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C O N T E N T

GLOBAL ECONOMY

ACCOUNTING AND AUDIT

ENTERPRISE

З М І С Т

ГЛОБАЛЬНА ЕКОНОМІКА

ОБЛІК ТА АУДИТ

ПІДПРИЄМНИЦТВО

GLOBAL ECONOMY

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GLOBAL TRENDS IN WAGE DYNAMICS

Under the conditions of growing economic uncertainty, geopolitical tensions, and the impact of technological changes, the issue of wage dynamics has acquired strategic importance. The aim of this research is to identify key trends in wage dynamics globally and in specific regions. To achieve this aim, the research employs statistical, comparative, and systemic analysis methods, as well as systematization, grouping, and scientific abstraction. The hypothesis, which is tested in this research, is that global wage dynamics are determined by the combined influence of economic, technological, demographic, social and political factors. Overall, global trends in wage dynamics across Europe, North and South America, Asia, Africa, and the Arab world are influenced by regional characteristics and shaped by economic, social, and political factors. It was found that the largest declines in wages occurred during the global financial crisis (2008–2009) and the COVID-19 pandemic (2020–2021), due to a sharp reduction in economic activity, a drop

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ГЛОБАЛЬНІ ТЕНДЕНЦІЇ В ДИНАМІЦІ ЗАРОБІТНОЇ ПЛАТИ

В умовах зростаючої економічної невизначеності, геополітичної напруженості та впливу технологічних змін питання динаміки заробітної плати набуває стратегічного значення. Метою дослідження є виявлення ключових тенденцій у динаміці заробітної плати у світі та в окремих регіонах. Для досягнення мети використано методи статистичного, компаративного та системного аналізу, систематизації, групування та наукової абстракції. У ході дослідження перевірено гіпотезу, що динаміка заробітної плати у світі визначається сукупним впливом глобальних економічних, технологічних, демографічних та соціально-політичних чинників. Загалом глобальні тенденції в динаміці заробітної плати у країнах Європи, Північної та Південної Америки, Азії, Африки та арабського світу пов'язані з її регіональними особливостями та урахуванням економічних, соціальних і політичних чинників. Виявлено, що найбільші спади заробітної плати відбулися під час світової фінансової кризи (2008–2009 рр.) та пандемії COVID-19 (2020–2021 рр.), що зумовлено різким скороченням економічної активності, падінням

in employment and a slowdown in labor productivity growth. The unevenness of real wage growth by region is substantiated with high rates in the Asia-Pacific region, Central and Western Asia, and Eastern Europe, and moderate rates in countries with developed market economies in Western Europe and North America. The analysis of the ratio between minimum and maximum wages in Poland, Germany, the USA, and Ukraine from 2016 to 2023 reveals signifycant differences in levels of social inequality. The reduction of the wage gap in developed countries is a result of active social policies, whereas in Ukraine, it remains substantial due to structural economic problems. Global trends in wage dynamics have been identified: growing wage inequality, the impact of the latest technologies on the labor market and its pay, the impact of the COVID-19 pandemic, and the globalization of the labor market. The existence of a gap between high-skilled and low-skilled workers, regional inequality in wages, the gender gap, the impact of automation and robotics on wages, wage growth in critical sectors of the economy, wage cuts in sectors affected by the pandemic, relocation of production to countries with cheaper labor and competition through outsourcing are proven. It is emphasized that the growth of the global inflation rate has a negative impact on the real incomes of employees, reducing their purchasing power. The slowdown in global economic growth, geopolitical risks, the energy crisis in Europe and the food crisis in Africa as a result of russian aggression against Ukraine signifycantly affected the dynamics of wages on a global scale.

Keywords: labor market, minimum wage, real wage, global trends, salary dynamics.

зайнятості та уповільненням зростання продуктивності праці. Обґрунтовано нерівномірність реального зростання заробітної плати за регіонами – з високими темпами в Азійсько-Тихоокеанському регіоні, Центральній і Західній Азії та Східній Європі та стриманими темпами у країнах з розвиненою ринковою економікою у Західній Європі та Північній Америці. Проведений аналіз співвідношення мінімальної та максимальної заробітної плати в Польщі, Німеччині, США та Україні за 2016–2023 рр. виявляє суттєві відмінності у рівнях соціальної нерівності. Скорочення розриву між мінімальною та максимальною заробітними платами в розвинених країнах є результатом активної соціальної політики, тоді як в Україні він залишається значним через структурні проблеми економіки. Визначено світові тенденції у динаміці заробітної плати: зростання нерівності в оплаті праці, вплив новітніх технологій на ринок праці та її оплату, вплив пандемії COVID-19, глобалізація ринку праці. Доведено наявність розриву в оплаті праці між висококваліфікованими та низькокваліфікованими працівниками, регіональну нерівність, гендерний розрив, вплив автоматизації та роботизації, зростання у критичних секторах економіки й скорочення у постраждалих внаслідок пандемії секторах, переміщення виробництва у країни з дешевшою робочою силою та конкуренція через аутсорсинг. Підкреслено, що зростання світового рівня інфляції негативно впливає на реальні доходи працівників, знижуючи їхню купівельну спроможність. Уповільнення темпів зростання світової економіки, геополітичні ризики, енергетична криза в Європі та продовольча криза в Африці внаслідок російської агресії проти України суттєво вплинули на динаміку заробітної плати у глобальному масштабі.

Ключові слова: ринок праці, мінімальна заробітна плата, реальна заробітна плата, глобальні тенденції, динаміка заробітної плати.

JEL Classification: F66, J30, J31.

Introduction

The changes study in wage levels is important for understanding the social and economic processes taking place in different countries. In macroeconomics, wage dynamics is one of the main indicators for measuring economic growth in the long term, as it reflects the purchasing power of consumers in the economy, as well as the standard of living of the population. In the context of globalization, technological change, digital transformation of labor markets and growing inequality between different social groups, the wage dynamics issue becomes a key to the development of economies at different stages.

The trend of wage growth began in the 1800s in connection with a significant boost in technological development (known as the Industrial Revolution), as well as an increase in the size of the labor force. This principle, known as the "golden rule" of Robert Solow, is based on his growth model (1956). Technological improvements have led to significant increases in productivity in enterprises, leading to rapid wage increases in most developed countries. However, this trend has reversed since the 2008 global financial crisis, as many countries have experienced low wage growth. Despite attempts to stimulate GDP growth and reduce unemployment in the post-crisis period, many have failed to make any significant progress (Allen, 2016).

Ukrainian and foreign researchers are actively studying the issues of current wage trends in different countries. Bodnar et al. (Bodnar et al., 2022) in their study note that the COVID-19 pandemic has significantly affected labor markets and wage growth indicators in the eurozone. The onset of the pandemic led to a sharp reduction in the total number of hours worked. The widespread introduction of job retention schemes to contain the consequences of the pandemic helped reduce job losses, which affected changes in wages. Containment measures, as well as changes in demand and supply caused by the pandemic, led to uneven changes in employment and wages in different sectors. After the Russian invasion of Ukraine, there was a sharp increase in consumer price inflation. At the same time, consumer confidence in the eurozone fell sharply, and uncertainty about the economic outlook increased. The combination of these factors has made it much more difficult to assess and forecast wage pressures. Additional difficulties have arisen from issues related to the statistical treatment of government support under job retention schemes.

The analysis of the relationship between labor market tightness, nominal wage growth, and inflation in the US services sector was conducted in Hajdini's research. Since 2022, labor shortages have been mostly observed in service sectors, and nominal wage growth in some sectors has exceeded the averages recorded before the pandemic. The evidence suggests that the positive relationship between labor shortages and the wage growth has become stronger since the pandemic. A systematic relationship between the wage growth and inflation is only observed in the education, health, and leisure and hospitality sectors. At the same time, this relationship is not observed in sectors such as transportation, financial, and business services (Hajdini, 2024).

Hsu (2024) notes that after several years of instability, China's economy is entering a phase of stable development, prompting employers to reconsider their approaches to wage distribution. Economic growth is expected to outpace inflation in 2025–2026. Different industries are adopting different wage management strategies in response to economic dynamics, competition for talent, and budget constraints. Some companies are increasing base wage spending,

while others are focusing on variable pay to drive productivity. It is worth noting that digitalization has also affected wage levels, as technology-related jobs (e.g., artificial intelligence, machine learning) have seen double-digit increases.

Van Greunen (2024) notes in his study that the dynamics of the African labor market depend on several key factors that determine the level of wages and their growth across the continent. In many African countries, exchange rate volatility and high inflation make it difficult to predict labor costs, forcing companies to adapt their compensation strategies. The increase in the cost of living creates additional pressure on both businesses and workers. Despite the recognition of the need to adjust wages to maintain the purchasing power of employees, finding a balance between inflation and the financial capabilities of companies remains a challenge. In addition, the introduction of new technologies and automation in certain sectors contribute to the growth of demand for specialists in the field of information technology, financial services and telecommunications. Accordingly, this further widens the gap between skilled and unskilled workers, which affects the structure of employment and forces governments to consider new initiatives to retrain the workforce.

Researchers Bounajm et al. (2024) focus on the fact that wage growth is a key indicator that central banks use to assess inflationary pressures, since labor costs account for a significant part of production costs. At the same time, the average wage can be a misleading indicator, since this indicator is formed on the basis of millions of workers' salaries with different levels of qualifications, experience and employment in different sectors of the economy. Thus, the dynamics of average wages depend not only on market conditions, but also on changes in the structure of the labor force. For example, if the share of workers with lower incomes increases in the economy or there is significant staff turnover, this may affect the average level of wages without a real impact on overall inflationary pressures. That is why structural changes in the composition of the labor force can create additional fluctuations that require detailed analysis for the correct interpretation of inflation risks.

Yatsenko notes that in conditions of increased instability in the Ukrainian labor market, the search for quality jobs is complicated not only due to the limited number of vacancies, but also due to low employee motivation. A key factor in such motivation is a stable and sufficient level of income. However, the salary offered by employers often does not meet the expectations of candidates, which is due to a complex of technical, organizational, economic, financial and social factors. In addition, the level of remuneration has significant regional differences, which affects the mobility of the workforce and the level of competition in the labor market (Yatsenko, 2024).

Trends in the development of the labor market in recent decades are determined by the influence of crises, geopolitical upheavals, globalization shifts, intellectualization of labor, virtualization of social and labor relations under the influence of the COVID-19 pandemic, transformation of social, economic, political and social-network relations. Accordingly, this is accompanied by a weakening of the stability of the economic system in general and the labor market in particular, which was discussed in more detail in our previous study (Shtunder & Shkuropadska, 2024).

Thus, although many aspects of assessing wage growth have already been covered in the scientific literature, the issue of the influence of global factors on regional disparities, as well as the long-term consequences of structural changes in wage growth, remains insufficiently studied. This became the focus of this research.

A hypothesis was formed that the wages dynamics in the world is determined by the combined influence of global economic, technological, demographic, social and political factors.

The aim of the research is to identify key trends in wage dynamics in the world and in individual regions.

To achieve the aim of the research, statistical and comparative analysis methods were used to assess the wage dynamics in the world and in individual regions; systems analysis methods to study the disparities between the minimum and maximum wages; systematization and grouping methods to identify global trends in the wage dynamics; scientific abstraction method to substantiate the conclusions of the study.

The structure of the main part of the article is as follows: the first section analyzes the minimum wage in the world and in individual regions; the second analyzes the disparities between the minimum and maximum wages in Poland, Germany, the USA and Ukraine; the third identifies global trends and factors that determine the wage dynamics.

1. Salary dynamics analysis

Identifying global trends in wage dynamics requires an analysis of regional characteristics of its changes in the world, taking into account economic, social and political factors. The research examined the wage dynamics in Europe, North America, South America, Asia, Africa and the Arab world. This approach makes it possible to assess the impact of regional conditions on wage growth rates, which contributes to a deeper understanding of global trends.

Figure 1 presents the average annual global growth rates of real wages in the world for the period 2006–2024. Global real wage growth shows significant fluctuations during the specified period, with a significant role of China in the overall dynamics.

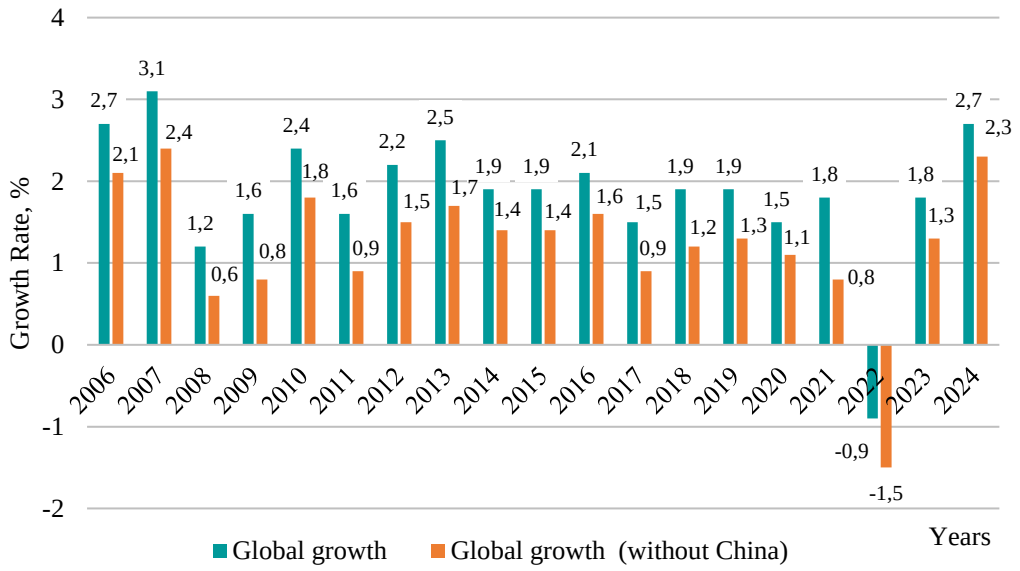

Figure 1. Average annual global growth of real monthly wages, 2006–2024.

Source: compiled by the authors based on data from the International Labour Organisation, 2024.

In 2006–2007, there were relatively high rates of growth in global wages, reflecting favorable economic conditions and stable labor market development. However, in 2008, the global financial crisis led to a sharp slowdown in growth rates, and, moreover, excluding China, this indicator turned out to be half as low. A gradual recovery was observed later, but without China, growth rates remained significantly lower than the overall indicators, which indicates the important role of this country in supporting global wage levels.

It is worth noting that China remains one of the largest economies in the world, demonstrating high GDP growth rates over recent decades, which contributes to a gradual increase in wage levels, especially in the manufacturing sector. Given China's large share of the global labor force, its growth significantly affects the average global wage level. China is currently the world's manufacturing hub, and rising wages there are driving up production costs, which is also driving up the wage growth in other countries that compete with China in the manufacturing sector (Vietnam, India, Bangladesh).

In period 2010–2019, global wage growth fluctuated between 1.6–2.5%, with 2013 reaching one of the highest values for the period under review. The COVID-19 pandemic in 2020 did not lead to a significant drop in global wage growth, but its growth slowed down, although without China this figure was somewhat lower. In 2021, there was a partial recovery, but in 2022, the dynamics turned negative for the first time, which is explained by high inflation and economic shocks caused by the pandemic and the energy crisis. In 2023–2024 global wage growth has returned to positive values with an increasing trend, indicating a stabilization of the world economy.

Overall, on a global scale, the total percentage of real wage growth for 2006–2024 was 35.4%. However, excluding China, which plays a significant role in the global economy due to its high growth rates and policies to stimulate incomes, this figure drops to 23.6%, which indicates a significant influence of China on global trends in wage dynamics and highlights the uneven economic development of different regions of the world.

Figure 2 presents the average annual growth rates of real wages in Europe, which show marked differences between different regions, including the European Union, Northern, Southern and Western Europe, as well as Eastern Europe.

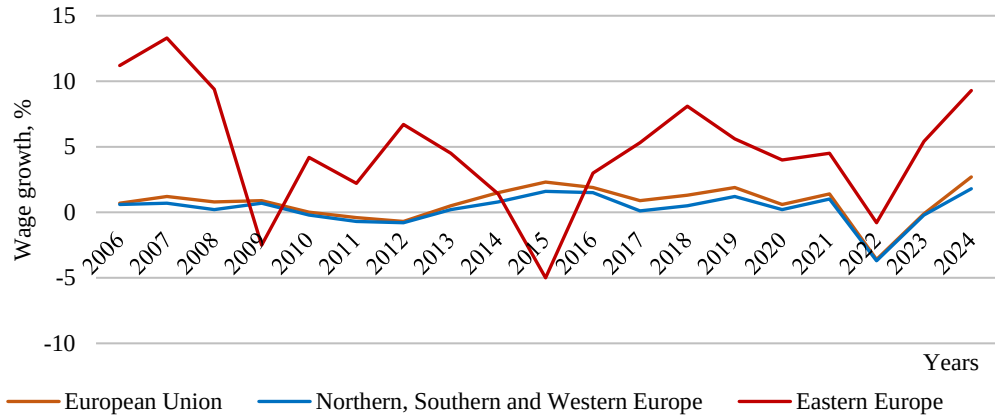

Figure 2. Average annual real wage growth in Europe, 2006–2024.

Source: compiled by the authors based on (International Labour Organization, 2024).

During the period under review, wages in the EU showed moderate growth rates, with several years of negative performance, notably in 2011, 2012 and 2022. Crises affecting the EU economy, namely the global financial crisis of 2008 and the COVID-19 pandemic, affected the growth rates of real wages. The largest increases in the EU were observed in 2015 and 2024.

Average annual real wage growth in Northern, Southern and Western Europe during the period under review was also moderate, with several negative peaks in 2010, 2011, 2012, 2022 and 2023. At the same time, the largest growth in these regions was recorded in 2015. Some growth was observed in 2024, indicating a gradual recovery of the economies of these regions.

Eastern Europe has shown the highest real wage growth rates among all regions of Europe, with the most notable peaks in 2006–2007. However, in the following years there was a certain decline due to the global financial crisis. After that, the indicator gradually recovered, with the growth being particularly pronounced during 2010–2014, when the economies of many countries in this region began to actively adapt to market conditions and expand their economic capabilities. The negative peak in 2015 was due to geopolitical instability. In particular, russian aggression against Ukraine affected the whole of Eastern Europe, increasing economic uncertainty. Due to geopolitical risks and macroeconomic instability in the region, foreign

investors became less active, which slowed down economic development and job creation (Shevchuk, 2023).

During 2016–2021, the wage dynamics showed a gradual increase. Even in 2020, during the COVID-19 pandemic, real wages increased by 4%. The largest increase was recorded in 2024, which is one of the highest rates among all regions of Europe.

Overall, real wage growth in the EU for the period 2006–2024 was 13.8%. At the same time, in Northern, Southern and Western Europe this figure reached only 5.5%, while in Eastern Europe it was 89.8%. Such a significant difference indicates a faster pace of wage growth in Eastern European countries compared to the rest of Europe. The main factors of this process are active economic recovery after the crises, structural reforms that contributed to attracting foreign investment, increased labor productivity, as well as convergence of income levels with Western European countries as a result of integration into European economic processes. However, despite the high dynamics, the wage level in Eastern Europe remains lower than in more developed EU countries, which leads to the preservation of economic differentiation within the region.

Figure 3 shows the average annual growth of real wages in North and South America with the Caribbean, which are two regions with different economic models, levels of development and factors affecting the wage growth: North America is dominated by advanced economies with high incomes, stable financial systems and innovative economies (Linden, 2024); Latin America includes countries with different levels of development, but in general they are characterized by greater vulnerability to economic crises, high inflation and dependence on raw material exports. Analyzing the dynamics of the average annual growth of real wages in these regions in 2006–2024, one can see general economic trends and the influence of global and regional factors.

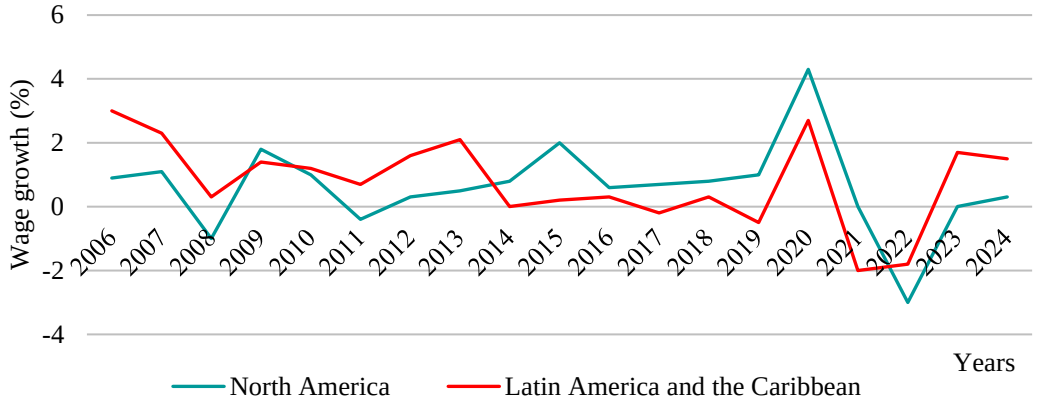

Figure 3. Average annual real wage growth in North and South America, 2006–2024.

Source: constructed by the authors based on (International Labour Organization, 2024).

Real wage growth in North America was characterized by stable growth in the periods 2006–2007, 2009–2010, 2012–2020. Negative trends were observed in 2008 due to the global financial crisis. The decline in 2011

was a consequence of the weak economic recovery after the crisis. In 2022, the largest decrease in real wage growth occurred due to high inflation and the consequences of the COVID-19 pandemic, but in 2024 a slight increase in rates was already observed.

