll or Ken using artificial intelligence technology. The marketing team also carefully timed the releases of teasers and memes (Dias, 2023). As a result, Barbie exceeded box office expectations, and the film's debut at the same time as another film, *Oppenheimer*, resulted in the biggest cumulative box office gross of the pandemic period and the fourth highest in history. By the time the worldwide box office ended, Barbie was the highest-grossing film of 2023, surpassing the USD 1.44 billion mark worldwide and USD 636.2 million in the United States (Box Office Mojo, n.d.).

With the advent of big data and advances in analytics techniques, the film industry has a unique opportunity to more accurately predict audience needs and preferences. The use of machine learning and artificial intelligence algorithms can identify hidden patterns in viewers' behaviour and predict their reactions to advertising campaigns. For instance, analysing data on previous film views, search queries, and social media activity can help film companies customise targeted advertising and achieve higher audi-

ence engagement. Furthermore, it is worth noting the significance of monitoring and analysing audience response in real time. With rapid access to data from a variety of sources, film studios can react promptly to changes in viewer preferences and adjust their advertising strategies accordingly.

The use of digital technology in film marketing expands the opportunities for audience engagement and content distribution. Social media such as Facebook, Instagram, Twitter, and YouTube play a key role in promoting films through official pages, publishing trailers, video interviews with actors, and running competitions. Moreover, streaming services such as Netflix, Amazon Prime Video, and Disney+ provide direct access to audiences, allowing film companies to present their films at any time and place. The use of virtual reality and augmented reality is also creating new opportunities for interactive content, including virtual tours of film sets and augmented reality applications. Thus, the use of digital technology in film marketing is becoming a necessity in modern entertainment industry, providing a wider audience reach, increased engagement, and the creation of unique content that can capture the attention and interest of viewers. Even in the case of mixed opinions from focus group participants at pre-screenings of a film, an effective publicity campaign can have a decisive impact on the success of a project. The impact of social media on film projects is covered in Table 1.

**Table 1.** The role of social media in film promotion

Aspect	Description
Promotion and marketing	Social media provides a platform for film companies to promote their films. Official film accounts post trailers, posters, set photos, and exclusive content to reach potential audiences to create a wide reach and keep viewers engaged in discussions about upcoming premieres.
Audience interaction	Social media provides an opportunity for direct interaction with the audience. Film companies can answer questions, conduct surveys, organise competitions, and give away prizes, which helps to strengthen the connection with fans and increase brand loyalty.
Analytics and performance measurement	Social media provides tools to analyse and measure the effectiveness of marketing campaigns. Film companies can track the number of views, likes, comments, and reposts, and analyse audiences and their engagement to optimise their promotional strategies.
Creation of viral content	Social media provides an opportunity to create viral content that spreads quickly among users and catches the attention of film lovers. Viral trailers, memes, challenges, and other content formats can be a powerful tool for attracting attention to films.

**Source:** compiled by the author

Focus groups play a significant role in pre-testing films, providing film companies with valuable reviews and feedback from potential audiences. Focus group participants can provide valuable insights about various aspects of the film, from plot and characters to soundtrack and visual effects. While watching the film, participants can express their impressions, analyse their emotional reactions to plot twists and turns, and assess the authenticity of dialogue and characters. These reviews can be a valuable tool for film companies in understanding what content generates the most interest and emotional impact on audiences. Furthermore, focus groups allow film companies to test audience reactions to different versions of a film, experiment with

different concepts and alternative endings, and determine the best marketing approach to attract attention to the film.

*Methods of optimising production processes, resources, and cost reduction.* Optimising production processes and reducing costs in film production play a key role in ensuring efficient use of resources and increasing competitiveness. Efficient use of resources at various stages of film production and marketing is key to ensuring the successful launch and marketing of a film. At the production stage, resources such as budget, time, and talent must be optimally allocated to maximise the quality and appeal of the film to the target audience. For instance, the use of modern technology and innovative filming techniques can substantially

reduce the time and cost of creating certain scenes, as well as increase their visual appeal.