Real wage growth in Latin America and the Caribbean was characterized by high growth rates during 2006–2013. During this period, the Latin American economy grew due to the export of raw materials, which contributed to an increase in wage levels. The highest rates were recorded in 2006 and 2013. Since 2014, growth rates have fallen significantly, which is explained by the decline in commodity prices and rising inflationary pressures. During the COVID-19 pandemic in 2020, there was a short-term increase due to public support and economic stimulus measures. However, there was a decline in 2021–2022, indicating a significant impact of the pandemic on the region. During 2023–2024, real wage dynamics were positive. Overall, real wage growth in North America over the period 2006–2024 was 11.7%, while in South America it was 14.8%. Moderate growth rates in North America are explained by a stable economic situation, low inflation rates and a gradual increase in labor productivity. At the same time, in South America, higher rates of unemployment are largely due to economic fluctuations, periods of high inflation, social programs and policies to increase the minimum wage in a number of countries. However, it is worth noting that despite the formal growth of real wages, economic instability and devaluation of national currencies in some South American countries (Argentina, Venezuela, Colombia, Chile) have significantly limited the real purchasing power of the population.

Figure 4 shows the average annual growth of real wages in Asia, which is the most populous continent with high economic dynamics. The Asia-Pacific region includes developed economies (Japan, South Korea, Australia) and fast-growing countries (China, Indonesia, Vietnam, Philippines). Central and West Asia — covers the post-Soviet countries (Kazakhstan, Uzbekistan, Azerbaijan, Armenia) and the oil economies of the Middle East. Let us consider the dynamics of real wage growth in these two regions for 2006–2024.

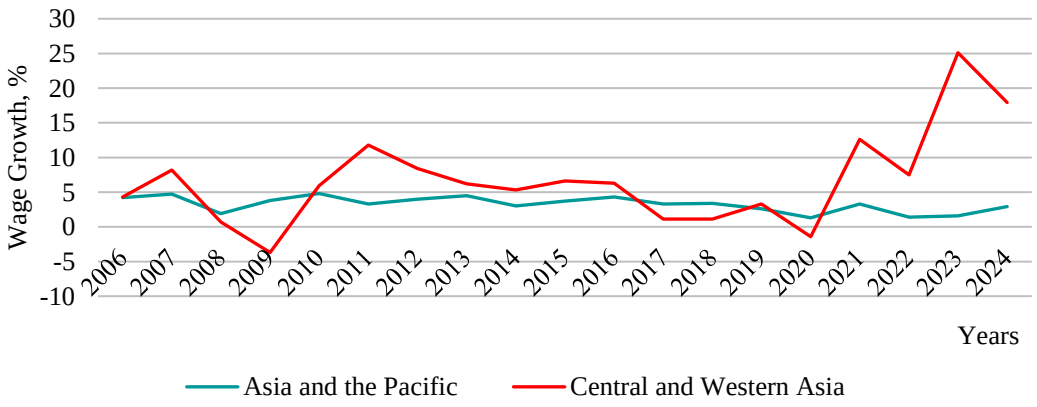

Figure 4. Average annual real wage growth in Asia, 2006–2024.

Source: Compiled by the authors based on (International Labour Organization, 2024).

Between 2006 and 2024, the average annual growth rate of real wages in the Asia-Pacific region showed moderate fluctuations, reflecting the impact of both global economic crises and local factors of economic development. In the Asia-Pacific region, the highest growth rates were observed in 2010, after the recession caused by the 2008 financial crisis. In subsequent years, the indicators varied within the range of 1.3–4.5%, demonstrating some stability, but with a tendency to gradually slow down, especially after 2019. The decrease in growth rates in 2020 to 1.3% is explained by the impact of the COVID-19 pandemic and restrictive measures that reduced economic activity. In the period 2021–2024, the growth rates totaled 9.2%, indicating a post-crisis recovery.

In Central and West Asia, the situation is more volatile, due to both economic cycles and political factors. The most dramatic changes were observed in 2009, when real wage growth fell markedly, which was a consequence of the global financial crisis. In contrast, there was a significant increase in 2011, which can be explained by economic recovery. After that, the dynamics fluctuated, showing periods of slowdown in 2017–2019. In 2020, the region experienced another crisis recession, but in 2021 a sharp jump in wage dynamics was recorded, indicating economic recovery after the pandemic. Recent years show sharp growth in 2023 and 2024, which is a consequence of macroeconomic and inflationary factors in the region.

Overall, real wage growth in the Asia-Pacific region over the period 2006–2024 was 62%, while in Central and West Asia this figure reached 127.2%. Therefore, the dynamics of real wages in both regions largely depends on global and local economic crises, political events and the level of economic development. The Asia-Pacific region demonstrates stable, albeit gradually slowing growth, driven by the development of the technology sector, integration into world trade and increased labor productivity. At the same time, Central and West Asia are experiencing significant fluctuations caused by macroeconomic shocks, currency instability and regional conflicts (in particular, the Karabakh conflict between Armenia and Azerbaijan, geopolitical tensions in the Middle East). Despite the overall positive trend, it is worth noting that structural imbalances and socio-economic challenges remain significant factors affecting the purchasing power of the population and the overall financial sustainability of households.

Figure 5 presents the average annual growth of real wages in Africa and the Arab States in 2006–2024. In general, the economic situation in Africa is determined by a number of factors, including political instability (Democratic Republic of the Congo, Central African Republic, South Sudan, Somalia, Mali, Sudan), weak economic diversification, inflationary risks (Zimbabwe, Ethiopia, Ghana, Egypt, Nigeria) and the impact of external shocks. The region’s economy is heavily dependent on natural resource extraction, especially minerals and oil (Nigeria, Angola, Algeria, Libya, Gabon, Democratic Republic of Congo, South Africa), making it vulnerable

to changes in world prices. Population explosion (Niger, Uganda, Democratic Republic of Congo, Tanzania, Ethiopia) and insufficient investment in infrastructure (Madagascar, Chad, Sudan, Mozambique, Burkina Faso) also create additional wage challenges.

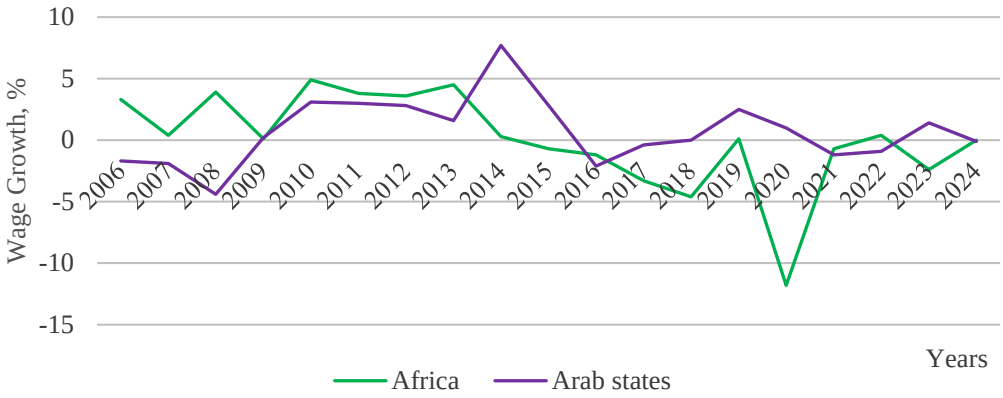

Figure 5. Average annual real wage growth
in Africa and the Arab States, 2006–2024.

Source: compiled by the authors based on data from the International Labour Organization, 2024.

Africa is characterised by significant fluctuations in the rate of wages change during 2006–2024, with positive dynamics prevailing until 2014, although it showed a drop due to the global financial crisis, after which a steady increase was observed in 2010–2013. Instead, in 2014, the pace slowed significantly, and a prolonged decline began in 2015. The worst figure was recorded in 2020, when real wage growth fell significantly due to the COVID-19 pandemic. After that, the region gradually began to recover, but the dynamics remain weak, and in 2024, growth was zero.

It is worth noting that hunger and rising poverty cause political protests, strikes, and sometimes armed conflicts (e.g., in Sudan and Somalia). The UN report on the State of Food Security and Nutrition in the World for 2024 states that the level of food security in Africa is the lowest among other regions of the world. The prevalence of malnutrition is 20.4% (approximately 298.4 million Africans), which is twice the global average (FAO, 2024). Accordingly, this situation scares away investors, slows down business development and limits the growth of the economy.

The Arab states show a slightly different picture, as the influence of external factors, in particular fluctuations in oil prices, plays a key role here. In 2006–2008, the indicators were negative, which is associated with global economic instability. After a symbolic increase in 2009, a period of significant wage growth began. In 2010–2015, the rates were mostly positive, with a record figure in 2014. However, the situation worsened in subsequent years: in 2016–2018, zero or negative values were observed, and in 2020 the figure was only 1%. The recovery turned out to be unstable, and in 2021–2024, growth rates remained weak with minor negative fluctuations.

Arab states, despite having high revenues from oil and gas exports, also face challenges in economic diversification. A significant part of the countries in the region depend on the energy sector, which makes them vulnerable to fluctuations in oil prices (Saudi Arabia, Kuwait, Qatar, the United Arab Emirates, Iraq, Algeria, Libya). Political instability, in particular military conflicts, is also an important factor affecting the level of wages (Syria, Yemen, Lebanon, Iraq, Libya, Sudan, Palestine). Thus, the overall percentage of real wage growth in African countries for the period 2006–2024 was only 0.6%, which indicates significant economic problems in the region. At the same time, in the Arab states this figure reached 13.4%, which is partly explained by the active development of the oil and gas sector and state strategies for economic growth. However, despite the positive dynamics, the general trend indicates instability in real incomes of the population, which creates risks for the socio-economic development of the region.

2. Disparity analysis between minimum and maximum wages

Disparities between the lowest and highest wages are one of the key indicators of social and economic inequality in a country. The analysis of such disparities allows us to assess how effective state measures aimed at reducing the income gap are, such as tax reforms, raising the minimum wage or social support programs.

The minimum wage is the legally established minimum level of remuneration that an employer is obliged to pay an employee for the work performed (Law of Ukraine "On Labor Remuneration" No. 108/95-VR, 1995, March 24, Art. 3). It determines the lower limit of employees' income, below which remuneration is illegal. The minimum wage is aimed at ensuring a basic level of income sufficient to meet the minimum needs of the employee and his family. It is also an indicator of economic development and living standards in the country. In most cases, the minimum wage is set or changed by state bodies or through tripartite negotiations between the government, employers and trade unions.

The level of the maximum wage is usually determined by market conditions, the qualifications of the employee, the demand for his professional skills and is not directly regulated by law. Accordingly, the salary of a Supreme Court judge was chosen for the analysis of the maximum wage. This choice is due to the fact that the salaries of judges are transparent, as they are subject to public control through income declaration requirements, which allows obtaining accurate data for analysis. In the world, the salaries of Supreme Court judges are usually among the highest in the public sector, reflecting their responsibility, qualifications and importance in society.

Poland, Germany, the United States, and Ukraine were selected for the analysis of the disparities between the minimum and maximum wages, as these countries represent different economic systems, levels of development, and geopolitical contexts (study *Table 1*). Ukraine is characterized by a

developing economy and challenges related to war and post-war reconstruction. Poland, as a neighboring country, is an example of a successful transition from a planned to a market economy. It is a EU member and actively uses European funds for development. Germany is one of the strongest economies in the EU and Europe, characterized by significant state support for social standards and a high level of labor productivity. The United States was selected for analysis because of its unique economic model and special role in the global economy. Comparing these countries allows us to cover a wide range of social and economic approaches and provide a more holistic picture of the impact of policies on wage disparities.

Table 1

The amount of minimum and maximum wages in Poland, Germany, the USA and Ukraine in 2016–2023

Period	Poland (*PLN*)		Germany (*EUR*)		The USA (*USD*)		Ukraine (*UAH*)	
	Wages amount							
	min	max	min	max	min	max	min	max
2016	1850.00	16000.00	1444.00	11671.78	1160.00	21725.00	1600.00	99750.00
2017	2000.00	17000.00	1498.00	12214.81	1160.00	21941.66	3200.00	115800.00
2018	2100.00	19000.00	1498.00	12751.90	1120.00	22250.00	3723.00	127500.00
2019	2250.00	22000.00	1557.00	13159.96	1160.00	22250.00	4173.00	138975.00
2020	2600.00	23000.00	1584.00	13581.08	1160.00	23141.66	5000.00	152025.00
2021	2800.00	25000.00	1646.00	13771.22	1160.00	23375.00	6500.00	164175.00
2022	3010.00	28000.00	1700.00	15074.80	1160.00	23891.66	6700.00	179475.00
2023	3600.00	30000.00	2078.00	15074.80	1160.00	24875.00	6700.00	194175.00

Source: compiled by the authors according to (Eurostat, n.d.; Ministry of Finance of Ukraine, 2024; Take-profit.org, n. d.; National Taxpayers Union Foundation, n. d.; inisterium der Finanzen des Landes Nordrhein-Westfalen, n. d.; Law of Ukraine "On the Judiciary and the Status of Judges", 2016, 2 June, Article 135).

In Poland, the minimum wage is growing steadily, increasing by 95% from 2016 to 2023 (study *Table 1*). The leader in the minimum wage level is Germany, where the indicator in 2023 is almost three times higher than in Poland and 12 times higher than in Ukraine. In Germany, the increase from 2016 to 2023 was 44%. Ukraine shows the fastest relative growth (319% in 8 years), but the absolute values remain the lowest among the analyzed countries, which indicates a gradual increase, but the starting level was low. In 2023, the minimum wage in the USA remained unchanged and amounted to USD 7.25 per hour (USD 13.920 per year). It is important to note that some American states increase the minimum wage independently. The following are the most common types of minimum wage earners: cleaners, washermen, salespeople, caregivers, and couriers (Golishevska, 2023).

The United States has the highest maximum wage, indicating a strong economy with high opportunities for highly skilled workers. In Poland and Germany, maximum wages are increasing at a moderate pace, while in Ukraine, there is a rapid increase – almost doubling from 2016 to 2023. The

gap between the minimum and maximum wages in Poland, Germany, the United States, and Ukraine is shown in *Table 2*.

Table 2

Gap between the minimum and maximum wages in Poland, Germany, the USA and Ukraine in 2016–2023, times

Period	Poland	Germany	The USA	Ukraine
2016	8.6	8.1	18.7	62.34
2017	8.5	8.1	18.9	36.2
2018	9.0	8.5	19.9	34.2
2019	9.8	8.4	19.2	33.3
2020	8.8	8.6	19.9	30.4
2021	8.9	8.4	20.1	25.2
2022	9.2	8.9	20.6	26.8
2023	8.3	7.2	21.4	29

Source: compiled by the authors.

Poland has a relatively stable gap between the minimum and maximum wages. The indicator peaked in 2019, but then decreased in 2023, indicating that wage inequality is gradually decreasing in Poland.

In Germany, the gap is quite stable and smaller than in Poland, indicating a more even distribution of income. Germany is a model of reducing inequality due to strong social regulation mechanisms and a strong middle class.

In the USA, the gap is consistently high. The trend towards increasing inequality is noticeable. A significant gap indicates that the economy is polarized. The USA is characterized by high income inequality, which is typical of a liberal economy, where priority is given to high incomes of qualified professionals, such as judges.

The wage gap in Ukraine remains the largest among the countries studied. It peaked in 2016, after which it decreased. Ukraine has one of the highest income inequalities, which indicates the need for structural reforms to ensure greater social justice.

Thus, Germany is an example of social equality and stability. Poland is ensuring gradual income equalization through active social policies. The United States needs to reduce inequality through reforms in the minimum wage and social protection. Ukraine needs structural reforms aimed at increasing minimum incomes, combating corruption, and supporting socially vulnerable groups.

As for the optimal gap between the minimum and maximum wages, it depends on several factors: the economic situation in the country, the level of economic development, political and social conditions. However, from a socio-economic point of view, the optimal gap between the minimum and maximum wages should be such as to ensure social justice, economic

efficiency and professional motivation. As a rule, in developed countries, the ratio between the lowest and highest wages should not exceed 1:10 to ensure an optimal balance. For developing countries, this gap may be larger, but it is important that it does not exceed 1:20 to avoid serious social disparities (Dong-Hee & Seongman, 2020). As for the salaries of Supreme Court judges, it should be high enough to ensure the independence of judges, but it is also important that this amount does not create a feeling of injustice towards workers in other sectors of the economy.

3. Global wage trends

Wage trends are persistent changes or patterns in the dynamics of wage levels, structure, distribution and other aspects, reflecting the impact of social, economic, political, demographic, industry and other factors in a specific period of time. Accordingly, the analysis of wage dynamics in the world has identified the following global trends:

- growing wage inequality;
- the impact of technology on the labor market;
- the impact of the COVID-19 pandemic;
- globalization of the labor market.

Growing wage inequality creates a significant gap between highly skilled and low-skilled workers, which is expressed in such phenomena as the "skills gap" and "wage polarization". The corresponding phenomena arise as a result of changes in the structure of the economy, in particular due to technological innovation, globalization and automation. Such polarization is increasing in many countries of the world, both in developed and developing countries. Workers with skills in high-tech and innovative industries receive significantly higher wages, while those working in traditional sectors or in low-skilled positions face limited opportunities to increase their incomes, contributing to further worsening social and economic inequality.

There is also growing regional wage inequality, which is reflected in the significant gap between wages in large cities and developed countries, compared with wages in rural areas or developing countries. Highly developed regions and agglomerations continue to develop rapidly, attracting investment, innovation and a skilled workforce, while peripheral regions find themselves in a situation of economic and demographic stagnation, with limited opportunities for development. Accordingly, this leads to the fact that people in such regions are often forced to look for work in more developed parts of the country or abroad, which creates additional social and economic problems. Regional wage imbalances negatively affect the stability of the labor market, causing increased unemployment, migration flows and a deterioration in the standard of living in economically weaker regions. The gender wage gap remains a global problem, although its scale varies significantly depending on the region and the level of economic development of the country. This is reflected in the fact that women on average receive

lower wages than men, even with the same qualifications and experience. The main reasons for this phenomenon include horizontal and vertical segregation of the labor market, disparities in employment, invisible unpaid work of women (childcare and household), as well as cultural and social factors. Thus, in 2024, the global gender gap was 68.5% in 146 countries of the world. Significant investments are needed to achieve gender equality, especially in developing countries (Global Gender Gap, 2024).

The impact of technology on the labor market is also noticeable: automation and robotization lead to a decrease in demand for manual labor, while salaries in the IT sector, engineering, and knowledge-intensive industries are increasing. There are increasing trends towards increased remote employment, which entails the possibility of working from home. It makes it possible to attract workers from regions with lower wages, which affects the global wage structure. The development of information technologies significantly changes the scope of employment, modifies the demand for individual specialists, creates special conditions for wages and social security, which are increasingly becoming individual in nature (Rudakova et al., 2021).

The rapid development of the "gig economy" began in 2010, when technology and changes in the public perception of work began to actively contribute to the emergence of new forms of employment, where salaries are determined for the implementation of a project, rather than hourly or monthly. Freelancing as a specialized activity of a specialist in providing digital services, namely services for creating and promoting websites, writing advertising texts, promoting targeted advertising in social networks, creating web design, translating texts, creating audio and video content, and system administration involves performing a certain list of works within one or more projects for one or several companies without signing a long-term contract with an employer. Working with the help of digital platforms (mobile applications or websites), gig workers, instead of receiving fixed salaries per month, receive payment for the implementation of individual projects. However, there is a threat of instability of financial income, since such workers do not have a fixed salary and move from project to project.

The most developed gig economy is observed in countries where technology, internet infrastructure and a culture of flexible employment are at a high level. Among the leaders is the USA, where numerous platforms such as Uber, Lyft, Airbnb, Fiverr and Upwork are actively used. The gig economy in the USA covers various sectors, from technical services to creative and consulting. The UK also has a high level of this economy thanks to platforms such as Deliveroo and TaskRabbit, where gig workers work in the delivery and service sectors. Canada has a stable economy and a high level of technological development, which makes it attractive for gig workers in areas such as graphic design and programming. Germany, the largest economy in Europe, is showing a growth of the gig economy, particularly in software development and service through the platforms Delivery Hero and Freelance.de. These countries not only have a high level of technological infrastructure, but also favorable conditions for the development of the gig

economy, due to the growing demand for flexible work and the reduction of social restrictions (Chub, 2025).

The study of the COVID-19 pandemic impact showed an increase in wages in critical sectors of the economy, which caused an unprecedented increase in demand for workers, in particular in the field of health care, logistics. Instead, there was a reduction in wages in sectors related to the physical presence of customers, in particular in the field of tourism, hotel and restaurant business, trade and entertainment, the tourism industry and the arts, air and maritime transport. There was also support for workers by the state during the COVID-19 pandemic, when governments of many countries introduced a number of measures to preserve incomes and avoid mass unemployment, in particular the introduction of subsidy programs for the population, direct payments of compensation to citizens, tax breaks and loans. The report of the International Labor Organization (ILO) notes that out of more than a hundred countries studied, the average monthly wage decreased or grew very slowly. The positive figures from a third of the countries studied are explained by the fact that many workers lost their jobs, so average wages tended to increase. Countries that proactively influenced the labor market by applying appropriate measures avoided massive job cuts, but at the same time faced a decrease in average wages (International Labour Organization, 2020).

There is also globalization of the labor market, which is associated with the relocation of production to countries with cheaper labor (for example, China, Vietnam, Bangladesh, India). Accordingly, this creates an uneven distribution of benefits: developed countries (USA, Germany, France) are faced with a reduction in industrial jobs and an increase in unemployment among low-skilled workers, which contributes to the strengthening of economic inequality. However, developing countries receive economic benefits in the form of increased employment and exports, but at the same time face social and environmental challenges.

Also, as a result of globalization of the labor market, competition is created through outsourcing. Many companies cut costs by attracting specialists from countries with lower wages. Outsourcing stimulates global competition, reducing costs for business, but creates significant challenges for the workforce and economic stability in general. According to the international ranking, the leading regions in the use of outsourcing services are India, China, the Philippines, Malaysia, Eastern Europe and Latin America (Lyutak et al., 2024). In these regions, the IT, data processing, financial services and other sectors that involve highly qualified professionnals are developed. In many cases, service providers perform specific tasks at a lower price than the company could perform on its own.

The increase in the global inflation rate also negatively affects the reduction of real income of workers, reducing their purchasing power. This trend is likely to continue due to the slowdown in global economic growth, geopolitical risks and the consequences of russian aggression against Ukraine, which caused an energy crisis in Europe and a food crisis in Africa.

According to forecasts by the International Labor Organization, a full recovery of the global economy after the COVID-19 pandemic and stabilization of the labor market, including an increase in employment, are expected no earlier than 2025. At the same time, in many countries, especially developing ones, the situation may worsen due to high debt burdens, stagflation risks, and growing social inequality (Kudlay, 2024).

Conclusions

Analysis of wage dynamics at the global level shows that the largest wage declines occurred during the global financial crisis (2008–2009) and the COVID-19 pandemic (2020–2021), which was due to a sharp decline in economic activity, a drop in employment and a slowdown in labor productivity growth.

Real wage growth remains uneven across regions. The highest rates are observed in the Asia-Pacific region, Central and Western Asia and Eastern Europe, which is associated with intensive economic development, industrialization and increasing demand for skilled labor. At the same time, wage dynamics in advanced economies are more restrained due to structural factors such as automation, demographic changes and stricter market regulations.

Analysis of average annual global real wage growth over 2006–2024 also highlights China's significant role in supporting global wage growth through its economic growth and rising incomes. At the same time, the global labor market remains vulnerable to financial crises, pandemics, and inflationnary challenges, underscoring its vulnerability to macroeconomic fluctuations and global shocks.

Analysis of the ratio of minimum and maximum wages in Poland, Germany, the USA and Ukraine for 2016–2023 shows significant differences in the levels of social inequality. Ukraine demonstrates the largest gap, significantly exceeding the indicators of other countries. Accordingly, this indicates serious economic imbalances caused by a low minimum wage, weak policy of its regulation and labor migration. In the USA, the gap is consistently high, which is typical of an economy with large differences in income between sectors and social groups. Germany and Poland demonstrate a tendency to reduce the gap, which indicates the effectiveness of social and economic reforms aimed at equalizing incomes. Thus, the reduction of the gap in developed countries is the result of active social policies, while in Ukraine it remains significant due to structural problems of the economy. In general, these data confirm that in order to achieve greater social equality, it is necessary to introduce effective mechanisms for regulating the minimum wage, as well as stimulate income growth in the middle and lower classes of the population.

It has been established that the global trends in wage dynamics during 2016–2024 are: increasing inequality in wages (gap between highly skilled and low-skilled workers, regional inequality, gender gap), the impact of new

technologies on the labor market and its payment (automation and robotization, increase in remote employment, development of the "gig economy"), the impact of the COVID-19 pandemic (increase in wages in critical sectors of the economy, reduction in wages in affected sectors, support for workers by the state), globalization of the labor market (relocation of production to countries with cheaper labor, competition through outsourcing).

In general, the analysis of wage dynamics in the world confirms that it is formed under the influence of global economic, technological, demographic, social and political factors. Economic factors such as inflation, employment levels and income regulation policies directly affect the growth or stagnation of wages. Technological changes stimulate the demand for highly skilled workers, which leads to wage growth in technology sectors, while automation and digitalization can reduce the incomes of low-skilled workers. Demographic factors, in particular, the aging of the population in developed countries, are changing the structure of the labor market, contributing to an increase in wages in the areas of health care and social security. At the same time, countries with high birth rates are experiencing a surplus of labor, which limits income growth. Social and political aspects, including labor migration, minimum wage regulation policies, and social instability, also play a significant role. In particular, in countries experiencing military conflicts or political instability, the level of wages remains low due to economic uncertainty and the outflow of investment. Therefore, the results obtained confirm the research hypothesis.

The issue of social justice in the process of income distribution in Ukraine and the world in the context of global transformations will be the subject of further scientific research.

REFERENCE/СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ

Allen, R. C. (2016). Real wage rates (historical trends). *The New Palgrave Dictionary of Economics*, Palgrave Macmillan UK, 1–7. https://doi.org/10.1057/978-1-349-95121-5_2168-1

Bodnár, K., Gonçalves, E., Górnicka, L., & Koester, G. (2022). Wage developments and their determinants since the start of the pandemic. *European Central Bank.* https://www.ecb.europa.eu/press/economic-bulletin/articles/2023/html/ecb.ebart202208_02~2328747465.en.html

Bounajm, F., Devakos, T., & Galassi, G. (2024). Beyond the averages: Measuring underlying wage growth using Labour Force Survey microdata. *Bank of Canada*. https://www.bankofcanada.ca/2024/10/staff-analytical-note-2024-23/

Chub, A. (2025). Gig economy and delivery statistics. *WNIZZ*. https://www.getwhizz.com/blog/for-delivery/gig-economy-and-delivery-statistics

Dong-Hee, J., & Seongman, M. (2020). Minimum wages and wage inequality in the OECD countries. *East Asian Economic Review*, *24*(3), 253–273. https://doi.org/10.11644/KIEP.EAER.2020.24.3.379

Eurostat (*n. d.*). Minimum wages. *European Commission*. https://ec.europa.eu/eurostat/en/web/products-datasets/-/EARN_MW_CUR

FAO. (2024). *The state of food security and nutrition in the world.* Rome, Italy. https://doi.org/10.4060/cd1254en

Global Gender Gap. (2024). *World Economic Forum.* https://www3.weforum.org/docs/WEF_GGGR_2024.pdf

Golishevska, A. (2023). What is the average salary in the USA 2023 and which professions earn the least: amounts. *Vikna*. https://vikna.tv/styl-zhyttya/yaka-serednya-zarplata-v-ssha-2023/	Голішевська, А. (2023). Яка середня зарплата в США 2023 та представники яких професій заробляють найменше: суми. *Вікна.* https://vikna.tv/styl-zhyttya/ yaka-serednya-zarplata-v-ssha-2023/

Hajdini, I. (2024). Wage growth, labor market tightness, and inflation: A service sector analysis. *Federal Reserve Bank of Cleveland.* https://www.clevelandfed.org/publications/economic-commentary/2024/ec-202415-wage-growth-labor-market-tightness-and-inflation-a-service-sector-analysis

Hsu, E. (2024). As the economy stabilizes, pay trends in China are diversifying. *WTW*. https://www.wtwco.com/en-cm/insights/2024/08/as-the-economy-stabilizes-pay-trends-in-china-are-diversifying

International Labour Organization. (2020). Global Wage Report 2020–2021. Wages and minimum wages in the time of COVID-19. *International Labour Office*, Geneva. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms_762534.pdf

International Labour Organization. (2024). Global Wage Report 2024–25: Is wage inequality decreasing globally? *International Labour Office*, Geneva. https://doi.org/10.54394/CJQU6666

Kudlai, V. (2024). The international labor market in the context of globalization and digitalization: Trends and prospects. *Halytskyi Ekonomichnyi Visnyk*, *3*(88), 13–19. https://doi.org/10.33108/galicianvisnyk_tntu2024.03	Кудлай, В. (2024). Міжнародний ринок праці в умовах глобалізації та диджиталізації: тренди та перспективи. *Галицький економічний вісник*, *3*(88), 13–19. https://doi.org/10.33108/galicianvisnyk_ tntu2024.03
Law of Ukraine "On Remuneration of Labor" dated March 24, 1995, No. 108/95-VR (as amended on August 24, 2024). https://zakon.rada.gov.ua/laws/show/108/95-%D0%B2%D1%80#Text	Закон України "Про оплату праці" № 108/95-ВР. (1995, 24 березня). (редакція 24.08.2024). https://zakon.rada.gov.ua/laws/show/108/95-D0%B2%D1%80#Text
Law of Ukraine "On the Judiciary and the Status of Judges" from 02.06.2016 – No. 1402-VIII (version of 26.03.2024). https://zakon.rada.gov.ua/laws/show/1402-19#Text	Закон України "Про судоустрій і статус суддів" № 1402-VIII (2016, 2 червня). (редакція 26.03.2024). https://zakon.rada.gov.ua/laws/show/1402-19#Text

Linden, M. (2024). The state of the U.S. labor market 4 years after the start of the COVID-19 recession. *Washington Center for Equitable Growth*. https://equitablegrowth.org/the-state-of-the-u-s-labor-market-4-years-after-the-start-of-the-covid-19-recession/

Lytak, O., Baula, O., & Tatarchuk, D. (2024). Outsourcing in the international business environment: prospects and challenges. *Economic Space*, (191), 275-279. https://doi.org/10.32782/2224-6282/191-45	Лютак, О., Баула, О., & Татарчук, Д. (2024). Аутсорсинг в міжнародному бізнес-середовищі: перспективи та виклики. *Економічний простір*, (191), 275–279. https://doi.org/10.32782/2224-6282/191-45

Ministerium der Finanzen des Landes Nordrhein-Westfalen. (*n. d.*). Besoldungstabellen für Beamtinnen und Beamte. https://www.finanzverwaltung.nrw.de/dienststellen/landesamt-fur-besoldung-und-versorgung-nrw/besoldungstabellen-fuer-beamtinnen-und-beamte

Ministry of Finance of Ukraine. (2024). *Minimum wage in Ukraine*. https://index.minfin.com.ua/ua/labour/salary/min/	Міністерство фінансів України. (2024). *Мінімальна зарплата в Україні*. https://index.minfin.com.ua/ua/labour/salary/min/

National Taxpayers Union Foundation (*n. d.*). Salaries for Members of Congress, Supreme Court Justices, and the President. *NTU Foundation*. https://www.ntu.org/foundation/tax-page/salaries-for-members-of-congress-supreme-court-justices-and-the-president

Rudakova, S., Shchetinina, L., Danilevich, N., & Varshava, D. (2021). Digitalization of employment relations: Global experience and its implementation in Ukraine. *Halytskyi Ekonomichnyi Visnyk*, *6*(73), 43–54. ttps://doi.org/10.33108/galicianvisnyk_tntu-2021.06.043	Рудакова, С., Щетініна, Л., Данилевич, Н., & Варшава, Д. (2021). Цифровізація відносин у сфері зайнятості: світовий досвід та його імплементація в Україні. *Галицький економічний вісник,* *6*(73), 43–54. https://doi.org/10.33108/galicianvisnyk_tntu 2021.06.043

Shevchuk, V. (2023). Analysis of wage dynamics in Ukraine and EU countries as a component of labor market research. *Economics and Management: Collection of Scientific Papers*, (53), 119–127. https://em.duit.in.ua/index.php/home/article/ view/92	Шевчук, В. (2023). Аналіз динаміки рівня заробітної плати в Україні та країнах ЄС як складова дослідження кон'юнктури ринку праці. *Економіка і управління: Збірник наукових праць,* (53), 119–127. https://em.duit.in.ua/index.php/home/article/view/92
Shtunder, I., & Shkuropadska, D. (2024). Determinants of labor market resilience. *Scientia fructuosa*, (4), 41–57. https://doi.org/10.31617/1.2024(156)03	Штундер, І., & Шкуропадська, Д. (2024). Детермінанти стійкості ринку праці. *Scientia fructuosa*, (4), 41–57. https://doi.org/10.31617/ 1.2024(156)03
Take-profit.org. (n. d.). *United States wages data*. https://take-profit.org/en/statistics/wages/united-states/	
Van Greunen, D. (2024). Spotlight on Africa: Highlighting the factors driving salary budgets. *WTW*. https://www.wtwco.com/en-il/insights/2024/04/spotlight-on-africa-highlighting-the-factors-driving-salary-budgets	
Yatsenko, L. (2024). The recovery of the labor market in Ukraine under wartime conditions: Regional aspects. *National Institute for Strategic Studies*.https://niss.gov.ua/doslidzhennya/sotsialna-polityka/vidnovlennya-rynku-pratsi-v-ukrayini-v-umovakh-viyny-rehionalni	Яценко, Л. (2024). Відновлення ринку праці в Україні в умовах війни: регіональні аспекти. *Національний інститут стратегічних досліджень*. https://niss.gov.ua/doslidzhennya/sotsialna-polityka/vidnovlennya-rynku-pratsi-v-ukrayini-v-umovakh-viyny-rehionalni

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TECHNOLOGICAL DISPARITIES IN EU–UKRAINE TRADE

The conclusion of the Deep and Comprehensive Free Trade Agreement (DCFTA) between Ukraine and the EU both created additional opportunities for Ukrainian exports in terms of simplified access to European markets and liberalization of customs tariffs, and provoked new risks caused by the pronounced asymmetry of economic development between the partners. One of the most threatening manifestations of economic asymmetry is the significant differences in the level of technological complexity of export and import flows between Ukraine and the EU. Therefore, the research aim is to analyze technological imbalances in trade between Ukraine and the EU under the DCFTA.

Based on the results of the assessment of the technological complexity of Ukraine's exports and imports in trade with the EU under the DCFTA and the depth of technological imbalances in trade relations based on the calculation of the technological pressure indicator proposed by the authors, the hypothesis that there is a negative trend in the dynamics of technological complexity of Ukraine's exports and imports in preferential trade with the EU is confirmed. The results are shown that reducing customs barriers and expanding market access for technologically sophisticated goods simultaneously increase

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ТЕХНОЛОГІЧНІ ДИСПРОПОРЦІЇ ТОРГІВЛІ ЄС ТА УКРАЇНИ

Укладання Угоди про поглиблену та всеохоплюючу зону вільної торгівлі (ПВЗВТ) між Україною та ЄС створило додаткові можливості для вітчизняного експорту в частині спрощеного доступу на європейські ринки і лібералізації митних тарифів, а також спровокувало нові ризики, зумовлені вираженою асиметрією економічного розвитку партнерів. Одним з найзагрозливіших проявів економічної асиметрії є суттєві відмінності в рівні технологічної складності експортно-імпортних потоків між Україною та ЄС. Відтак, метою статті є аналіз технологічних диспропорцій у торгівлі України та ЄС у рамках ПВЗВТ. За результатами оцінки технологічної складності експорту та імпорту України в торгівлі з ЄС у контексті з ПВЗВТ, а також глибини технологічних диспропорцій у торговельних відносинах на основі розрахунку запропонованого авторами показника технологічного тиску підтверджено гіпотезу про існування негативного тренду в динаміці технологічної складності продукції експорту та імпорту України в преференційній торгівлі з ЄС. Для досягнення поставленої мети використано методи аналізу та синтезу, метод нормалізації, індексний метод. Отримані результати показують, що зниження митних бар'єрів і розширення доступу до ринків для технологічно складних

pressure on less developed sectors of Ukraine's economy, which does not always contribute to their development. In such circumstances, protectionist measures such as temporary import restrictions or support for domestic producers may be justified to protect economically vulnerable sectors. This allows gradually increasing the technological complexity of products and adapting domestic producers to the conditions of fierce competition, which will help reduce technological pressure in the long run. The authors consider prospects for further research in substantiating objective criteria for selecting economic sectors that require additional support and gradual increase in competitiveness in the context of deepening Ukrainian-European trade integration.

Keywords: preferential trade, trade relations, DCFTA, economic asymmetry, technological disparities, Product Complexity Index, technological pressure.

JEL Classification: F13, F15, O33.

товарів одночасно підвищують тиск на менш розвинуті сектори економіки України, що не завжди сприяє їх розвитку. У таких умовах протекціоністські заходи, такі як тимчасові обмеження на імпорт або підтримка національних виробників, можуть бути обґрунтованими для захисту економічно вразливих секторів. Це дасть можливість поступово збільшувати технологічну складність продукції та адаптувати національних виробників до умов посиленої конкуренції, що сприятиме зменшенню технологічного тиску в довгостроковій перспективі. Автори бачать перспективи подальших досліджень у визначенні об'єктивних критеріїв для вибору секторів економіки, які потребують додаткової підтримки та поступового підвищення конкурентоспроможності в умовах поглиблення українсько-європейської торговельної інтеграції.

Ключові слова: преференційна торгівля, торговельні відносини, ПВЗВТ, економічна асиметрія, технологічні диспропорції, індекс складності продукції, технологічний тиск.

Introduction

The Deep and Comprehensive Free Trade Area (DCFTA), which is part of the Association Agreement between Ukraine and the European Union, entered into force in January 2016. This document opened up new opportunities for economic cooperation and contributed to the deepening of trade relations between the parties. The main goal of the DCFTA is to ensure the free movement of goods and services through the gradual liberalization of customs tariffs, which stimulates the economic integration of Ukraine with the EU. One of the important aspects that highlights the effects of the DCFTA is the technological complexity of export and import flows between Ukraine and the EU. The technological complexity of products is an indicator that reflects the level of innovation, knowledge-intensiveness and added value embodied in products. High-tech products have higher added value and are more competitive in the global market. Therefore, assessing the technological complexity of exports and imports allows us to better understand the level of technological development of a country, its dependence on imports of high-tech goods, and the potential for further modernization of the economy.

Empirically substantiated conclusions on the positive impact of technological specialization of exports on the economic growth of a country are obtained in the works (Lee, 2011; Zakrajsek & Harrigan, 2006; Hidalgo & Hausmann, 2009; Nepelski & De Prato, 2020). Thus, the results of the analysis of the impact of technologicality of exports on economic development for a statistical sample of 71 countries showed that economies demonstrate higher growth rates if they are oriented towards the export of high-tech products (Lee, 2011). Testing the empirical model of export specialization of countries

confirmed the importance of technological factors for the formation of long-term comparative advantages in the international division of labor (Harrigan & Zakrajsek, 2006). The work (Hidalgo & Hausmann, 2009) identified the technological complexity of products as a critically important factor of economic growth and proved that the complexity of the economy directly correlates with the level of gross national income, which is determined by the complexity of production structures. Based on empirical analysis, researchers (Nepelski & De Prato, 2020) concluded that a country's position in the global technology space determines its profitability and growth rates, and the main driver is the uniqueness of the state's technology portfolio compared to other countries.

The importance of technological specialization of exports for the economic development of the country and its protection from trade dependence in asymmetric bilateral relations is confirmed by the cases of individual countries (Costa et al., 2023; Anzolin & Benassi, 2024; Bernatonyte, 2015; Saboniene, 2013; Hossain et al., 2021). Thus, the analysis results of Brazilian export specialization confirmed its different sectoral composition and structure, which varies in terms of the level of added value and the degree of correlation with trading partners (Costa et al., 2023). The need for transformation from raw material specialization to higher value-added exports for Lithuania is highlighted in the study (Bernatonyte, 2015). Author Saboniene (2013) notes that over time, there have been positive transformations of Lithuanian exports into relatively technological sectors. Scholars have also emphasized the importance of rational industrial policy in developing the technological capacity of exports (Anzolin & Benassi, 2024).

The works of Ukrainian scientists devoted to the issues of Ukraine's foreign trade with the EU consider various aspects of the asymmetry of these bilateral relations (Pyrog et al., 2024; Lyzun et al., 2024; Ischuk et al., 2021; Marunyak et al., 2023). Researchers emphasize the existence of disproportions in the volumes of Ukraine's export-import operations with individual EU countries (Pyrog et al., 2024), which makes the domestic economy more vulnerable to external shocks (Lyzun et al., 2024) and the asymmetry of foreign trade indicators with the EU across regions of Ukraine (Ischuk et al., 2021; Marunyak et al., 2023). However, one of the critical, in our opinion, aspects of the asymmetry of Ukrainian-European trade relations is technological asymmetry as the difference in the level of technological sophistication of goods exported from Ukraine and imported from EU countries. The results of the scientists' research confirm the raw material specialization of Ukrainian commodity exports – both in general (Kalyuzhna & Dashkov, 2023; Lyashok & Taranyuk, 2024; Tur et al., 2024), and in trade with the EU (Kalyuzhna & Dashkov, 2024). The predominance of raw material-type products with a low share of added value prevents the creation of a stable basis for the economic growth of the state (Tur et al., 2024). The imbalance between Ukrainian raw material exports and high-tech European

imports further deepens the asymmetry of bilateral trade with Ukraine's main partner (Lyashok & Taranyuk, 2024). In previous works, the authors of the article, based on the results of the analysis of the degree of technological sophistication of Ukraine's exports, confirmed the trend of its raw material specialization (Kalyuzhna & Dashkov, 2023) and separately emphasized the deepening technological imbalances in Ukrainian-European trade relations (Kalyuzhna & Dashkov, 2024).

The conclusion of preferential trade agreements, in particular free trade zones, should theoretically contribute to the equalization of trade conditions between partners by ensuring mutual access to domestic markets and eliminating/reducing trade barriers. At the same time, preferential trade between partners with a pronounced asymmetric level of economic development, in practice, on the contrary, can lead to a deepening of disparities due to significant differences in the level of technological complexity of export and import products. Therefore, an important scientific and practical task is to confirm the outlined negative effect and develop a toolkit for assessing the depth of such disparities.

The research aim is to determine technological disparities in trade between Ukraine and the EU within the framework of the DCFTA in order to assess the depth of the gap in the technological complexity of export and import products. A hypothesis is put forward regarding the presence of a negative trend in the dynamics of technological complexity of Ukrainian export and import products in trade with the EU within the framework of the DCFTA, which indicates the existence and deepening of technological imbalances in preferential trade between partners with an asymmetric level of economic development.

To achieve the aim, the methods of analysis and synthesis were used (to identify the level of liberalization of preferential trade between Ukraine and the EU in terms of product groups and obligations under customs tariffs), the normalization method (to calculate the normalized index of technological complexity of products in terms of product groups under the customs tariffs of the EU and Ukraine), the index method (to substantiate the indicator of technological pressure in bilateral trade relations and its calculation for trade between Ukraine and the EU within the framework of the DCFTA), abstraction and generalization (to formulate conclusions regarding the risks of deepening technological disparities in preferential trade of economically asymmetric partners). The theoretical and methodological basis is the results of research by scientists on the issues of trade integration, economic asymmetry and technological development. The study is supported by regulatory documenttation on trade conditions between Ukraine and the EU within the framework of the DCFTA and the results of the Atlas of Economic Complexity project based on the calculation of the Product Complexity Index (PCI).

To confirm the hypothesis put forward, it is necessary to analyze the technological complexity of products in terms of customs tariffs in accordance with the DCFTA Agreement between Ukraine and the EU

(first section), determine the technological complexity of Ukraine's exports and imports in trade with the EU (second section), and assess the depth of technological disparities in preferential trade between Ukraine and the EU (third section).