As the film moves into the marketplace, effective use of resources in marketing becomes critical, which includes developing a marketing strategy that makes the best use of budget and resources to capture audience attention and create a positive image for the film. For example, choosing the suitable advertising platforms, target audience, and content distribution channels can have a substantial impact on the effectiveness of marketing

efforts and the ultimate success of a film. Furthermore, effective use of resources also includes analysing data and feedback from the audience. Understanding audience response to advertising campaigns, promotional materials, and film previews helps to adjust marketing strategies in real time and optimise the use of available resources for maximum impact. Thus, the efficient use of resources at various stages of film production and marketing is an essential factor for success and competitiveness in modern film industry (Table 2).

**Table 2.** Practical recommendations on how to optimise budget and resources

Recommendation	Details
Detailed budget planning	Developing a detailed budget for each stage of production, including script, filming, post-production, marketing, and distribution. This will help to avoid unexpected costs and manage costs more efficiently.
Utilisation of modern technologies	The introduction of modern technology into production processes can significantly reduce costs. For instance, the use of computer graphics and virtual film sets can reduce set and location costs.
Optimisation of production processes	Analysis of each stage of production to identify opportunities for optimisation. This may include finding more efficient filming techniques, using fewer filming days, and making effective use of props.
Partnership and cooperation	Establishing long-term partnerships with service and equipment providers. This will help to get better supply terms and reduce production costs.
Data analysis and feedback	Detailed analysis of cost and performance data for production and marketing processes. It is recommended to use feedback from the audience to adjust strategies and optimise the use of resources.
Staff training	Investing in staff training and development to improve their skills and performance. Trained employees contribute to reducing production time and costs.
Use of flexible strategies	Development of flexible budget management strategies to respond to changes in the external environment and market conditions. This will help to minimise risks and maximise resource efficiency.
Risk management	Assessment of potential risks and development of mitigation strategies. This may include insuring against losses, setting aside additional funds for contingencies, and careful planning for risk management activities.

**Source:** compiled by the author

*Factors influencing the success of film projects.* The success of film projects depends on many factors that are inter-related and influence the final outcome. One of the key factors is the quality of the content. Films with an interesting plot, engaging characters, and high-quality performance often attract audiences and achieve success outside the national market. Marketing strategy plays a major role. Effective advertising and promotion help draw attention to a film and create interest in watching it. However, successful marketing requires not only a financial investment, but also an understanding of the cultural characteristics and preferences of audiences in different countries. The cast also makes a significant difference. The involvement of famous actors can attract more viewers and increase the chances of successfully reaching the international market. However, regional audience preferences and expectations can also influence the perception of a film. Often the success of a film project is determined by the time of release. Starting a film in a particular season or coinciding with other film premieres can have a substantial positive or negative impact on its success.

Critical reviews and audience reactions can greatly affect the success of a film project. Positive reviews and high ratings help increase interest in a film and its long-term success, while negative reviews can have a negative impact

on its reception. Criticism is often the first source of evaluation of a film for potential viewers. Critics' reviews can influence the decision to go to the cinema or watch a film on streaming platforms. Positive reviews can draw attention to a film and convince viewers of its value, while negative reviews can put audiences off. Public opinion has a substantial impact on the perception of a film. Social media, online forums, and real-life discussions become a platform for sharing opinions about the film project. Audience impressions expressed in comments and reviews can influence other people's decision on whether to watch a film. Furthermore, public opinion can be shaped by a variety of cultural, social, and political factors. Films that touch on current topics or generate discussion in society often attract more attention and elicit more vivid reactions. Proceeding from the findings of this study, film studios and marketers can consider the following practical recommendations:

1. Adaptation of cultural and social trends: changes in cultural preferences and values in society should be closely monitored to create content that resonates with audiences, including the presentation of diverse cultural and social perspectives, and the active inclusion of representatives of different groups in the film-making process.

2. Use of digital technologies in marketing: film studios can use modern digital technologies to improve marketing

campaigns, which includes the use of social media, video advertising, interactive advertising platforms, and other innovative methods of attracting viewers' attention.