1. Technological complexity of products in terms of customs tariffs under the DCFTA between Ukraine and the EU

The first step in assessing the technological complexity of Ukraine's exports and imports to the EU is to analyze the agreement on the elimination of customs barriers in accordance with the tariff liberalization schedule set out in the DCFTA. The structure analysis of customs tariffs for different product groups according to the EU schedule and Ukraine's schedule under the DCFTA demonstrates the differentiation of approaches of both parties to taxation of imported goods and helps to assess the level of protection of certain industries (*Figure 1*).

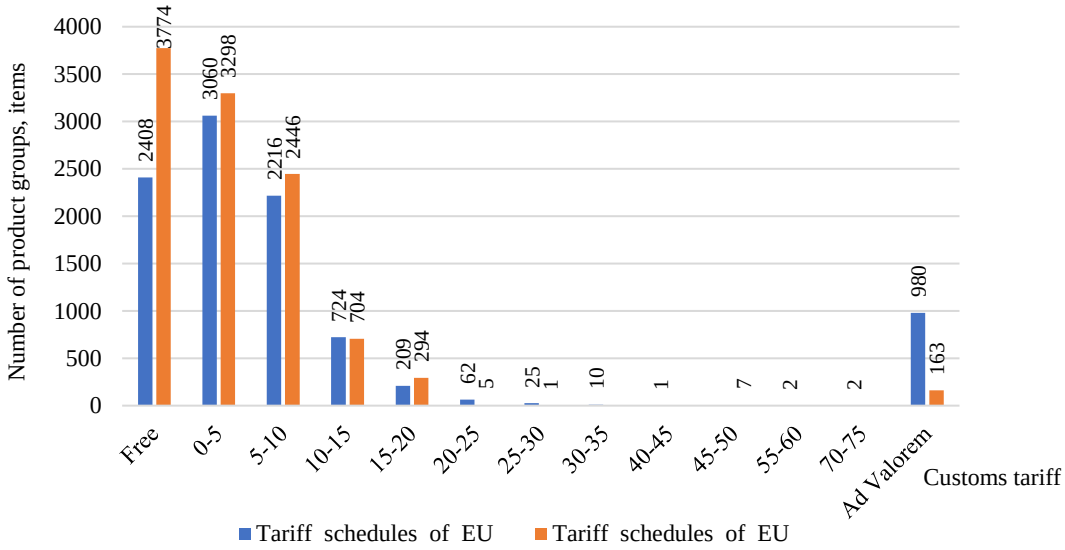

Figure 1. Distribution of product groups by customs tariffs under the DCFTA between Ukraine and the EU

Source: compiled by the authors according to (EU-Ukraine DCFTA, 2016).

As it can be seen from Figure 1, the number of product groups in each tariff rate band indicates the level of market openness and the protective mechanisms that both sides use to support their own industries. Thus, for goods exempted from duties, the number of product groups is 2408 for the EU and 3774 for Ukraine. This indicates that Ukraine provides a larger number of duty-free items for imports from the EU, which contributes to wider access of European goods to the Ukrainian market.

The product groups in terms of tariff value mostly fall within the 0–5% tariff rate range for both the EU (3060 groups) and Ukraine (3298 groups), which in turn also indicates the desire of both sides to

liberalize trade and reduce barriers for a large number of goods. Higher tariff rates (15–75%) apply to a limited number of product groups, mostly for specific goods that require greater protection. The EU, compared to Ukraine, uses significantly more high tariffs in this range (e.g., 15–20% – 209 for the EU vs. 294 for Ukraine, 20–25% – 62 for the EU vs. 5 for Ukraine, 25–30% – 25 for the EU vs. 1 for Ukraine). This may indicate that the EU seeks greater protection of certain sectors from Ukrainian imports. Ukraine demonstrates a more open tariff policy, providing a larger number of product groups with duty-free access and applying fewer ad valorem duties. This is in line with Ukraine's strategic goal to expand cooperation with the EU and integrate into European economic processes. On the other hand, the EU applies significantly more ad valorem duties and has a larger number of product groups with moderate and high rates, which may be due to the protection of sensitive sectors of the EU economy from competitive imports.

A detailed analysis of customs tariff commitments for individual product groups allows us to assess the depth of liberalization for key sectors of the economy of both parties (*Table 1*).

Table 1

The amount of product groups subject to duty-free regulations under the DCFTA between Ukraine and the EU

Product groups	Obligations under the zero tariff	
	The EU	Ukraine
72 ferrous metals	308	311
84 nuclear reactors, boilers, machinery	177	439
29 organic chemical compounds	164	274
85 electrical machines	119	232
48 paper and cardboard	164	171
73 ferrous metal products	113	194
03 fish and crustaceans	43	260
44 wood and wood products	88	177
90 optical and photographic instruments and apparatus	82	165
27 mineral fuels; oil and products of its distillation	36	90
55 synthetic or artificial	–	121
30 pharmaceutical products	58	61
28 inorganic chemical products	34	68
39 plastics, polymeric materials	31	62
87 means of land transport other than railway	13	78
OTHER TYPES	978	1071

Source: developed by the authors based on data (EU-Ukraine DCFTA, 2016).

A significant number of product groups fall under the zero customs tariff, which indicates the agreement's focus on creating the most open trading environment and mutual market accessibility. In some categories, Ukraine provides more duty-free items than the EU. The most significant

disproportion of commitments is observed for group 84 nuclear reactors, boilers, machinery, which indicates different market opening strategies for each party. Ukraine also opens its market for ferrous metals, having almost the same number of product lines with the EU. There is also an asymmetry in establishing a duty-free regime for group 29 organic chemical compounds, under which Ukraine provides more benefits, which allows simplifying the import of organic chemicals. The situation is similar for group 85 electrical machines. At the same time, the elimination of duties for group 72 ferrous metals is practically symmetrical, under which the EU provides significant benefits for ferrous metal products, which is important for Ukrainian industry. Thus, the agreement provides for a deep opening of markets on both sides, but with a certain asymmetry in different sectors of the economy. Ukraine often provides more duty-free positions in key industrial categories, while the EU is more cautious about eliminating duties in certain sectors.

Differences in the level of technological complexity of products subject to different customs tariffs were estimated based on the calculation of the normalized product complexity index. Traditionally, the weighted average PCI index (Product Complexity Index) is used to assess the technological complexity of exports and imports, which is determined based on the analysis of the structure of economic activity of countries in the world, in which products of a high level of complexity can be produced by a limited number of countries. On the contrary, the technologically simpler the product (and, accordingly, the lower the PCI value corresponding to it), the greater the number of countries in the world can specialize in its production. The PCI is determined for 1223 types of products according to the Harmonized System for the Description and Coding of Goods HS 1992, i.e. each type of commodity product or service received a certain complexity index. To increase the validity of the results of the comparative analysis of the technological complexity of exports and imports, the authors (Kalyuzhna & Dashkov, 2024) proposed to carry out Z-normalization of the PCI index according to the formula:

$$PCI\ normal = \frac{PCI - PCI(av)}{PCI(\sigma)},$$

where: *PCI normal* – normalized product complexity index;
PCI – product complexity index;
PCI (av) – average value of product complexity index in the sample;
PCI (σ) – standard deviation of product complexity index in the sample.

Standardization allows to eliminate differences in the scales of measurement and to provide the possibility of comparing indices for different product groups. Z-normalization determines how much the PCI value deviates from its average *PCI* value (*av*) in units of standard deviation. As a result of normalization, the data is converted into a standard form, where the average value is 0 and the standard deviation is 1. This allows to compare

indices of different product groups, regardless of their initial scales. Analysis of normalized PCI indices for products subject to different customs tariffs allows to assess the technological complexity of the products subject to these tariffs on both sides of the agreement. An important aspect of this analysis is the comparison of customs obligations and the level of technological complexity for products exported and imported between Ukraine and the EU (*Table 2*).

Table 2

Standardized PCI index of product groups under customs tariffs according to the DCFTA between Ukraine and the EU

Customs tariffs, %	PCI index	
	ЄС	Україна
No duty	0.023	0.163
0–5	0.476	0.162
10–15	–1.051	–0.914
5–10	–0.014	0.050
15–20	–0.896	–0.858
20–25	–0.898	0.243
25–30	–1.077	–0.980
30–35	–0.856	–
40–45	–0.639	–
45–50	–	–1.613
55–60	–0.723	–
70–75	–0.639	–
Ad Valorem	–0.459	–0.493

Source: compiled by the authors according to (EU-Ukraine DCFTA, 2016).

As the calculation results show, according to the tariff elimination schedule, Ukraine has obligations regarding more technologically complex products for the introduction of a duty-free regime, which gives grounds to argue about the existence of a certain asymmetry in the obligations of the parties: Ukraine opens its market to more technologically intensive products, which can increase competition for domestic producers and stimulate industrial modernization.

2. Technological complexity of Ukraine's exports and imports in trade with the EU under the DCFTA

Foreign trade between Ukraine and the EU in 2016–2023 demonstrates changes in the structure of exports and imports depending on customs rates, which indicates a change in the level of technological complexity of goods during this period. Analysis of normalized PCI indices for exports and imports of Ukraine at customs tariffs within the framework of the DCFTA for 2016–2023 shows that imports of goods from the EU generally have a higher technological complexity, especially for goods with

no customs duties or with minimal customs rates (*Table 3*). Ukraine's exports to the EU mostly remain less technologically complex at customs rates, which indicates a significant asymmetry in the structure of trade between the countries. Thus, for groups of goods with a duty-free regime, the gradual increase in PCI for imports from the EU indicates an increase in the technological complexity of imported products. For exports, PCI remains negative, which indicates that goods in this group have a relatively low technological complexity. At customs rates up to 5%, the PCI for imports gradually decreases, which indicates a gradual decrease in the technological complexity of imported goods in this range. For exports, the PCI remains negative. For products with customs rates set within 5–10%, the PCI for imports increased during 2016–2021, but as of 2023 it has significantly deteriorated. The negative dynamics of the PCI is also confirmed for exports in this range of customs rates.

Table 3

Standardized PCI values of Ukraine's exports and imports in trade with the EU under customs tariffs according to the DCFTA Agreement in 2016–2023

PCI (Exports/ Imports)	Customs rate, %	2016	2017	2018	2019	2020	2021	2022	2023
Import PCI	0	0.255	0.273	0.276	0.314	0.320	0.295	0.051	0.099
Export PCI		–0.270	–0.317	–0.304	–0.369	–0.339	–0.314	–0.527	–0.538
Import PCI	0–5	0.258	0.273	0.270	0.249	0.228	0.218	0.041	–0.046
Export PCI		–0.269	–0.261	–0.226	–0.242	–0.225	–0.283	–0.291	–0.262
Import PCI	5–10	0.044	0.069	0.066	0.229	0.216	0.139	0.025	–0.035
Export PCI		–0.368	–0.367	–0.361	–0.298	–0.251	–0.538	–0.642	–0.699
Import PCI	10–15	–0.018	–0.017	–0.017	–0.034	–0.039	–0.034	–0.040	0.051
Export PCI		–0.210	–0.194	–0.154	–0.182	–0.220	–0.107	–0.153	–0.217
Import PCI	15–20	–0.019	–0.019	–0.026	–0.034	–0.039	–0.067	–0.070	–0.057
Export PCI		–0.106	–0.103	–0.072	–0.092	–0.126	–0.119	–0.136	–0.150
Import PCI	20–25	0.000	0.000	0.000	0.000	0.000	0.039	0.031	0.028
Export PCI		–0.009	–0.011	–0.009	–0.009	–0.012	–0.011	–0.010	–0.009
Import PCI	25–30	0.000	0.000	0.000	0.000	0.000	–0.003	–0.004	–0.003
Export PCI		–0.006	–0.007	–0.005	–0.005	–0.007	–0.004	–0.006	–0.006
Import PCI	30–35	–0.006	–0.007	–0.006	–0.005	–0.008	–0.006	–0.007	–0.010
Export PCI		–0.003	–0.002	–0.003	–0.003	–0.003	–0.004	–0.003	–0.003
Import PCI	*Ad Valorem*	–0.009	–0.010	–0.011	–0.014	–0.017	–0.019	–0.013	–0.018
Export PCI		–0.324	–0.358	–0.345	–0.418	–0.379	–0.322	–0.551	–0.589

Source: calculated by the authors.

In general, imports of goods from the EU to Ukraine showed stable positive or neutral dynamics until 2022 at most customs rates. This indicates that Ukraine imported products of high technological complexity from the EU. After 2022, the trend is negative, i.e. the import structure has changed

towards low-tech products. Complexity indices for products at higher customs rates (from 15%) generally show negative values or are stabilized at a low level, indicating lower technological complexity. Ukraine's exports to the EU at all customs rates are characterized by consistently negative PCI values. This indicates that exported goods have a lower level of technological complexity, which is typical for raw materials or low-tech goods. The deterioration is particularly noticeable in the group of goods with duty-free regime and duty rates within 5–10%, where PCI for exports decreased by 50% and 47%, respectively, compared to 2016. This indicates a deterioration in the technological complexity of goods that Ukraine exports at these customs rates. For goods with other customs rates (10–15% and 15–20%), the trend remains negative, with a deterioration in the complexity indicator by 3% and 30%, respectively.

Thus, the analysis results of the complexity of products under customs tariffs under the DCFTA Agreement illustrate the presence of a pronounced asymmetry in the structure of trade: imports of goods from the EU generally have a higher level of technological complexity, while Ukraine's exports to the EU remain low-tech, with a predominance of exports of raw materials and low-complexity products. There is also a trend towards a decrease in the technological complexity of imports in medium-duty groups and an increase in dependence on imports of high-tech goods, especially for the duty-free group of goods and goods with minimal duties (0–5%).

An in-depth analysis of the complexity of products for Ukraine's imports from the EU under the duty-free regime in 2016–2023 indicates the following trends: high-tech goods occupy a significant share in the import structure, but their share either remains stable or decreases slightly (*Table 4*).

The overall import complexity index throughout the period has a negative trend, indicating a gradual decrease in the technological complexity of goods imported from the EU within the framework of the DCFTA agreement. Thus, the largest group of imported products is mineral fuels, oil and its distillation products, for which the complexity index has a negative value. Since 2018, there has been a gradual decrease in the share of fuel imports in the overall import structure of the country, which had a positive effect on the level of technological sophistication of imports. But in 2022, there is a jump to 24% of the share in the import structure, and the maximum negative value of the complexity index is recorded.

The second group in terms of share in total imports of Ukraine for the period under review is nuclear reactors, boilers, and machinery. The PCI for this group of products remains at a high level throughout the period, indicating a high technological complexity of imported goods. At the same time, the PCI indicator in the structure gradually decreases, indicating a decrease in the share of these products in total imports.

Table 4

Standardized values of Ukraine's imports of duty-free products in trade with the EU under the DCFTA in 2016-2023

Indicator	2016	2017	2018	2019	2020	2021	2022	2023
27 mineral fuels; oil and products of its distillation								
Share, % (in UAH)	14	15	13	11	9	11	24	20
Weighted average PCI	–0.977	–0.977	–0.977	–0.977	–0.977	–0.977	–0.977	–0.977
PCI in the structure of	–0.141	–0.142	–0.130	–0.106	–0.085	–0.107	–0.234	–0.199
84 nuclear reactors, boilers, machinery								
Share, % (in UAH)	14	14	14	13	13	13	7	8
Weighted average PCI	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
PCI in the structure of	0.141	0.142	0.137	0.131	0.129	0.132	0.071	0.081
87 means of land transport other than railways								
Share, % (in UAH)	8	10	10	13	11	11	11	11
Weighted average PCI	1.116	1.116	1.116	1.116	1.116	1.116	1.116	1.116
PCI in the structure of	0.091	0.112	0.106	0.144	0.123	0.126	0.121	0.126
85 electric machines								
Share, % (in UAH)	7	8	8	9	8	7	6	5
Weighted average PCI	0.783	0.783	0.783	0.783	0.783	0.783	0.783	0.783
PCI in the structure of	0.057	0.061	0.066	0.067	0.066	0.055	0.043	0.040
30 pharmaceutical products								
Share, % (in UAH)	7	6	6	6	7	7	5	5
Weighted average PCI	0.786	0.786	0.786	0.786	0.786	0.786	0.786	0.786
PCI in the structure of	0.051	0.048	0.047	0.048	0.058	0.055	0.037	0.037
39 plastics, polymeric materials								
Share, % (in UAH)	7	6	6	5	6	6	5	5
Weighted average PCI	0.798	0.798	0.798	0.798	0.798	0.798	0.798	0.798
PCI in the structure of	0.053	0.050	0.048	0.043	0.045	0.049	0.040	0.038
38 various chemical products								
Share, % (in UAH)	4	4	4	3	3	3	3	2
Weighted average PCI	0.455	0.455	0.455	0.455	0.455	0.455	0.455	0.455
PCI in the structure of	0.019	0.018	0.017	0.015	0.015	0.013	0.011	0.009
48 paper and cardboard								
Share, % (in UAH)	3	3	3	2	3	2	0	2
Weighted average PCI	0.295	0.295	0.295	0.295	0.295	0.295	0.000	0.295
PCI in the structure of	0.010	0.008	0.008	0.007	0.007	0.007	0.000	0.005
Others up to 2%								
Share, % (in UAH)	35	34	36	37	40	39	40	42
Weighted average PCI	–0.072	–0.066	–0.067	–0.097	–0.098	–0.088	–0.095	–0.089
PCI in the structure of	–0.026	–0.023	–0.024	–0.036	–0.039	–0.034	–0.038	–0.037
TOTAL PCI in the structure	0.255	0.273	0.276	0.314	0.320	0.295	0.051	0.099

Source: calculated by the authors.

A general analysis of the dynamics of complexity indices for product groups of Ukraine's imports from the EU for the period 2016–2023 shows several key trends: a gradual decrease in the share of low-tech goods, stability of high-tech groups until 2021 with a peak value in 2020. Since 2022, significant structural changes have occurred in imports, the PCI has decreased sharply, which was accompanied by an increase in the share of

low-tech goods (in particular, mineral fuels) and a reduction in imports of high-tech products (such as equipment, electronics, motor vehicles). Analysis of the structure of Ukraine's exports to the EU for the period 2016–2023 under the duty-free regime demonstrates negative dynamics of the level of technological complexity of products, exports are mostly based on products with low technological complexity, such as grains, ores, fats and oils (*Table 5*).

Table 5

Standardized PCI values of Ukraine's exports in trade with the EU by groups of duty-free products under the DCFTA in 2016–2023

Indicator	2016	2017	2018	2019	2020	2021	2022	2023
72 ferrous metals								
Share, % of the total	20	18	18	15	13	20	10	9
Average PCI	0.449	0.449	0.449	0.449	0.449	0.449	0.449	0.449
PCI in the structure of	0.088	0.079	0.079	0.066	0.060	0.091	0.045	0.042
10 cereals								
Share, % of the total	10	10	11	12	9	7	17	20
Average PCI	–1.057	–1.057	–1.057	–1.057	–1.057	–1.057	–1.057	–1.057
PCI in the structure of	–0.100	–0.103	–0.116	–0.131	–0.098	–0.076	–0.177	–0.207
85 electrical vehicles								
Share, % of the total	12	12	12	11	12	10	8	6
Average PCI	0.861	0.861	0.861	0.861	0.861	0.861	0.861	0.861
PCI in the structure of	0.104	0.102	0.104	0.097	0.103	0.083	0.072	0.055
15 fats and oils of animal or vegetable origin								
Share, % of the total	9	8	5	7	10	9	11	13
Average PCI	–0.853	–0.853	–0.853	–0.853	–0.853	–0.853	–0.853	–0.853
PCI in the structure of	–0.074	–0.069	–0.046	–0.062	–0.083	–0.075	–0.094	–0.109
26 ores, slags and ashes								
Share, % of the total	7	9	9	9	8	11	9	7
Average PCI	–1.306	–1.306	–1.306	–1.306	–1.306	–1.306	–1.306	–1.306
PCI in the structure of	–0.095	–0.118	–0.121	–0.115	–0.106	–0.147	–0.112	–0.093
12 seeds and fruits of oilseeds								
Share, % of the total	5	6	6	8	6	6	10	8
Average PCI	–1.430	–1.430	–1.430	–1.430	–1.430	–1.430	–1.430	–1.430
PCI in the structure of	–0.066	–0.092	–0.085	–0.108	–0.091	–0.079	–0.149	–0.119
44 wood and wood products								
Share, % of the total	6	5	5	5	5	5	6	5
Average PCI	–0.959	–0.959	–0.959	–0.959	–0.959	–0.959	–0.959	–0.959
PCI in the structure of	–0.056	–0.046	–0.050	–0.047	–0.052	–0.051	–0.056	–0.051
94 furniture								
Share, % of the total	2	2	3	3	4	3	3	3
Average PCI	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261
PCI in the structure of	0.005	0.006	0.007	0.007	0.009	0.009	0.007	0.008

End of Table 5

Indicator	2016	2017	2018	2019	2020	2021	2022	2023
27 mineral fuels; oil and its distillation products								
Share, % of the total	3	3	3	3	2	2	3	1
Average PCI	–0.767	–0.767	–0.767	–0.767	–0.767	–0.767	–0.767	–0.767
PCI in the structure of	–0.020	–0.024	–0.025	–0.026	–0.018	–0.017	–0.025	–0.009
23 residues and waste from the food industry								
Share, % of the total	3	3	3	3	3	2	2	3
Average PCI	–0.829	–0.829	–0.829	–0.829	–0.829	–0.829	–0.829	–0.829
PCI in the structure of	–0.026	–0.023	–0.021	–0.021	–0.021	–0.015	–0.015	–0.028
84 nuclear reactors, boilers, machinery								
Share, % of the total	3	3	2	3	3	2	2	2
Average PCI	0.601	0.601	0.601	0.601	0.601	0.601	0.601	0.601
PCI in the structure of	0.016	0.015	0.015	0.015	0.018	0.014	0.013	0.012
73 ferrous metal products								
Share, % of the total	2	2	2	2	2	2	2	3
Average PCI	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049
PCI in the structure of	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Others up to 2%								
Share, % of the total	20	20	20	20	22	20	17	19
Average PCI	–0.233	–0.234	–0.222	–0.223	–0.266	–0.254	–0.208	–0.207
PCI in the structure of	–0.046	–0.046	–0.045	–0.044	–0.059	–0.051	–0.035	–0.040
TOTAL PCI in the structure	–0.269	–0.317	–0.304	–0.369	–0.338	–0.314	–0.526	–0.538

Source: calculated by the authors.

For exports from 2016 to 2023, the largest product group is the ferrous metals group. The PCI for this product group is positive, which allows us to consider this group as technologically complex. The electrical machinery product group has a high PCI index with a twofold decrease in its share in the export structure since the entry into force of the DCFTA Agreement. Grain products have low technological complexity, and their share in the export structure to the EU countries decreases significantly by 2021, which indicates a decrease in the role of this group in exports. A significant increase in the share of grain exports in the overall structure in 2022 and 2023 negatively affected the overall export complexity index. Exports of the animal or vegetable fats and oils product group have positive dynamics, while this product group has a negative complexity index, which negatively affects the overall export complexity index.

Analysis of the dynamics of PCI complexity indices for the main product groups of Ukrainian exports to the EU in the period 2016–2023 demonstrates several key trends: stability or minor fluctuations for groups with high PCI in 2016–2021 and a decline since 2022; raw materials with low technological complexity continue to dominate exports, products with medium complexity

(furniture, ferrous metal products) demonstrate a slight increase in their share in the export structure. In general, Ukraine remains strongly oriented towards the export of raw materials and low-tech goods, which has especially intensified since 2022. The dynamics of the technological complexity indices of products by customs tariff groups illustrates that the weighted average PCI for exports and imports has a negative trend (*Figure 2*).

Figure 2. Dynamics of Ukraine's exports and imports in the DCFTA with the EU by customs tariffs in 2016–2023

Source: compiled by the authors.

For groups of goods with a duty-free regime, the complexity index for exports has been gradually decreasing since 2016 with a sharp decline starting from 2022 (study *Figure 2*). For imports, there is an increase in the PCI from 2016 to 2021 with a further significant decline. A similar trend is observed for the group of goods with customs rates up to 5%, for which the complexity index for exports demonstrated some stability in negative values, but significantly decreased from 2022. In general, there is weak progress in the technological complexity of products exported within this rate. For imports in this category, the index has a negative trend, reaching a negative value in 2023.

The group of goods with customs rates from 5 to 10% has an even more pronounced trend of decreasing the technological complexity of export and import products. A sharp decrease in the complexity index for exports starting from 2021 indicates a decrease in the share of technological products in this category. The dynamics of the import complexity index indicates that there is a decline in the technological complexity of imported products in this category at customs rates.

For groups of goods in the category with customs rates from 10 to 15% in exports, the PCI indicator remains negative, but demonstrates some volatility, which indicates the instability of the composition of exported products in this rate group. For imports, the PCI demonstrates stability at a level close to zero with a positive value in 2023, which may indicate a gradual increase in the technological complexity of imported products in the last year of the period under review.

Thus, export trends indicate a consistently low level of technological complexity of products at all customs rates. The worst indicators are recorded in the range of rates of 5–10% and the duty-free regime, which indicates the low competitiveness of Ukrainian exports in these segments. For imports, in all rate groups except 10–15%, a deterioration in the technological complexity of products is observed after 2020. The 10–15% group shows positive dynamics in 2023, indicating a possible increase in imports of products with greater complexity.

3. Technological imbalances in trade relations between Ukraine and the EU under the DCFTA

The analysis of the complexity indices of exports and imports of products by customs tariff groups allows us to proceed to a quantitative assessment of the level of technological disparities in trade relations between Ukraine and the EU within the framework of the DCFTA. For the assessment, we will use the technological pressure indicator (*TP – technological pressure*) proposed in the authors' previous work (Kalyuzhna & Dashkov, 2024), which is calculated as the difference between the values of the weighted average complexity indices of the country's imports and exports:

$$TP = \overline{PCI}(imp) - \overline{PCI}\ (exp),$$

where: *PCI (imp)* – weighted average import complexity index;
PCI (exp) – weighted average export complexity index.

The weighted average import and export complexity indices are calculated as:

$$\overline{PCI}(imp) = \frac{\sum_{i=1}^{n} (PCI_i(imp) \times w_i)}{\sum_{i=1}^{n} w_i},$$

$$\overline{PCI}(exp) = \frac{\sum_{j=1}^{m} (PCI_j(exp) \times v_j)}{\sum_{j=1}^{m} v_i},$$

where: PCI_i (*imp*), PCI_j (*exp*) – complexity indices of the i imported and j exported goods, respectively;

w_i – share of the i goods in the total import value;

n – total number (nomenclature) of imported goods;

v_j – share of the j goods in the total export value;

m – total number (nomenclature) of exported goods.

The technological pressure indicator reflects technological disparities between trading partners and allows us to assess the level of dependence of a country participating in a trading pair on imports of high-tech goods compared to exports of products of a lower technological level. The results of calculating the indicator make it possible to determine which products a country exports and imports by the level of technological complexity, as well as to find out whether it is an exporter or importer of high-tech goods. This allows us to assess the degree of technological development of the country, its dependence on external sources of advanced technologies and high-tech imports from trading partners. A high value of the technological pressure indicator for a country indicates that imported goods are much more technologically complex than exported ones, which indicates a significant dependence on imports of high-tech products. This, in turn, can limit the country's economic development and pose risks to its economic security. In contrast, a low or negative value of the technological pressure indicator indicates parity in the technological complexity of imported and exported goods, which indicates a country's high technological potential and its strong competitive position in global markets.

The dynamics of the technological pressure indicator of Ukraine's trade relations with the EU countries in terms of customs tariffs under the DCFTA Agreement in 2016–2023 are presented in *Table 6*.

Table 6

Dynamics of technological pressure in Ukraine's trade relations with the EU in terms of customs tariffs under the DCFTA

Group of customs tariffs, %.	2016	2017	2018	2019	2020	2021	2022	2023
0 (No duty)	0.525	0.590	0.579	0.683	0.658	0.610	0.578	0.637
0-5	0.527	0.534	0.496	0.491	0.454	0.502	0.332	0.216
5-10	0.412	0.436	0.427	0.527	0.467	0.677	0.667	0.664
10-15	0.192	0.177	0.137	0.147	0.182	0.073	0.114	0.268

Source: calculated by the authors.

As can be seen from *Table 6*, the highest technological pressure was observed in the group of products with a duty-free regime, which indicates an increase in Ukraine's dependence on imports of technologically complex goods. The increase in technological pressure in this group of products emphasizes that imported goods significantly exceed exported goods in terms of technological complexity.

For the group of products with customs rates up to 5%, the values of the technological pressure indicator fluctuated throughout the period. The highest indicator was recorded in 2017, after which a tendency to decrease in pressure was observed. The value of the technological pressure indicator gradually decreased, which is a positive factor, but in 2022–2023 it fell significantly, reaching a minimum in 2023. Such dynamics cannot be interpreted positively, because the factor of this decline is a significant decline in imports of technologically complex products – that is, the country is losing segments of the economy that attract such imports.

In the group with customs rates from 5 to 10%, the lowest value of the technological pressure indicator was recorded in 2016, after which a trend of increasing technological disparities with some fluctuations was observed. The growth of technological pressure is a negative trend, indicating a deepening technological asymmetry in trade between Ukraine and the EU. High values in 2022–2023 demonstrate the continued dependence on technology imports.

The value of the technological pressure indicator in the group with customs rates from 10 to 15% varied, demonstrating unstable dynamics. The lowest indicator was recorded in 2018, and growth began after 2020. In 2022, the indicator value increased and reached its maximum in 2023. This indicates an increase in dependence on imports, especially in conditions of a decrease in technologically complex exports. The trend for this group indicates a growing imbalance in bilateral trade, especially after 2020. The increase in technological pressure in 2022–2023 indicates a deterioration in the technological structure of exports and increased dependence on imported technologies.

In general, the increase in technological pressure in all product groups indicates that Ukraine is facing a technological deficit, as imported goods have a higher technological complexity than exported ones. This may lead to a decrease in the competitiveness of Ukrainian goods on the world market. It is worth noting that, despite the reduction of tariffs and improved access to EU markets under the DCFTA agreement, there is a reverse trend towards an increase in the technological gap in bilateral preferential trade.

Conclusions

The assessment results of technological disparities in Ukraine's trade with the EU within the DCFTA framework confirm the hypothesis of a negative trend in the dynamics of technological complexity of Ukrainian exports and imports. Technological disparities in preferential trade between Ukraine and the EU, as well as the tendency to their deepening, are obviously due to asymmetric levels of economic and technological development. The opening of the domestic market to more technologically advanced trading

partners leads to significant pressure on domestic producers, who face competition from products with higher added value and innovative potential. Although the opening of the domestic market can provide a certain impetus for the integration of new technologies, this effect is limited. The constant increase in technological pressure leads to the fact that national producers face additional difficulties in maintaining competitiveness, as well as the need to implement modern technological solutions, which requires significant investments and modernization of production.

When analyzing international preferential agreements from the point of view of technological pressure, it is necessary to take into account the need for protectionism of underdeveloped sectors of the economy. Opening markets to more technologically advanced partners may have an ambiguous impact on sectors that are unable to compete at the proper level. Under such conditions, protectionist measures, such as temporary restrictions on imports or support for national producers, may be justified to protect economically vulnerable sectors. This allows for a gradual increase in the technological complexity of products and adaptation of national producers to the conditions of tougher competition, which will contribute to a decrease in technological pressure in the long term.

Therefore, the authors suggest prospects for further research in substantiating objective criteria for selecting sectors of the economy that require additional support and a gradual increase in competitiveness in the context of deepening Ukrainian-European trade integration. For the state, such prioritization is the basis for developing balanced foreign trade strategies that take into account both the need to open markets and introduce new technologies, as well as the need to protect national producers in key but weaker sectors.

REFERENCE/СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ

Anzolin, G., & Benassi, C. (2024). How do countries shift their export specialization? The role of technological capabilities and industrial policy in Ireland, Spain and Sweden (1995–2018). *Socio-Economic Review*, *22*(4), 1811–1841. https://doi.org/10.1093/ser/mwae010

Bernatonyte, D. (2015). Estimation of export specialization: Lithuanian case. *Equilibrium*, (3), 129. https://doi.org/10.12775/EQUIL.2015.028

Costa, L. T., Costa, K. V., & Castillo, M. R. (2023). Geographical and sectoral specialization of Brazilian value-added exports. *Revista Brasileira de Inovação*, (22), 1–34. http://dx.doi.org/10.20396/rbi.v22i00.8669009

EU-Ukraine DCFTA. (2016). EU-Ukraine Deep and Comprehensive Free Trade Area. *European Commission. Official site*. https://trade.ec.europa.eu/access-to-markets/en/content/eu-ukraine-deep-and-comprehensive-free-trade-area

Hidalgo, César A., & Hausmann, R. (2009). The Building Blocks of Economic Complexity. *Proceedings of the National Academy of Sciences*, *106*(26), 10570–10575. https://doi.org/10.1073/pnas.0900943106

Hossain, M. E., Dechun, H., Zhang, C., Molnar, V., & Del Prado, M. A. (2021? June). Specialization and Market Penetration of Bilateral Trade between Peru and United States: An Exploratory Analysis. *Journal of Economics and Sustainable Development*. http://dx.doi.org/10.7176/JESD/12-12-11

Ishchuk, S. O., Polyakova, Yu. V., & Protsev'yat, O. S. (2021). Structure and dynamics of Ukrainian commodity exports. *Regional Economy*, (1), 20–30. https://doi.org/10.36818/1562-0905-2021-1-3

Іщук, С. О., Полякова, Ю. В., & Процев'ят, О. С. (2021). Структура та динаміка українського товарного експорту. Регіональна економіка, (1), 20–30. https://doi.org/10.36818/1562-0905-2021-1-3

Kalyuzhna, N. H., & Dashkov, S. I. (2024). Assessment of technological pressure in Ukraine-EU trade. *Foreign Trade: Economics, Finance, Law*, *4*(135), 69–85. https://doi.org/10.31617/3.2024(135)05	Калюжна, Н. Г., & Дашков, С. І. (2024). Оцінка технологічного тиску в торгівлі України та ЄС. *Зовнішня торгівля: економіка, фінанси, право*, *4*(135), с. 69–85. https://doi.org/10.31617/3.2024(135)05
Kalyuzhna, N. H., & Dashkov, S. I. (2023). Technological specialization of exports as a factor of economic growth. *Foreign Trade: Economics, Finance, Law*, *6*(131), 4–20. https://doi.org/10.31617/3.2023(131)01	Калюжна, Н. Г., & Дашков, С. І. (2023). Технологічна спеціалізація експорту як чинник економічного зростання. *Зовнішня торгівля: економіка, фінанси, право*, *6*(131), 4–20. https://doi.org/10.31617/3.2023(131)01
Lee, J. (2011). Export specialization and economic growth around the world. *Economic Systems*, *35*(1), 45–63. https://doi.org/10.1016/j.ecosys.2010.11.002	
Lyashok, A., & Taranyuk, O. (2024). Analysis of Ukraine's foreign trade activities. *Kyiv Economic Scientific Journal*, (7), 90–95. https://doi.org/10.32782/2786-765X/2024-7-13	Ляшок, А., & Таранюк, О. (2024). Аналіз зовнішньоторговельної діяльності України. *Київський економічний науковий журнал*, (7), 90–95. https://doi.org/10.32782/2786-765X/2024-7-13
Lyzun, M., Vitálišová, K., & Borseková, K. (2024). Transformation of trade flows between the EU and Ukraine in the conditions of increasing security risks. *Journal of European Economy*, *23*(2), 289–305. https://doi.org/10.35774/jee2024.02.289	
Marunyak, Ye. O., Lazhnik, V. Y., & Puhach, S. O. (2023). Spatial differentiation of commodity trade of Ukraine with EU countries. *Ukrainian Geographical Journal*, *2*(122), 13–24. https://doi.org/10.15407/ugz2023.02.013	Маруняк, Є. О., Лажнік, В. Й., & Пугач, С. О. (2023). Просторова диференціація товарної торгівлі України з країнами ЄС. *Український географічний журнал*, *2*(122), 13–24. https://doi.org/10.15407/ugz2023.02.013
Nepelski, D., & De Prato, G. (2020). Technological complexity and economic development. *Review of Development Economics*, *24*(2), 448–470. https://doi.org/10.1111/rode.12650	
Pyroh, O. V., Kolinko, N. O., & Berdey, N. V. (2024). Ukraine's external trade position in the EU: Study of trends during martial law. *Management and Entrepreneurship in Ukraine: Stages of Formation and Development Problems*, *2*(12), 323–332. https://doi.org/10.23939/smeu2024.02.323	Пирог, О. В., Колінко, Н. О., & Бердей, Н. В. (2024). Зовнішня торговельна позиція України у ЄС: вивчення тенденцій зміни у період дії воєнного стану. *Менеджмент та підприємництво в Україні: етапи становлення та проблеми розвитку*, *2*(12), 323–332. https://doi.org/10.23939/ smeu2024.02.323
Saboniene, A., Masteikiene, R., & Venckuviene, V. (2013). Lithuania's Export Specialization According to Technological Classification. *Mediterranean Journal of Social Sciences*, *4*(11), 346–351. http://dx.doi.org/10.5901/mjss.2013.v4n11p346	
Tur, O. V., Lyashevska, V. I., & Kuts, N. V. (2024). Trends in the formation of Ukraine's commodity exports under military aggression. *Problems of Modern Transformations. Series: Economics and Management*, (16). https://doi.org/10.54929/2786-5738-2024-16-03-06	Тур, О. В., Ляшевська, В. І., & Куц, Н. В. (2024). Тенденції формування товарного експорту України в умовах військової агресії. *Проблеми сучасних трансформацій. Серія: економіка та управління*, (16). https://doi.org/10.54929/2786-5738-2024-16-03-06
Zakrajsek, E., & Harrigan, J. (2006). Factor Supplies and Specialization in the World Economy. *Federal Reserve Bank of New York Research Paper Series*, Staff Report, (107), 51 p. https://doi.org/10.2139/ssrn.933375	

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ESG INVESTMENT STRATEGIES

The key directions of social and economic development of any country today are associated with the concept of establishing a balance between meeting the needs of humanity and preserving the interests of future generations. In the context of the implementation of the sustainable development program, the international investment market has undergone radical changes. Foreign investors are oriented towards cooperation provided that they comply with the principles of sustainability and transparency of activities. The aim of the research is to study the impact of responsible investing on the process of activating foreign investment in the context of the Ukrainian economy post-war reconstruction. The research is based on the hypothesis of the positive impact of implementing the principles of environmental, social and governance (ESG) sustainability in the activities of national companies in order to more actively attract foreign investment into the real sector of the economy. The main research methods are systemic and comparative analysis; methods of theoretical generalization, grouping and abstraction; induction and deduction; statistical methods of collecting and processing information. The research was carried out using materials from reports of international organizations, the European economic database, and scientific works of foreign and Ukrainian scientists. The opinions of global investors and consultants in various areas of

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СТРАТЕГІЇ ESG-ІНВЕСТУВАННЯ

Ключові напрями соціально-економічного розвитку будь-якої країни сьогодні пов'язані з концепцією встановлення балансу між задоволенням потреб людства та збереженням інтересів майбутніх поколінь. В умовах реалізації програми сталого розвитку зазнав кардинальних змін міжнародний інвестиційний ринок. Іноземні інвестори орієнтовані на співпрацю за умови відповідності принципам сталості та прозорості діяльності. Метою статті є виявлення потенціалу та ролі відповідального інвестування в контексті залучення коштів міжнародних інституційних і приватних інвесторів для повоєнного відновлення економіки України. Дослідження базується на гіпотезі про позитивний вплив впровадження принципів екологічної, соціальної та управлінської сталості (ESG) в діяльність вітчизняних компаній з метою більш активного залучення іноземних інвестицій в реальний сектор економіки. Основними методами дослідження є системний та порівняльний аналіз; теоретичного узагальнення, групування та абстрагування, індукції та дедукції, статистичні методи збирання та обробки інформації. Дослідження виконане за матеріалами звітів міжнародних організацій, європейської економічної бази даних, наукових праць закордонних та українських учених. Викладено думки глобальних інвесторів і консультантів у різних сферах сталого розвитку.

sustainable development are presented. Global trends in responsible investment are studied. An analysis of the investment needs of the Ukrainian economy, taking into account current losses and damages in various areas and industries, showed that strategic development requires long-term investments to finance large-scale and long-term projects. The feasibility of using project financing for the development of the real sector of the Ukrainian economy is substantiated. Analysis of ESG ratings and GDP per capita indicators showed that the implementation of sustainable development principles is more relevant for high-income countries. A phased integration of ESG standards for Ukrainian enterprises interested in foreign investments was proposed. The main barriers to the implementation of ESG principles in the corporate policy of companies were systematized. Studying the experience of the international business community has allowed us to identify the main advantages of introducing sustainable investing into business practice.

Keywords: responsible investing; project finance; sustainable development; environmental, social and governance (ESG) factors; post-war reconstruction.

Досліджено глобальні тренди відповідального інвестування. Проведений аналіз потреб української економіки в інвестиціях з урахуванням поточних втрат і збитків у різних сферах та галузях показав, що для стратегічного розвитку необхідні довготермінові інвестиції для фінансування великомасштабних і довгострокових проєктів. Обґрунтовано доцільність використання проєктного фінансування для розвитку реального сектору економіки України. За результатами аналізу рейтингів ESG та показників ВВП на душу населення визначено, що впровадження засад сталого розвитку більш актуальне для країн з високим рівнем доходів. Запропоновано поетапне інтегрування ESG-стандартів для зацікавлених в іноземних інвестиціях українських підприємств. Систематизовано основні бар'єри впровадження принципів ESG в корпоративну політику компаній. Вивчення досвіду міжнародної бізнес-спільноти дозволило визначити основні переваги запровадження сталого інвестування в практику бізнесу.

Ключові слова: відповідальне інвестування, проєктне фінансування, сталий розвиток, екологічні, соціальні та управлінські чинники (*ESG*), повоєнне відновлення.

JEL Classification: F21, G24, O16, O19.

Introduction

Investment is a significant factor in economic development and increasing competitiveness in international markets. For Ukraine, attracting investment is also a guarantee of reconstruction and development in the post-war period, primarily in the real economy sector, which requires significant financial investments for the implementation of large-scale long-term projects.

Despite the high investment potential of many areas of activity in Ukraine, even in the pre-war period there was an outflow of foreign direct investment (FDI) from Ukraine. According to the Ministry of Finance of Ukraine (2025, January 1), in 2022, which began with a full-scale invasion of Ukraine by the Russian Federation, the FDI total amount decreased by 73% compared to the previous year, but the balance remained positive (+623 million USD), in 2023 the volume of receipts increased (+3.1 billion USD); in 2024, 3.1 billion USD of FDI was received, which is 1.1 billion USD more than in 2019 and less than in 2023. It is obvious that such volumes of foreign direct investment do not meet the needs of Ukraine. For example, the FDI volume in Poland amounted to 29 billion USD in 2023 (Statista, 2024, July 24).

For foreign investors, the conditions for investing capital in Ukraine are associated with a high risk of asset loss and uncertainty. At the same time, in the conditions of the formation and implementation of sustainable development policies in the world, a record growth in investments in ESG

projects aimed at preserving the environment, solving social problems and issues of quality management, compliance with the principles of responsible investment becomes a key issue for investors. According to the forecast of PwC, by 2026, institutional investments focused on ESG will reach 33.9 trillion USD (PwC, 2022, October 10). The share of investors who take into account sustainability criteria when making investment decisions is increasing every year. The activation of foreign investment in Ukraine requires the introduction of ESG standards into the activities of state institutions and Ukrainian businesses.