3. Analysis of feedback from viewers: it is essential to actively collect feedback from viewers through various channels, including social media, surveys, focus groups. This will offer a better insight into the audience's preferences and expectations, as well as help to adjust the promotion and content creation strategies.

4. Strengthening ties with critics and public opinion: it is vital to pay attention to critics' reviews and public opinion about films. Quality perception by critics and positive feedback from audiences can substantially influence a film's success, a therefore it is essential to strengthen ties with reviewers and actively work to build positive public opinion of film projects.

5. Efficient use of resources: film studios should strive to optimise production processes and budget management, which includes finding efficient ways to use resources, reducing production costs, and maximising cost effectiveness.

6. Attention to the international market: considering the global nature of cinema, film studios must pay special attention to the international market, adapt content for different cultures and languages, and use marketing strategies that are tailored to different regions and audiences.

In-depth audience analysis is paramount to improving marketing campaigns and adapting them to changing trends and audience expectations. Based on data on audience behaviour and preferences, film studios can conduct detailed target audience analysis, which will provide a better understanding of what attracts audiences to films and what aspects may be more appealing to them in the future. Regular exchanges with audiences allow film studios to get feedback and also build long-term relationships with the public. Furthermore, film studios can use innovative approaches to marketing. In modern world, change happens rapidly, and therefore film studios must constantly seek new, innovative methods of attracting the audience's attention, use new media platforms, create interactive content, take part in various events and festivals, and experiment with advertising formats. Each project should have its own identity and target audience. Film studios can develop bespoke marketing strategies that are tailored to the specifics and needs of each film. Effective marketing management requires constant monitoring of changes in the industry and active use of innovative approaches to attract the attention of the audience.

## DISCUSSION

The present study examined key aspects of the economic success of film production, including budget optimisation, efficient use of resources and analysis of marketing strategies. The findings of the study helped to identify the significance of focus groups in shaping the audience's perception of a film, and to offer practical recommendations for film studios and marketers to optimise budgets and improve marketing campaigns.

The study confirmed the significance of understanding audience preferences and expectations for success in the film industry. Having examined sociological and marketing aspects, it was found that attention to audience preferences is a key factor in shaping successful film production and marketing strategies. The findings of this study were compared with those obtained by R. Stafford (2019), who covered the role and influence of the audience in shaping the film product. The considered study confirmed the idea that understanding the needs of the audience is a prerequisite for successful film production and distribution. However, since the present study focused mainly on analysing sociological and marketing aspects, a more in-depth analysis of other factors such as technological changes, political aspects, or global economic trends could have complemented the findings and added value to them.

The factors that influence the success of film projects encompass not only the quality aspects of the film but also its publicity campaign. In this context, S. Gundle (2020) covered the significance of marketing strategy for the successful promotion of film products in a historical perspective. The researcher revealed the importance of adapting marketing techniques to the needs of the audience, considering product placement and consumer culture, which corresponds to the approach presented in this study, aimed at covering the role of focus groups and their impact on the competitiveness of film products. The described influence of marketing strategies on the long-term market success of a film in the context of this study provides a broader understanding of the relationship between audience opinions, marketing strategies and the economic success of film production.

The study of aspects such as understanding audiences and their involvement in the film process has shown that the effective use of resources and optimising a film's budget often depend on the success of a film project among audiences. A. Blagrove (2021) explored the topic of audience interaction with specialised film projects. Turning to the issues of audience engagement and its influence on film choices, the researcher has found a range of aspects of audience interaction with cinema, including audience preferences, expectations, and needs. Comparing these results with the findings of the conducted study, there is a similarity of position regarding the significance of understanding audiences and their engagement to effectively develop marketing strategies and optimise film budgets.