The problematic issues of implementing ESG approaches and investment attractiveness of investment objects have been studied by many national and foreign scholars. The impact of a full-scale war on the implementation of sustainable development principles is considered in the Pshenichna's study (2022). The author conducted the research of global trends in assessing the investment attractiveness of an object from the perspective of non-financial factors and business reputational characteristics. In particular, she emphasizes that the level of involvement of Ukrainian business in the processes of implementing ESG factors is insufficient against the background of growing interest in responsible business conduct on the part of foreign investors.

A group of researchers emphasizes the need to change the legal mechanism for implementing projects with significant investments in order to effectively implement the European Union's financial support program for Ukraine. The scientists have formulated clear proposals for improving the organizational and legal mechanism for interacting with investors. At the same time, the issue of monitoring compliance with environmental and social requirements during the implementation of such projects is indirectly mentioned by the authors (Naumenkova et al., 2024).

The evolution of the ESG practices implementation using the example of foreign companies was studied by Dyba & Gernego (2022, p. 46–55). The authors proposed measures to stimulate financial support for ESG investment projects in Ukraine for the national, industry and individual counterparty levels.

The peculiarities of foreign investor behavior were considered by Shubaly (2023). According to the author, an increase in the amount of direct investment in Ukraine depends on security risks and will become possible after the end of the war or its active phase. However, the author does not take into account the change in the global investment landscape and the emergence of investment criteria, which also affect the possibilities of obtaining foreign investment in the conditions of implementing the principles of sustainable development.

Bagatska (2024) provides methods of financing infrastructure projects in territorial communities in her research. The author proposes to use

combined forms of financial support for the restoration of the infrastructure of territorial communities in Ukraine, including using project financing for the implementation of public-private partnership projects.

The issue of implementing an ESG strategy as an important tool for sustainable development, which allows enterprises to integrate environmental, social and governance standards, is considered in Livoshko's work (2022), which substantiates the significance of ESG investing in the process of transformation to a low-carbon economy and its impact on the competetiveness of enterprises in the current conditions. The study of modern investment trends allowed the author to conclude that investors are paying increased attention to indicators of companies' compliance with ESG criteria, international policies and procedures.

The continuation of hostilities and the increase in losses due to the armed aggression of the Russian Federation actualizes the need to study ways to increase investment attraction for the post-war reconstruction of Ukraine, taking into account changes in global investment trends and the need to implement the principles of sustainable development in national practice.

The aim of the research is to identify the potential and the role of responsible investment in the context of attracting funds from international institutional and private investors for the post-war recovery of the Ukrainian economy. The tasks to achieve the aim are to study global trends in responsible investment; analyze the needs of various areas of activity in investments in Ukraine; reveal the advantages and barriers of integrating ESG standards into the corporate policy of companies.

The research methodology is systemic and comparative analysis, methods of theoretical generalization, grouping and abstraction; induction and deduction; statistical methods of collecting and processing information.

The hypothesis is put forward that the implementation of ESG principles in the activities of national companies will contribute to attract foreign investment, the development of project financing in Ukraine for its post-war recovery.

The information base of the research was materials from reports of international organizations, the Ministry of Finance of Ukraine (Ministry of Finance of Ukraine, 2025), the World Bank Group (World Bank Group, n. d.), the German online platform Statista (2024, July 24; 2024, October 15), scientific works of foreign and Ukrainian scientists, expert opinions of global investors and consultants in various areas of sustainable development are provided. The first section of the main content part of the article is devoted to the study of modern global trends in responsible investment. The second section assesses the investment needs of various industries and spheres of activity of Ukraine in recovery and reconstruction. The third section reveals practical aspects of integrating ESG practices into the corporate policy of Ukrainian companies.

1. Global trend in responsible investment

Responsible investment is a priority and long-term trend in the global market. In the current environment, the selection of projects for the investment portfolio by Western investors and lenders is carried out not only by analyzing financial indicators, but also taking into account a number of non-financial aspects, which allows you to avoid investing in projects that do not meet the criteria of sustainable development, the activities of which contradict the values of the investor or lender.

An important criterion for making investment decisions by foreign investors until recently was socially responsible investment (SRI), known as sustainable investment. SRI refers to investment strategies that seek not only to provide financial returns, but also to comply with moral values and have a positive impact on society. This may be a simple refusal to invest in any industry that the investor considers morally questionable (for example, alcohol or tobacco production), or a complex process of a large investment fund that studies investment opportunities based on key performance indicators in the environmental and social spheres. Since SRI standards preceded ESG standards in foreign countries, adaptation to new standards for foreign companies has not become a significant challenge. In the USA, SRI has been implemented since the 1960s. Ukrainian business has not gained such experience and is only beginning to implement it in its corporate policy.

After the UN Global Compact came into force in 2000, the principles of socially responsible investment were further developed and reflected in 10 basic principles, combined into three interrelated groups of ESG factors: environmental (environmental conservation); social (attention to people and relationships); governance (quality of company management).

Environmental issues play a key role in the responsible investment system. They directly relate to the future activities of the project, the location of the main construction sites and necessary infrastructure, and their potential impact on the environment. The issue of proper disposal of material resources after the completion of the project life cycle is important. Social aspects of responsible financing include human rights, in particular labor law, working conditions and their payment. It also provides for tracking the supply chain of materials to avoid their receipt from countries that do not comply with ESG standards and may damage the reputation of the project company. Corporate governance has various aspects of business: the activities of supervisory bodies (separation of the project company from the sponsor, lender, holding company), compliance with the policy of compliance with established norms, control procedures; requirements for disclosure and reporting; transaction management; cybersecurity issues; fight against corruption; compliance with trade norms, which involves refusing to cooperate with customers, suppliers, distributors or other counterparties on whom blocking sanctions have been imposed (such as, for example, sanctions on Russian legal entities and individuals imposed by the US in response to russia’s invasion of Ukraine).

According to the CFA Institute (2024, March 4), there are key differences between SRI and ESG: while SRI models use value judgments and are aimed at negative selection of projects to decide which companies are worth investing in or not, ESG analysis is aimed at finding the value of companies, and not just supporting a set of values.

The implementation of responsible investing, in which investors expect not only financial benefits, but also a positive impact of the project on the environment and society, allows for a higher probability of attracting foreign investment capital, which, in turn, contributes to the economic development of the country and positive GDP growth.

In recent years, it has become common practice to determine ESG ratings of countries and companies on a global scale. Analysis of the ESG rating and GDP per capita in countries with the highest ESG rating showed that countries with a high overall indicator of implementation of sustainable development principles are characterized by a correspondingly high level of GDP per capita in nominal terms (*Figure 1*).

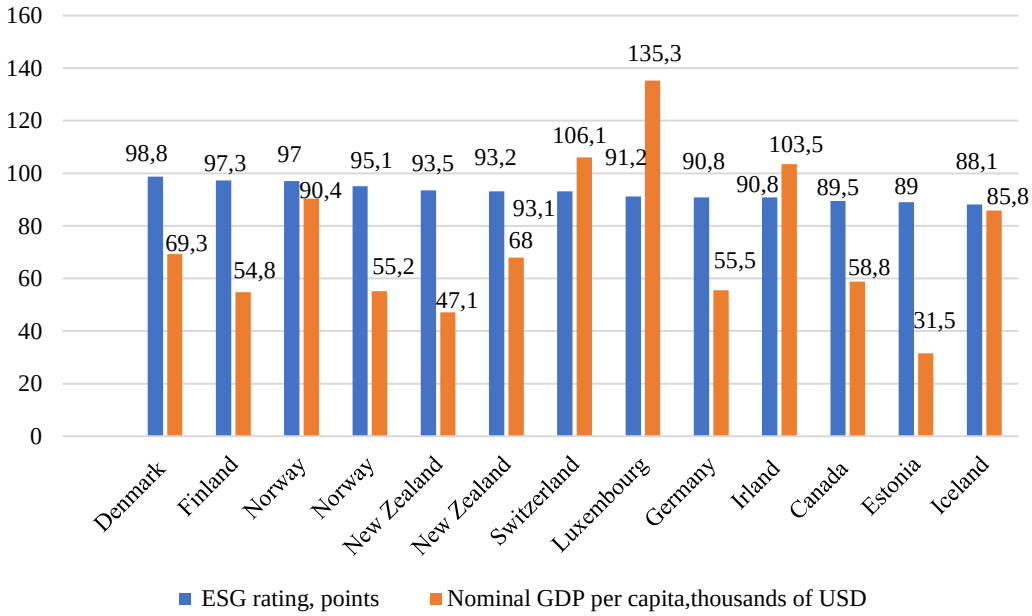

Figure 1. ESG rating and nominal GDP per capita, 2024

Source: compiled by the authors according to (Statista, 2024, October 15; STATISTICS TIMES, 2024, October).

European countries Luxembourg, Ireland, Switzerland are leaders in terms of GDP per capita and are also among the top 10 countries in the world according to the ESG rating. Ukraine is ranked 141st in this rating in terms of GDP per capita (5.5 thousand USD). Despite the growing importance of ESG in the country, quite a few Ukrainian companies that need external financing plan budgets for ESG, for conducting due diligence to provide an objective idea of the investment object for potential investors, lenders and other project participants.

Europe is a leader in the implementation of ESG standards, European investors consider them as a key investment principle, 93% of ESG users are located in Europe, while in North America – 79%, in the Asia-Pacific region – 88% (Harvard Law School Forum on Corporate Governance, 2022, June 17). Thus, the European ESG market is more mature and has an appropriate regulatory framework in place.

Regarding the financial performance of companies with the highest ESG ratings, studies have shown that they have higher profits compared to companies with low ratings, their stocks are more reliable, there is a lower probability of significant price declines and a lower probability of bankruptcy (Eccles & Klimenko, 2019).

Project financing is the preferred form of financial support for real sector projects, which involves raising funds from external sources for a long period of time in significant amounts and on the terms of their return after the project is completed. In project financing, the concept of social and environmental responsibility is not new, since international standards – the Equator Principles (a set of rules for financial and credit institutions to make decisions on financing projects of 10 million USD or more) were created back in 2003. The rules provide for financing only socially responsible and environmentally safe projects and are aimed at identifying negative factors that reduce the effectiveness of existing Equator Principles mechanisms in global and national financial markets. Responsible investment also significantly changes the landscape of project financing, which must be taken into account by potential customers (owners, developers) and other key project participants. Investment projects that meet environmental, social and governance standards are prioritized in order to obtain financing on more favorable terms.

2. Analysis of Ukraine's recovery and reconstruction needs

The consequences of the Russian aggression have led to large-scale losses in the field of commercial and residential real estate, social infrastructure and services, energy, transport; in addition, they have a devastating impact on the environment. Since the beginning of the full-scale war in Ukraine, about a third of enterprises have ceased or limited their activities.

The problem of post-war recovery and compensation for losses incurred as a result of the armed aggression of the russian federation is acute for both business and the population of Ukraine. A preliminary assessment of the destruction, losses and needs of Ukraine is being carried out by joint efforts of the World Bank, the Government of Ukraine, the European Commission and the United Nations with the support of other partners.

From the beginning of the full-scale war to the end of 2023, an assessment was carried out in various areas of activity, the total amount of needs for 10 years as of December 31, 2023 was almost 487 billion US dollars (*Figure 2*).

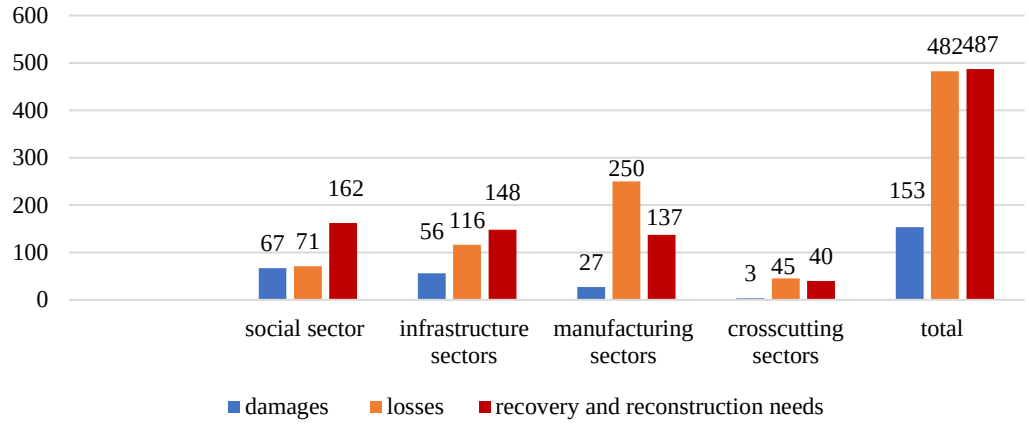

Figure 2. Amount of damage, losses, and needs for recovery and reconstruction by sector, February 2022 – December 2024, billion USD

Source: compiled by the authors according to (World Bank Group, n. d.).

In monetary terms, the amount of damage, losses, and the need for funds for reconstruction are constantly growing. According to a study by the Kyiv School of Economics (Kyiv School of Economics, 2024), by the beginning of April 2024, direct losses due to the war in Ukraine in various areas amounted to about 150 billion USD, with the largest losses suffered by the housing stock, transport infrastructure, industrial sector, construction and services, agro-industrial complex, and land resources (*Figure 3*).

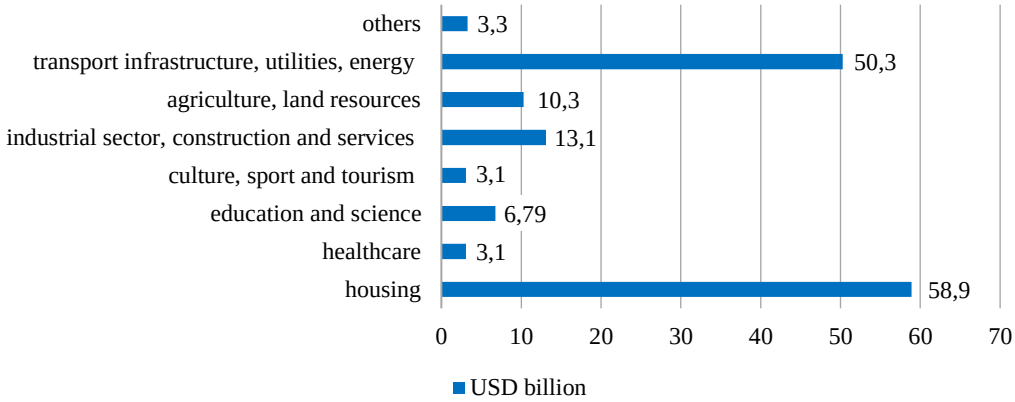

Figure 3. Losses (direct losses) by sectors, Ukraine, April 2024, billion USD

Source: compiled by the authors according to (Kyiv School of Economics, 2024).

Ukraine is counting on compensation for the losses caused by the Russian Federation: destruction and complete destruction of thousands of objects, but the waiting period for the receipt of reparations and compensations, taking into account foreign experience, can reach tens of years. Currently, business attention is focused on solving operational tasks, while financing long-term investment projects is significantly reduced.

The need for investment of the Ukrainian economy is largely provided by external financing. Throughout the entire period of full-scale war, Ukraine has been provided with emergency assistance by international financial institutions and governments of many countries of the world. However, for strategic development, the country needs long-term investments to finance large-scale projects with a planning period of more than 5 years. In such a situation, the basis for financing infrastructure projects, mining, energy and other sectors of the economy, commercial and residential construction, which require significant investments in the long term, can be project financing. Critical aspects of project financing are the ability to use high leverage, off-balance sheet accounting of transactions through the creation of a special purpose vehicle (SPV), risk sharing (transfer) and achieving a balance between security and potential project returns.

Priority areas for investment in Ukrainian projects are: energy, transport, housing and communal services, social infrastructure and services, industry (including trade, agribusiness and irrigation) and services, cross-sectoral priorities (demining, telecommunications, digital and cybersecurity, etc.) (Ministry of Economy of Ukraine, 2024, July 11).

Such projects require significant capital investments in the medium and long term and can be implemented using project financing. According to the Law of Ukraine "On State Support of Investment Projects with Significant Investments in Ukraine" (2024, December 11), one of the conditions for such support is the volume of necessary investments exceeding the equivalent of 12 million euros; projects with the corresponding status in EU countries – "major project" – require financing of more than 50 million euros.

It is advisable to attract investments for the reconstruction of the country's destroyed infrastructure through the mechanism of public-private partnership (PPP), which is based on project financing. The formation of a PPP in this case allows not only to attract investments on mutually beneficial terms for the state and the private partner, but also to solve important long-term tasks of the state, increasing its competitiveness. World experience proves that PPP project financing is optimal compared to budgetary and corporate, since, in addition to the above advantages, it does not require additional (other than state) guarantees when lending.

The FDI volume in Ukraine remains insignificant due to high security risks, the lack of a mechanism for insurance of military risks and the provision of guarantees. West ern investors currently prefer to finance existing assets and companies, rather than new ones. To change the situation, it is not enough to end hostilities; Ukraine needs a vision and development strategy, identifies growth sectors, and forms a high-quality portfolio of investment projects to attract foreign investment.

The concept of sustainable development in the modern globalized world affects the development of investment activities and project financing in particular, changing the criteria for such investment.

3. Integrating ESG standards into corporate policy

The inevitability of the transition to responsible (sustainable) investment in Ukraine, despite the difficulties, is obvious, since such activities have already become the norm in certain industries, for example, in the construction of any real estate. The implementation of ESG principles in the practice of Ukrainian development increases the level of its transparency, international image and investment attractiveness of the Ukrainian market (Ganechko, 2023).

Currently, Europe plans to be the first climate-neutral continent, the European Green Deal provides for achieving climate neutrality of the European Union by 2050 and progress towards achieving the UN Sustainable Development Goals by 2050. In this regard, Ukraine needs not only changes to the regulatory framework to move towards climate neutrality together with the EU, but also such a reorientation of the activities of companies, financial institutions, investors and other stakeholders that would meet the criteria of sustainable economic activity and allow obtaining sustainable financial products to ensure the implementation of projects.

Companies that attract investments for the purpose of implementing projects in the real sector of the economy and expect to receive foreign investments should be interested in responsible business conduct. It is obvious that global investors will participate in the reconstruction of Ukraine provided that the principles of sustainable development are observed and appropriate reporting is maintained. For economically developed countries of the world, this is not only an ethical requirement, it is a strategic need. Since investments in Ukraine for post-war reconstruction will most likely be made on the ESG basis, the implementation of relevant standards in both national policy and the activities of Ukrainian companies must be accelerated.

It is possible to distinguish the stages of integrating ESG standards into the corporate policy of Ukrainian business, which will allow attracting investments (*Figure 4*).

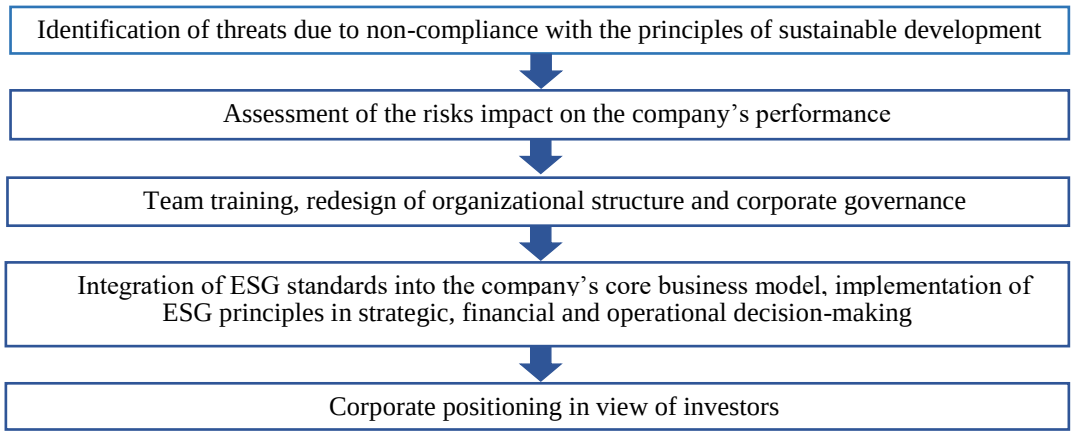

Figure 4. Stages of integrating ESG standards into corporate policy

Source: compiled by the authors according to (Kramer & Pfitzer, 2022; Bondar, 2021; Matos, 2020).

Each company has its own individual characteristics, so at the first stage it is necessary to identify an existing or potential threat due to non-compliance with the principles of sustainable development. It is important to focus on individual signals that come from customers, banks, partners and other stakeholders and may pose a threat to the formation of orders, the conclusion of any contracts, and the receipt of profit.

At the second stage, the impact of risks on the company's performance is assessed, taking into account environmental factors; safety and health of employees, their development, responsibility to customers, relations with the community and charity; management factors regarding activities in the best long-term interests of shareholders, the presence of professional and independent management, prevention of fraud and corruption.

The third stage is team training, redesign of the organizational structure and corporate governance. The logic of changes must be clear to each team member, and involvement and competence are critical success factors in implementing ESG practices. At this stage, investments in staff training and financing of employee development programs are necessary. The implementation of sustainable development practices involves the appointment of a Chief Sustainability Officer (CSO), restructuring of internal processes, and continuous data collection for regular reporting and performance measurement.

At the fourth stage, ESG standards are integrated into the company's core business model, ESG principles are taken into account when making strategic, financial and operational decisions. In order to prevent possible losses or unrealized opportunities, the implementation of ESG standards should begin as soon as possible, in particular, by joining the UN Global Compact and monitoring leading companies that are already applying sustainable development practices in Ukraine.

After completing the previous steps, at the fifth stage, appropriate changes are made to the company's positioning before investors and the image of a responsible partner is formed.

International practice of implementing sustainable development standards indicates the presence of obstacles that companies face in the new reality, which requires the analysis of environmental, social and management factors in the development and implementation of projects, the direction of capital flows into sustainable investments, the introduction of European sustainable development reporting standards.

The experience of foreign companies indicates the presence of typical barriers to the implementation of sustainable investment in project activities and the benefits of implementing ESG (*Figure 5*).

One of the main obstacles to the implementation of a sustainable development program is the lack of unified reporting standards and the need

to develop individual processes for each company that would meet the corporate needs of the business and solve the problem of forming sustainable development reporting. The issue of implementing such standards into the national reporting practice in Ukraine, how exactly it should be carried out: by developing national sustainable development reporting standards or using European analogues, remains debatable (Bezverkhyi, 2024).

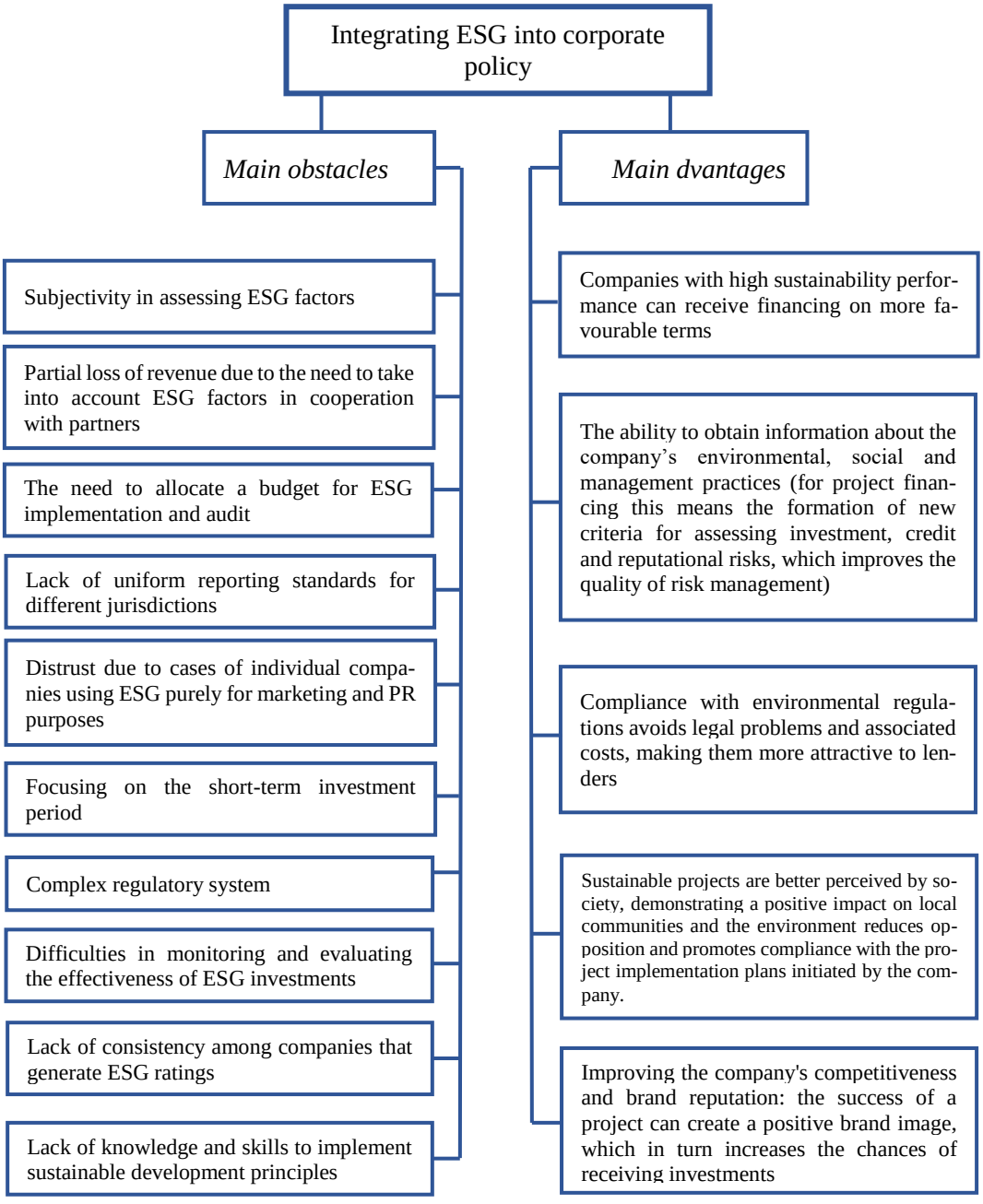

Figure 5. Obstacles and benefits of ESG implementing in the corporate policy of project companies

Source: compiled by the authors according to (Harvard Law School Forum on Corporate Governance, 2022; Harvard Law School Forum on Corporate Governance, 2024).

The ESG implementation requires certain additional costs, but in the long term there is a positive impact on the financial results of the business. Despite the existing ESG implementing difficulties in the practice of Ukrainian companies, in order to address the issues of investment deficit and attracting foreign capital from pragmatic Western business investors, it is necessary to intensify this process. Experts in this field note that only if current standards are met and activities are transparent, it is possible to obtain financing on favorable terms for the country's recovery and contribute to its more ecological future (Metzler, 2024). Responsible business conduct expands opportunities for attracting foreign investment, provides more favorable conditions for project financing, which can improve Ukraine's investment prospects in the post-war future.

Conclusions

During the years of the full-scale invasion of the Russian Federation into Ukraine, all spheres of economic activity have suffered losses; the loss of means of production is estimated at almost one trillion dollars, so the implementation of reconstruction projects requires significant investments. The annually growing volume of needs for investment resources requires the creation of a more favorable investment climate and an increase in the level of investment attractiveness of individual objects.

Modern trends in investment activity are formed under the influence of the policy of sustainable development, which has become a megatrend and has significantly influenced capital markets, forcing investors to focus not only on the financial and economic, but also on the non-financial aspects of project activity.

In developed countries of the world, compliance with ESG principles is widespread (in some jurisdictions it is mandatory) and has become an important component of corporate transparency. In contrast, in Ukraine, ESG changes occur slowly and are rarely reflected in development strategies and operational decisions. Ukraine has the status of a candidate for EU membership, and many Ukrainian companies are participants in the supply chain of European enterprises. The adopted EU Directive on corporate sustainability and comprehensive due diligence requires reporting by companies involved in the supply chains of businesses operating in the EU, even if they are not registered in the European Union themselves, so these rules directly apply to Ukrainian businesses.

Responsible investing requires the gradual integration of ESG standards into the corporate policy of Ukrainian businesses, taking into account the specifics of each company's activities and its relationships with stakeholders. The lack of unified reporting and the variability of ESG standards in different industries are the main barriers to their implementation, however, provided that ESG is taken seriously during the development and financing of the project by all participants, significant positive effects and consequences of its implementation can be expected.

The issue of attracting external investment resources for the post-war reconstruction of the economy largely depends on the implementation of ESG principles by businesses. In Ukraine, there is no data on the implementation of ESG practices, and sustainable development reporting standards have not been introduced into corporate reporting practice, which does not allow for a full assessment of the impact of the implementation of responsible investment on attracting foreign capital.

The practical significance of the research lies in the possibility of applying the results obtained to build sustainable partnerships and find reliable investment partners.

The concept of sustainable investing is complex and multifaceted, ESG factors, methods for assessing their interrelationships and impact on the interests of consumers and investors, as well as technological developments are evolving and changing, so further scientific exploration will be carried out in this direction.

REFERENCE/СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ

Bagatska, K. (2024). Financial support for infrastructure projects in territorial communities. *Scientia fructuosa*, *3*(2024), 88–104. https://journals.knute.edu.ua/ scientia-fructuosa/article/ view/2088/1896	Багацька, К. (2024). Фінансове забезпечення інфраструктурних проєктів у територіальних громадах. *Scientia fructuosa*, *3*(2024), 88–104. https://journals.knute.edu.ua/scientia-fructuosa/article/ view/2088/1896
Bezverkhyi, K. (2024). Implementation of European Sustainable Development Reporting Standards. *Foreign Trade: Economics, Finance, Law*, *2*(2024), 134–150. https://doi.org/10.31617/3.2024(133)08	Безверхий, К. (2024). Імплементація європейських стандартів звітності про сталий розвиток. *Зовнішня торгівля: економіка, фінанси, право*, *2*(2024), 134–150. https://doi.org/10.31617/3.2024(133)08
Bondar, R. (2021, December 16). In Ukraine, business pretends that ESG changes will not affect it. This is an illusion and we need to prepare now. How. *Forbes Ukraine*. https://forbes.ua/company/v-ukraine-biznes-delaet-vid-chto-esg-izmeneniya-ego-ne-kosnutsya-eto-illyuziya-i-gotovitsya-nuzhno-uzhe-kak-16122021-2951	Бондар, Р. (2021, 16 грудня). В Україні бізнес удає, що ESG-зміни його не торкнуться. Це ілюзія і готуватись треба вже. Як. *Forbes Ukraine*. https://forbes.ua/company/v-ukraine-biznes-delaet-vid-chto-esg-izmeneniya-ego-ne-kosnutsya-eto-illyuziya-i-gotovitsya-nuzhno-uzhe-kak-16122021-2951
CFA Institute. (2024, March 4). *What is ESG investing*? https://www.cfainstitute.org/insights/articles/what-is-esg-investing	
Dyba, M., & Gernego, I. (2022). ESG project financing: foreign practices and development opportunities in Ukraine. *Finance of Ukraine,* (2), 45–57. https://doi.org/10.33763/finukr2022.02.045	
Eccles, R. G., & Klimenko, S. (2019, May–June). The Investor Revolution. Shareholders are getting serious about sustainability. *Harvard Business Review*. https://hbr.org/2019/05/the-investor-revolution	
Hanechko, I. (2023). Real estate development: European trends. *Foreign trade: economics, finance, law*, *5*(2023), 97–112. https://journals.knute.edu.ua/ foreign-trade/article/view/1921/1789	Ганечко, І. (2023). Девелопмент нерухомості: європейські тренди. *Зовнішня торгівля: економіка, фінанси, право, 5*(2023), 97–112. https://journals.knute.edu.ua/ foreign-trade/article/view/1921/1789
Harvard Law School Forum on Corporate Governance. (2022, *June 17). ESG Global Study 2022.* https://corpgov.law.harvard.edu/2022/06/17/esg-global-study-2022	
Harvard Law School Forum on Corporate Governance. (2024, *June 25). ESG Engagements in 2024*. https://corpgov.law.harvard.edu/2024/06/25/esg-engagements-in-2024/	
Kramer, M., & Pfitzer. M. (2022). The Essential Link Between ESG Targets and Financial Performance. *Harvard Business Review*. https://hbr.org/2022/09/the-essential-link-between-esg-targets-financial-performance	

Kyiv School of Economics. (2024). *Report on direct infrastructure damage from destruction as a result of russia's military aggression against Ukraine as of early 2024*. https://kse.ua/wp-content/uploads/2024/04/01.01.24_Damages_Report.pdf	Київська Школа Економіки. (2024). *Звіт про прямі збитки інфраструктури від руйнувань внаслідок військової агресії росії проти України станом на початок 2024 року*. https://kse.ua/wp-content/uploads/2024/04/01.01.24_Damages_Report.pdf
Law of Ukraine "*On state support for investment projects with significant investments in Ukraine*" № 1116-IX. (2024, December 11). https://zakon.rada.gov.ua/laws/show/1116-20#Text//zakon.rada.gov.ua/laws/show/2404-17#Text	Закон України "*Про державну підтримку інвестиційних проектів із значними інвестиціями в Україні*" № 1116-IX. (2024, 11 грудня). https://zakon.rada.gov.ua/laws/show/1116-20#Text//zakon.rada.gov.ua/laws/show/2404-17#Text
Livoshko, T. (2022). Monitoring according to ESG principles and its impact on the competitiveness of business entities. *Bulletin of Khmelnytskyi National University. Economic Sciences*, *5*(1), 158–164. https://doi.org/10.31891/2307-5740-2022-310-5(1)-26	Лівошко, Т. (2022). Моніторинг за ESG-принципами та його вплив на конкурентоспроможність суб`єктів господарювання. *Вісник Хмельницького національного університету. Економічні науки, 5*(1), 158–164. https://doi.org/10.31891/2307-5740-2022-310-5(1)-26
Matos, P. (2020). ESG principles and responsible institutional investing in the world: *A critical review of research*. Lviv Polytechnic Publishing House, 88. https://ua.cfaukraine.org/wp-content/uploads/2020/12/P.Matos_ESG-PRYNTSYPY_ebook.pdf	Матос, П. (2020). ESG-принципи та відповідальне інституційне інвестування у світі: *Критичний огляд досліджень.* Видавництво Львівської політехніки, 88. https://ua.cfaukraine.org/wp-content/uploads/2020/12/P.Matos_ESG-PRYNTSYPY_ebook.pdf
Metzler, Anja. (2024, June 10). *The Future of Project Financing in Real Estate: Embracing Sustainability for Competitive Advantage. Sustainable Capital Group*. https://sustainablecapitalgroup.com/blog/the-future-of-project-financing-embracing-sustainability-for-competitive-advantage/	
Ministry of Economy of Ukraine. (2024, July 11). *Investment activity in Ukraine for the 1st quarter of 2024*. https://me.gov.ua/Documents/Detail?lang=-uk-UA&id=9cb46b66-6285-4f7f-a08e-f450f32f0-cb2&title=InvestitsiinaDiialnistVUkraini Za1-Kvartal2024-Roku	Міністерство економіки України. (2024, 11 липня). *Інвестиційна діяльність в Україні за 1 квартал 2024 року*. https://me.gov.ua/Documents/Detail?lang=uk-UA&id=9cb46b66-6285-4f7f-a08e-f450f32f0-cb2&title=InvestitsiinaDiialnistVUkraini Za1-Kvartal2024-Roku
Ministry of Finance of Ukraine. (2025, January 1). *Foreign Direct Investment (FDI) in Ukraine*. https://index.minfin.com.ua/ua/economy/fdi/	Міністерство фінансів України. (2025, 1 січня). *Прямі іноземні інвестиції (ПІІ) в Україну*. https://index.minfin.com.ua/ua/economy/fdi/
Naumenkova, S., Mishchenko, S., & Tishchenko, Ye. (2024). Project financing in the context of the implementation of the "UKRAINE FACILITY PLAN". *Economic Space,* (191), 142–153. https://doi.org/10.32782/2224-6282/191-24	Науменкова, С., Міщенко, С., & Тіщенко, Є. (2024). Проєктне фінансування в умовах реалізації "UKRAINE FACILITY PLAN". *Економічний простір,* (191), 142–153. https://doi.org/10.32782/ 2224-6282/191-24
Pshenichna, M. (2022). The impact of the full-scale russian-Ukrainian war on the practice of implementing ESG approaches by domestic enterprises. *Economy and Society*, (46). https://doi.org/10.32782/2524-0072/2022-46-64	Пшенична, М. (2022). Вплив повномасштабної російсько-української війни на практику імплементації ESG-підходів вітчизняними підприємствами. *Економіка та суспільство,* (46). https://doi.org/10.32782/2524-0072/2022-46-64
PWC. (2022, October 10). *Press Release*. https://www.pwc.com/gx/en/news-room/press-releases/2022/awm-revolution-2022-report.html	
Shubaly, O. (2023). Analysis of the behavior of European investors during the war in Ukraine. *Economic Forum, 1*(4), 50–55. https://doi.org/10.36910/6775-2308-8559-2023-4-6	Шубалий, О. (2023). Аналіз поведінки європейських інвесторів під час війни в Україні. *Економічний форум, 1*(4), 50–55. https://doi.org/10.36910/6775-2308-8559-2023-4-6
Statista. (2024, July 24). *Leading economies for foreign direct investment inflows in 2023, by country*. https://www.statista.com/statistics/964016/leading-economies-fdi-inflows-country/	
Statista. (2024, October 15). *Leading countries by Environmental, Social, and Governance (ESG) ranking worldwide in 2024, by overall ESG score*. https://www.statista.com/statistics/1498397/leading-countries-by-esg-ranking-worldwide	

STATISTICS TIMES. (2024, October). *Projected GDP per capita Ranking*. https://statisticstimes.com/economy/projected-world-gdp-capita-ranking.php

World Bank Group. (n. d.). Ukraine – Third Rapid Damage and Needs Assessment (RDNA3): February 2022 – December 2023. https://surl.li/oxkitl

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INTELLECTUAL CAPITAL VALUATION UNDER THE EU DIGITAL STRATEGY

The research explores the priorities of the EU Digital Strategy related to the use of intellectual capital, assessing its value as a key resource for innovation, corporate value creation, sustainable growth, and ensuring competitiveness. The hypothesis posits that the introduction of European approaches to the assessment of intellectual capital, aligned with the objectives of the EU Digital Strategy, will enhance the innovation potential, competitiveness, and economic resilience not only of EU member states but also of Ukraine by integrating these practices into digital transformation policies. The research methodology is based on systematic analysis, synthesis, detailing, analogy, the hypothetical-deductive method, comparison, and observation. The research results demonstrate that intellectual capital is a multifaceted and debated concept, playing a crucial role in shaping enterprise value and serving as an important indicator of its performance. However, its intangible nature, diverse

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ОЦІНКА ІНТЕЛЕКТУАЛЬНОГО КАПІТАЛУ В РАМКАХ ЦИФРОВОЇ СТРАТЕГІЇ ЄС

Досліджено пріоритети цифрової стратегії ЄС, пов'язані з використанням інтелектуального капіталу, оцінюванням його вартості як ключового ресурсу для інновацій, створення корпоративної вартості, сталого зростання та забезпечення конкурентоспроможності. Висунуто гіпотезу, що запровадження європейських підходів до оцінювання інтелектуального капіталу, що відповідають цілям цифрової стратегії ЄС, сприятиме підвищенню інноваційного потенціалу, конкурентоспроможності й економічної стійкості не лише країн – членів ЄС, але й України завдяки інтеграції цих практик у політику цифрової трансформації. Методологія дослідження базується на системному аналізі, синтезі, деталізації, аналогії, гіпотетично-дедуктивному методі, порівнянні, спостереженні. Результати дослідження демонструють, що інтелектуальний капітал є багатогранним та дискусійним поняттям, він відіграє ключову роль у формуванні вартості підприємства та є важливим індикатором ефективності його

characteristics, and manifestations complicate the processes of evaluation, accounting, reporting, analysis, and decision-making. The list of intellectual capital components has been expanded to include human, structural, relational, innovative, social, emotional, digital, customer, ecological capital, artificial intelligence capital, digital reputation capital, and intellectual property. The evaluation methodology should be flexible and adaptive, under the recognition characteristics of each component. Thus, key methods, such as market-based, cost-based, and income-based approaches, have been supplemented with non-financial, integrative, and IT-based methods to ensure the accuracy and transparency of intellectual capital evaluation for more informed decision-making and sustainable growth in the digital economy. The novelty of intellectual capital evaluation in the context of the EU Digital Strategy is based on aspects such as the integration of digital indicators to assess intangible assets, the expansion of accounting for non-financial components (e.g., human and relational capital), and the use of modern technologies such as blockchain and big data for asset identification and validation. Alignment with the goals of the EU Digital Compass 2030 and the integration of intellectual capital evaluation and disclosure into ESG reporting are the key to adapt Ukraine to European digital transformation standards, thereby accelerating EU integration and enhancing competitiveness.

Keywords: intellectual capital, valuation, European Union, EU Digital Strategy, human capital, structural capital, relational capital, digital transformation, intangible assets, accounting, reporting, digitalization.

діяльності. Однак його нематеріальна природа, різноманітність характеристик і проявів ускладнюють процеси оцінювання, обліку, звітування, аналізу та прийняття рішень. Перелік компонентів інтелектуального капіталу було розширено і виділено людський, структурний, реляційний, інноваційний, соціальний, емоційний, цифровий, клієнтський, екологічний капітал, капітал штучного інтелекту, капітал цифрової репутації й інтелектуальної власності. Методика оцінювання має бути гнучкою й адаптивною та відповідати особливостям визнання кожного компонента. Тому ключові методи, такі як ринкові, витратні та дохідні, були доповнені нефінансовими, інтегративними та методами на основі інформаційних технологій, щоб забезпечити точність та прозорість оцінки інтелектуального капіталу для більш обґрунтованого прийняття рішень і сталого зростання в цифровій економіці. Новизна оцінювання інтелектуального капіталу в контексті цифрової стратегії ЄС спирається на такі аспекти, як інтеграція цифрових індикаторів для оцінки нематеріальних активів, розширення обліку нефінансових компонентів, як-от людський, реляційний капітал та інші, використання сучасних технологій блокчейн і великі дані для ідентифікації та валідації активів. Відповідність цілям цифрового компаса ЄС 2030 та інтеграція оцінки й розкриття інтелектуального капіталу в ESG-звітність є ключовими для адаптації України до європейських стандартів цифрової трансформації, що сприятиме прискоренню інтеграції в ЄС та підвищенню конкурентоспроможності.

Ключові слова: інтелектуальний капітал, оцінювання, Європейський Союз, Цифрова стратегія ЄС, людський капітал, структурний капітал, реляційний капітал, цифрова трансформація, нематеріальні активи, облік, звітність, цифровізація.

JEL Classification: O34, M21, M41, M49.

Introduction

Assessment of intellectual capital is highly relevant in the modern context of digital transformation, which shapes the economic and social development of European Union countries. Intellectual capital, encompassing knowledge, skills, know-how, and relationships, has become a key resource for innovation, sustainable growth, and competitiveness in the digital economy. Within the framework of the EU's digital strategy aimed at creating an integrated digital market and accelerating technology adoption, proper valuation of intangible assets is a crucial element for making strategic decisions, attracting investments, enhancing competitiveness, and developing sustainable business models.

The dynamic nature of the digital economy and the current lack of unified assessment standards complicate the process of determining the value of intellectual capital, partly due to the multidimensionality of its components. Existing accounting standards largely fail to account for a significant portion of intellectual capital in financial reporting, as not all components meet the criterion of reliable measurement necessary for recognition as assets in the accounting and reporting system. Consequently, there is a growing demand for new approaches that can ensure reliable valuation of intellectual capital and its individual components. Research in this area focuses on harmonizing approaches to intellectual capital valuation, improving transparency in corporate reporting, and integrating innovative technologies, such as artificial intelligence and big data, for more effective management of intangible assets. This is essential for sustaining the development and competitiveness of any country on the global stage.