One of the objectives of the conducted study was to analyse the effective use of resources and optimise the budget of film projects, which made it possible to develop a range of practical recommendations, including cultural, social, technological, professional, economic, and marketing aspects. R. Behrens *et al.* (2021) expanded the definition of efficient use of resources and budget optimisation for film projects and explored the use of analytics to create compelling and profitable film content. The researchers of the reviewed study addressed the use of analytical tools to analyse data on audience preferences, trends in film production, and predict the success of films, proposing a big

data approach to develop content that is not only attractive to audiences but also profitable for film companies. Thus, the technological aspect should be considered not only as the need to use already existing new technologies (e.g., advertising cabinets in social networks) to promote films, but also as an opportunity to implement innovative projects. Creating unique algorithms for audience analysis, forecasting, and revenue optimisation is a promising area of work to provide informed decisions in film production.

C. Benson-Allott (2021) covered the issues related to material aspects of the viewer's cinematic experience such as film posters, souvenirs, costumes, and props and their impact on perception and engagement with the film. The reviewed study identified how these elements shape audiences' perceptions of film and its cultural significance, and how they can influence film companies' marketing and promotional decisions, providing a better understanding of the role of material culture in shaping audiences' cinematic experience. In the context of the conducted study, these observations represent a vital factor as the material aspects of the cinematic experience can substantially affect the perception and evaluation of film productions, and the marketing strategies covered in the study in relation to focus group involvement and audience reactions to previews and feedback provided a better understanding of the significance of focus group involvement in film production marketing strategies and their impact on the ultimate success of a film.

In the context of the conducted study, it is vital to consider the different business models in film production and their interrelationship. I. Vitkauskaitė (2020) analysed various business models in film production, including conventional studio models, independent productions, crowdfunding, and distribution platforms, covering the interrelationships between these models and their impact on the competitiveness and success of films. The findings of the reviewed study revealed that conventional studio models continue to dominate, but independent productions and crowdfunding are becoming increasingly important to contemporary culture and specific audiences. The present study also focused on film audiences and their response to various marketing strategies, including involvement of focus groups. Audience engagement in previews and audience feedback has been found to help better tailor marketing strategies and create content that better meets viewers' needs. For instance, the findings of the present study showed that one part of the audience prefers horror films because of their atmosphere of suspense and adrenaline, while another part prefers comedies because of their ability to evoke laughter and positive emotions. Thus, analysing audience preferences allows filmmakers to more effectively allocate resources to produce films that will be most appealing and in demand among the target audience. This is a major addition to the research on business models in film production, as it provides a better understanding of what types of films are likely to be most successful in different segments of the film market.

D. Liu & P. Courty (2022) highlighted the economic aspects of film exhibition, including patterns of revenue growth. Having analysed the factors that contribute to increasing film exhibition revenues, researchers have identified key strategies and approaches to managing film business enterprises to maximise profits and ensure their competitiveness in the market. The economic aspects and factors affecting the profitability of the film business uncovered in the study confirmed the significance of using effective economic and resource management strategies to ensure successful entry of films into the market. The proposed practical recommendations for budget and resource optimisation included various aspects of film budgeting and aimed at efficient use of resources, and their comparison with the findings of the researcher showed similarities in the use of modern technology, flexible strategies, and risk management.

All the studies reviewed above confirmed the significance of sociological and marketing aspects in film production and their impact on the economic success of films, indicating a trend towards in-depth audience analysis, effective use of resources and marketing strategies to ensure competitiveness in the film industry market. Thus, a combined understanding of these aspects opens prospects for the development of new approaches and strategies in film production that can lead to more successful films and meet the demands of modern audiences.

## CONCLUSIONS

The conducted study examined various sociological and marketing aspects of efficient use of resources and budget optimisation in the film industry, providing a better understanding of the dynamics and impact of various factors on film production and marketing. It was found that socio-cultural and technological changes play a key role in contemporary cinema. The diversity of stories, images, and genres reflects the dynamic nature of culture and audience preferences, while the introduction of digital technologies into production and marketing processes substantially expands the possibilities of cinema and contributes to its development. In addition, the study found that focus groups have a considerable impact on pre-testing of films. They offer film companies the opportunity to gain valuable feedback and reactions from members of the target audience at the development and production stages of a film, allowing them to identify potential problems or weaknesses in plot, characters, editing, and other aspects of the film, as well as determine what audiences like or dislike. The study considered examples where focus group opinions indicated the prospect of failure of films such as *The Shawshank Redemption* and *Blade Runner* at the box office, which, however, did not hinder the continued success and cult status of the films in question. The study concluded that such reviews can be a valuable tool to improve the quality and success of a film in the market, as they allow it to be tailored to the expectations and preferences of the target audience. However, focus group responses can be subjective and may not always reflect the views of the general audience.

The aspects of social media use explored in this study have demonstrated that it is an integral part of contemporary marketing strategies in film production and provides a unique opportunity to engage with audiences directly and in real time. It was found that one of the key benefits of using social media is its global reach: millions of users from around the world are active on social media every day, meaning that films can quickly become the subject of discussion and disseminated in the online environment. Moreover, social media allows film studios and directors to actively engage with audiences, receive feedback, and respond to their needs and expectations. This two-way flow of communication helps to form stronger bonds with viewers and reinforce their interest in the project. Notably, social media plays a key role in creating the image of a film: reviews, testimonials, trailers, photos from the set, and other content that is shared through social networks form the first impression of the film in potential viewers, and positive public opinion in social media can be a powerful tool to attract attention to the film and its successful launch in the market. A benchmark example of the effective use of

marketing strategies, the film Barbie, was presented, showing that the effective use of these platforms helps film studios not only to attract attention to their projects, but also to establish more profound and longer-term connections with audiences, which substantially contributes to their commercial success.

The limitations of the present study were related to the lack of free access to the results of film previews by focus groups, which did not allow for full coverage of the impact of this factor on the commercial success of films. Further research is recommended to focus on the impact of technology on content marketing and distribution, enabling the film industry to effectively adapt to changing trends and audience expectations, as well as improve production and marketing techniques to succeed in modern entertainment industry.

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## CONFLICT OF INTEREST

None.

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**Вплив думок фокус-груп на ринкову конкурентоспроможність та економічний успіх у кіновиробництві: аналіз соціологічних та маркетингових аспектів у контексті ефективного використання ресурсів та оптимізації бюджету**

**Анотація.** Метою цього дослідження було вивчення соціологічних та маркетингових аспектів для визначення ефективних стратегій використання ресурсів та оптимізації бюджету в контексті кіноіндустрії. Для цього було детально проаналізовано різні фактори успіху кінопродукту, що дозволило сформулювати практичні рекомендації щодо оптимізації бюджету та ресурсів. Дослідження охопило вплив соціокультурних чинників на глядацькі вподобання, що допомогло пояснити популярність фільмів певних жанрів після подій, які відбувалися в реальному світі. Дослідження визначило значення особистого досвіду, вподобань та культурного контексту для сприйняття фільмів аудиторією, що дозволило зробити висновок про необхідність підбору учасників фокус-груп відповідно до характеристик цільової аудиторії фільму для отримання максимального прибутку від кінопрокату. Розглянуті в цьому дослідженні фільми «Втеча з Шоушенка», «Той, що біжить по лезу» та «Інопланетянин» показали, що загалом думки фокус-груп достовірно вказують на перспективу успішного чи неуспішного кінопрокату, що, однак, не свідчить про якість фільму. Також було проаналізовано рекламну кампанію фільму «Барбі», висвітлено її основні аспекти (соціальні мережі, рожевий колір, привернення уваги громадськості), які привели фільм до касового успіху. Розроблено рекомендації щодо етичного просування кінопродукції, зокрема щодо широкого використання соціальних мереж для комунікації з аудиторією, ефективного використання ресурсів, роботи з фокус-групами. Результати дослідження свідчать про важливу роль фокус-груп у формуванні конкурентоспроможності фільмів на ринку, а також про необхідність враховувати їх при розробці маркетингових стратегій та оптимізації бюджетів кіновиробництва

**Ключові слова:** рекламні кампанії; аудиторія; стратегії просування; допрем'єрний показ; культурні тренди; соціальні медіа

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