The European Union has declared its ambition for 80% of its population to acquire basic digital skills by 2030 and plans to allocate EUR 250 billion in digitalization investments under the Next Generation EU program (A Europe fit for the digital age, 2024).

The valuation of intellectual capital directly supports the achievement of the Sustainable Development Goals (SDGs) (The 17 GOALS, n. d.) by fostering innovation, promoting quality education, and advancing decent work and economic growth (SDGs 4, 8, and 9). By identifying and optimizing aspects such as knowledge, skills, and relationships, organizations can contribute to sustainable practices, equitable opportunities, and resilient economic systems.

The review of scientific sources reveals that one of the main research directions is the development and adaptation of methods for assessing intangible assets, which form the foundation of intellectual capital. Articles analyze various approaches, including market-based, cost-based, and income-based methods (Grosu et al., 2024), the application of which may depend on the specific context and characteristics of enterprises operating in individual EU countries (Paszko, 2020).

The study by Ramanauskaite and Rudzioniene (2013) established a link between intellectual capital and the innovative capacity of enterprises in the digital environment. The development of artificial intelligence and big data analytics opens new opportunities for more accurate and prompter evaluation of intellectual capital (Irtyshcheva et al., 2020). Specific studies, such as those by Pelle and Vegh (2015), examine aspects of applying modern technologies for measuring the knowledge and skills of personnel, as well as evaluating the effectiveness of interaction between companies and their partners. All of this underscores the role of digital transformation not only in increasing the value of intellectual capital (Yilmaz, 2024) but also in its evaluation potential (Umantsiv, 2023).

In parallel, some studies address the formation of policies aimed at enhancing human capital to overcome the challenges of the digital divide among EU member states. For instance, Svarc et al. (2021) investigated the

association of National Intellectual Capital (NIC) with the national digital transformation readiness of the EU's member states.

Intellectual capital is viewed as a key factor explaining the difference between the market value and the book value of companies, driving the development of models for its classification and assessment (Pfeil, 2023). The issue lies in the absence of a unified approach to intellectual capital evaluation, which complicates its integration into financial reporting (Martins & Albino, 2024) and prevents comprehensive disclosure in companies' reports (Umantsiv & Kotsupal, 2022).

A review of the literature confirms the positive impact of intellectual capital on financial performance, market value (Cabrilo et al., 2024), competitive advantages of enterprises (Belimenko, 2024), and brand value (Iankovets, 2019). Various approaches are applied in the studies, including indicator systems, intellectual property management, and assessment methods, yet gaps remain, particularly in exploring industry-specific characteristics, long-term impacts, and mechanisms of transforming intellectual capital into corporate value (Malikah & Nandiroh, 2024). Key research areas include the standardization of assessment methodologies (Vo & Tran, 2024), the impact of digital technologies on intangible assets (Vorobei, 2018), as well as the integration of results into corporate reporting (Odobasa & Marosevic, 2023) and strategic management (Mazaraki et al., 2022).

Contemporary scientific literature emphasizes the interaction between artificial intelligence (AI) and intellectual capital (Ilyina, 2023), particularly the evaluation of intangible assets created by AI and their impact on productivity and value (Heidor & Kashpruk, 2022). Despite the growing interest in the technical aspects of AI, there is a significant need to develop methods for financially assessing intangible assets, which are becoming increasingly important in the economy (Grosu, 2024).

The unresolved issue of intellectual capital evaluation lies in the lack of unified standards and methodologies that would account for the dynamic nature of the digital economy and the specifics of intangible assets. The complexity of measuring components such as knowledge, innovation potential, or stakeholder relations complicates their integration into financial and non-financial reporting. Additionally, challenges associated with technological changes, such as process automation, and regulatory requirements, including data protection (GDPR), further complicate the effective use of intellectual capital to achieve the goals of the EU's digital strategy, highlighting the relevance of this study.

The aim of the research is to highlight the features and key methodological approaches to evaluating intellectual capital in European countries within the context of the EU Digital Strategy. The article analyzes the role of intellectual capital in the development of an innovative economy, examines the impact of digital technologies on intangible assets, and outlines prospects for harmonizing evaluation methodologies at the EU level.

The aims of the article are as follows:

- to review scientific sources that explore approaches to evaluating intellectual capital within the framework of the EU Digital Strategy;

- to identify the main methods of intellectual capital evaluation, their adaptation to the requirements of the digital economy, and the influence of modern technologies;
- to analyze the role of the EU Digital Strategy and its key objectives related to intellectual capital;
- to assess the potential for implementing European practices in Ukraine, taking into account the specificities of the national economy and prospects for integration into the EU's single digital market.

Research Hypothesis. The use of European approaches to evaluating intellectual capital, which consider the priorities of the EU Digital Strategy, will contribute to enhancing the innovation potential, competitiveness, and economic resilience of both EU member states and countries aspiring to integration, including Ukraine.

Methodological Framework. The reseach is based on general scientific and specialized methods, ensuring a systematic analysis of intellectual capital as an evaluation object within the context of the EU Digital Strategy. A hypothetico-deductive method was used to test the hypothesis concerning the impact of digitalization, along with methods of analysis, synthesis, and detailing to explore approaches to evaluating intellectual capital. Comparative and observational methods allowed for identifying key factors influenced by the EU Digital Strategy, while the analogy method facilitated a comparison of national specificities and the experience of European countries. A systematic approach, induction, and deduction formed the basis for drawing conclusions about the advantages of digitalization and proposing improvements to intellectual capital evaluation methods in the context of the EU Digital Strategy.

The 4 sections of the main part of the article consistently addresses the following issues: definition and components of intellectual capital, EU Digital Strategy and key objectives related to intellectual capital, methods for assessing intellectual capital, and best European practices for Ukraine.

1. Intellectual capital: definition and components

The concept of measuring intellectual capital emerged with the transition to a knowledge economy, where intangible assets became the main drivers of value creation. Intellectual capital is a multifaceted and debated concept, resulting in various perspectives not only on its essence but also on the definition of its components and the possibilities for their assessment. In generalized terms, intellectual capital is associated with concepts such as value (Malikah & Nandiroh, 2024), the totality of intellectual resources and the capacity to realize them (Irtyshcheva et al., 2020), intangible assets (Pfeil, 2023), or intangible resources (intangible growth factors) that enhance business value (Semenova et al., 2021) and build competitive advantages (Vo & Tran, 2024). Unlike physical or financial capital, intellectual capital encompasses knowledge, skills, innovation, and relationships that are not directly reflected in accounting systems or fully disclosed in reports, yet are critically important for the resilience, competitiveness, and sustainable development of business entities.

It is often claimed that intellectual capital represents intangible assets that contribute to the value and competitive advantage of an organization. This assertion is valid if intangible assets are viewed more broadly than as mere accounting objects. A thorough analysis of the requirements of International Accounting Standards, particularly IAS 38 "Intangible Assets" (IAS 38, n. d.), reveals that intellectual capital, from the perspective of accounting and reporting, is not equivalent to intangible assets. These concepts are not synonymous. While certain components of intellectual capital may be recognized as intangible assets and subject to accounting and disclosure, not all components fit this criterion. Therefore, it is crucial to analyze intellectual capital through its individual components.

Traditionally, intellectual capital is divided into three main types:

Human capital encompasses the knowledge, skills, experience, and competencies of employees, forming the core resource of any organization. This includes not only technical abilities but also creativity, innovation, and adaptability to change. Human capital is considered a dynamic asset that requires constant development through training, education, and employee motivation (Irtyshcheva et al., 2020). Companies invest in this capital by creating favorable conditions to attract talent and ensure high productivity.

Structural capital consists of intangible assets and other resources that remain within the company regardless of its employees. This includes internal processes, information systems, corporate culture, databases, and know-how. Automated management systems, standardized operational procedures, and digital platforms serve as the foundation for increasing organizational efficiency. This component also encompasses innovative developments and mechanisms for implementing innovations that ensure the resilience and competitiveness of a business.

Relational capital reflects the value of a company's relationships with its external partners, clients, suppliers, and other stakeholders. This includes customer loyalty, brand strength, market reputation, and trust from partners. Relational capital is challenging to measure quantitatively, but its importance in strategic management cannot be underestimated, which is why its evaluation predominantly involves non-financial indicators.

These categories are quite generalized and should be complemented to account for the modern multifaceted and dynamic changes in the era of the EU Digital Age. Therefore, we propose to outline additional components of a company's intellectual capital:

Innovation capital, creative or renewal capital (Cabrilo et al., 2024) refers to a company's ability to create new digital products, services, business models, or processes based on cutting-edge technologies, as well as its investments in research and development (R&D), patented technologies, inventions, and other innovations. In the context of digital transformation, companies actively implementing innovations can adapt more quickly to market changes and create unique competitive advantages. Effective management of this capital includes fostering an innovative culture and creating conditions for the generation of new ideas.

Social capital reflects the quality and intensity of social connections both within the organization (team spirit, collaboration, support, and trust among employees) and outside it (relationships with the community, partners, and stakeholders). A high level of social capital ensures effective knowledge sharing, enhances team cohesion, and strengthens the company's reputation.

Emotional capital defines the level of employees' emotional engagement with their work and the company's ability to manage emotions within the organizational environment. It includes employee satisfaction, loyalty, energy, and a sense of purpose in their work. Companies with high emotional capital create an environment where employees feel valued, boosting productivity and reducing turnover rates.

Digital capital encompasses all the company's digital assets, including software products, platforms, digital infrastructure, and the use of big data (Yilmaz, 2024). This component is becoming increasingly critical in today's world as companies actively integrate technologies into their processes to remain competitive. Specifically, it has been proven that utilizing big data analytics allows companies to make more informed decisions (Semenova, 2024).

Artificial intelligence capital includes tools and algorithms implemented for process automation, forecasting, and decision-making. This component is particularly relevant for investment allocation and monitoring their effectiveness.

Customer capital is characterized by knowledge about customers, their needs and expectations, and their loyalty. It helps retain customers and increase their average revenue for the company while reducing the costs of acquiring new customers.

Digital reputation capital includes the organization's online image, formed through interactions with customers, partners, and the public in the digital space. It can be highlighted as a separate category.

Ecological capital is a critical component of intellectual capital that reflects organizations' ability to implement environmentally friendly technologies aimed at reducing the carbon footprint and using resources efficiently. Within the EU's "Green Initiative", it includes the development of renewable energy sources, circular economy, and ecological innovations. Ecological capital not only enhances companies' competitiveness but also contributes to achieving green transition and sustainable development goals by integrating environmental aspects into digital strategies and business processes.

Intellectual property, for the purposes of evaluation and protection, should be distinguished from the entirety of intellectual capital. It includes patents, copyrights, trademarks, and other forms of intangible assets. Intellectual property ensures the uniqueness of a company's products or services and creates barriers for competitors. This component is recognized as an intangible asset under accounting standards, making it important to separate it from Innovation capital.

The distinction of these components may be subject to further scientific discussion; however, it is evident that evaluation tools must be as flexible and diverse as the concept of intellectual capital itself. The identified

components form a comprehensive understanding of intellectual capital, providing a foundation for its in-depth analysis and effective evaluation.

2. EU Digital Strategy: Key Objectives Related to Intellectual Capital

The EU Digital Strategy is a comprehensive framework aimed at positioning the European Union as a leader in the global digital economy while ensuring inclusivity, sustainability, and innovation (EU Digital Strategy, 2025). Intellectual capital plays a central role in achieving the strategy's objectives, as it underpins the development and effective use of digital technologies. Key objectives linked to intellectual capital include (A Europe fit for the digital age, 2024):

Empowering people with digital skills. The EU strives to bridge the digital skills gap by equipping citizens with the competencies necessary to thrive in the digital age. Investments in human capital through training programs, lifelong learning initiatives, and educational reforms will prepare a digitally skilled workforce capable of leveraging and enhancing intellectual capital.

Fostering innovation and research. The EU prioritizes research and innovation to enhance its global competitiveness. Initiatives such as the Horizon Europe program support the development of advanced technologies, including artificial intelligence, quantum computing, and big data analytics. Modern technologies increase intellectual capital by enabling better use of data and fostering knowledge creation (Svarc et al., 2021).

Enhancing digital infrastructure. The strategy emphasizes the development of secure, reliable, and scalable digital infrastructure to support intellectual capital. Investments in 5G, high-performance computing, and data centers create the structural capital necessary for effective knowledge exchange and collaboration.

Promoting trust and transparency. The EU aims to establish a regulatory framework that strengthens trust in digital technologies and promotes the ethical use of data. By protecting intellectual property and ensuring transparency in data management, the strategy supports the sustainable growth of intellectual capital.

Building a single digital market. Facilitating knowledge exchange and collaboration among Member States enhances relational capital by uniting businesses, research institutions, and governments into a cohesive structure.

Sustainability through digital transformation. Digital technologies are viewed as mechanisms for achieving green transition goals. The integration of intellectual capital, particularly in innovation and process optimization, supports the development of sustainable solutions aligned with climate objectives.

The declared goals demonstrate that intellectual capital is not only the cornerstone of the EU Digital Strategy but also a critical resource for sustaining technological leadership, driving economic growth, and fostering social cohesion. Through targeted policies and investments, the EU aims to maximize the potential of intellectual assets, ensuring long-term sustainnability and prosperity in a rapidly evolving digital landscape (Digital Decade 2024 report calls for

strengthened collective action, 2024). The implementation of digital technologies is not merely a technological process but also a social one, essential for the development of modern society (Svarc et al., 2021).

Expanding the benefits of the Digital Single market to the Eastern Partnership countries, including Ukraine, is also crucial. Through the EU4Digital initiative, the EU plans to support the development of digital economies, cybersecurity, and transformation in the region (EU Digital Strategy, 2025).

The assessment of intellectual capital is key to implementing the EU Digital Strategy, as it enables the effective measurement, management, and utilization of intangible assets that form the foundation of digital transformation (Intellectual Property in the Digital Age, 2023). First, this supports the development of digital skills, one of the four main benchmarks of the strategy. Measuring human capital helps determine the population's level of digital literacy and identify gaps in education that require investment. Second, evaluating organizational and structural capital allows businesses to understand their strengths in innovation, data management, and adaptation to technological changes, enhancing their competitiveness in the digital economy and driving the adoption of advanced technologies such as artificial intelligence and big data. Third, assessing social capital enables public and private organizations to build trust in digital services and ensure transparency. In general, the assessment of intellectual capital is vital for implementing the EU Digital Strategy, as it helps make informed decisions on resource allocation, policy formation, and ensuring the balanced development of digital infrastructure and society.

3. Methods for assessing intellectual capital

The evaluation and disclosure of intellectual capital face a range of common challenges. It is difficult to identify and measure its elements, which complicates their integration into reporting. The lack of standardization in approaches to disclosing information about intellectual capital leads to significant discrepancies between companies and countries. Moreover, the strategic importance of intellectual capital is often underestimated, limiting attention to this issue at the level of corporate practice.

The assessment and disclosure of information about intellectual capital within the frameworks of IAS 38 (n. d.), the Conceptual Framework for Financial Reporting (2018), Directive 2013/34/EU (2013), Directive 2014/95/EU (2014), and the Corporate Sustainability Reporting Directive (CSRD) (Directive 2022/2464/EU, 2022) encounter several challenges. IAS 38 focuses on intangible assets that meet recognition criteria, making it difficult to reflect broader aspects of intellectual capital, such as human or organizational capital. The Conceptual Framework for Financial Reporting provides general principles for preparing reports but does not cover specific methodologies for assessing intangible assets. Directive 2013/34/EU and Directive 2014/95/EU establish requirements for non-financial reporting, but their implementation is uneven across EU countries, especially for small and medium-sized enterprises. CSRD, focusing on integrating sustainability into reporting, adds complexity due

to its high requirements for data and resources. Overall, these standards require harmonization and improvement in approaches to ensure accuracy and transparency in the disclosure of intellectual capital.

From an accounting and reporting perspective, intangible assets are a key component of intellectual capital that can be recognized in financial statements under certain conditions. These include patents, copyrights, trademarks, know-how, and software, which have clearly defined value and the ability to generate economic benefits. However, many elements of intellectual capital, such as human capital or organizational culture, are typically not reflected on the balance sheet due to difficulties in their valuation. Intangible assets are reported in accordance with IAS 38 and require regular revaluation and impairment analysis. This poses a challenge for managers in ensuring the proper and transparent evaluation and disclosure of intellectual capital to demonstrate its true impact on a company's financial performance.

Key IAS 38 "Intangible Assets" requirements for assessing intellecttual capital (IAS 38, n. d.):

- Recognition of an intangible asset according to criteria: the asset must provide future economic benefits, be identifiable and controlled by the company, and its cost must be reliably measurable.
- Initial measurement at cost, which includes expenses for creating or acquiring the intangible asset.
- Subsequent measurement relies on either the cost model, where the asset is carried at cost less accumulated amortization and impairment losses, or the revaluation model, where the asset can be revalued to fair value if an active market exists.
- Limitations on recognizing intellectual capital: human capital, organizational culture, and company reputation (goodwill) usually do not meet the criteria for separate recognition as assets due to difficulties in their identification and measurement and, therefore, are not reflected in financial statements and accounting systems.
- Disclosure requirements: notes to financial statements must include information about the composition of intangible assets, valuation and amortization methods, and potential risks associated with their use.

IFRS provides a foundation for assessing intellectual capital but focuses on objectively measurable aspects, leaving non-financial components of intellectual capital often strategically significant for business overlooked.

The CSRD, adopted by the EU in 2022, significantly expands the requirements for companies' non-financial reporting, particularly regarding the disclosure of intellectual capital information. It addresses previous shortcomings of IFRS in assessing non-financial assets, especially those of strategic importance for long-term company development. CSRD emphasizes the assessment of human capital, measuring employees' contributions, skills, and corporate culture's role in the organization's overall value. Companies are required to detail human resource management strategies, talent development, and innovation support. CSRD also considers the modern development of the digital economy, particularly assets related to

data, digital platforms, and artificial intelligence. Digital assets are now recognized as an important part of intellectual capital.

A comprehensive review of sources allowed the generalization and systematization of methodological approaches to assessing intellectual capital. Traditional market, cost, and income methods have been supplemented by non-financial, integrative, and IT-based methods – see *Table*.

Table

Methodical approaches to intellectual capital valuation

Advantages	Characteristics	Description of methods
Market methods	Methods for evaluating intellectual capital based on market indicators are aimed at analyzing the relationship between intangible assets and the organization's financial or market performance. These methods help determine the value of intellectual capital by assessing its impact on the company's market value, stock price, or competitive position.	*Tobin's Q Method*: Compares the company's market value with the value of its assets. A high coefficient indicates significant intellectual capital. *Market Capitalization Method*: Determines the value of intellectual capital as the difference between the company's market capitalization and its net tangible assets. *Excess Earnings Method*: Based on the analysis of the company's earnings exceeding normal returns that could be generated from its tangible assets. It identifies what portion of earnings is generated by intangible assets and intellectual capital *Premium to Share Value Method*: Compares the share value of companies with similar tangible assets but different levels of intellectual capital. It is used to determine how additional intellectual capital increases share prices
Costing methods	Evaluation of intellectual capital is based on the costs incurred for its creation, development, or replacement	*Replacement Cost Method*: Determines how much it would cost to restore intellectual capital in case of its loss. *Cost Accumulation Method*: Accounts for all expenses related to the creation of intangible assets of intellectual capital, such as research, staff training, brand development, and more
Income methods	Based on the analysis of future income generated by intellectual capital	*Discounted Cash Flow (DCF) Method*: Evaluates intellectual capital as an income stream generated by intangible assets, taking discounting into account. *EVA (Economic Value Added) Method*: Calculates the extent to which intellectual capital contributes to creating value beyond operational expenses and investments
Non-financial methods	Grounded in qualitative analysis and descriptions of intangible organizational aspects, these methods help identify, structure, and systematize human, organizational, and customer capital	*Balanced Scorecard (BSC)*: Designed to assess organizational performance through measurements in four areas: finances, customers, internal business processes, and learning and growth. Intellectual capital is evaluated through indicators related to human capital development (staff training, qualification levels), processes (innovation, business efficiency), and customer interactions (satisfaction, loyalty). *Intellectual Capital Mapping*: Allows visualization of intellectual capital components and their interconnections. *Skandia Navigator Model*: Includes five components: financial focus, customer focus, process focus, development and learning, and human capital. *Intangible Assets Monitor*: Focuses on three aspects: the growth of intangible assets, their renewal, and the efficiency of their use. *Innovation Indicators*: Assess a company's ability to innovate by analyzing patent activity, the number of new products, and participation in research programs

End of Table

Advantages	Characteristics	Description of methods
Integrative methods	Include approaches that combine quantitative and qualitative indicators	*Knowledge Balance Scorecard*: Utilizes financial and non-financial metrics to measure human, structural, and consumer capital. *Skandia Navigator Method*: Analyzes intellectual capital through several components, such as financial performance, customer base development, human capital, and innovation potential. *Comparative Analysis and Modeling Method*: Involves the use of benchmarking, where companies are evaluated based on their intellectual assets in comparison to competitors or industry standards, as well as the development of a model that accounts for the interrelations between various components of intellectual capital. *Method of Combining Qualitative and Quantitative Approaches*: Combines quantitative methods for assessing intellectual capital (e.g., valuation of patents, licenses, income from intellectual property) with qualitative assessments, such as evaluating the company's level of innovation or its internal culture. This approach allows for considering both the financial and non-financial impact of intellectual capital on the business
Methods based on digital technologies	Utilize modern digital technologies in evaluation	*Big Data*: Analyzing large volumes of data to measure outcomes related to intangible assets. *Artificial Intelligence*: Used to evaluate complex interrelationships between components of intellectual capital

Source: compiled by the authors on the basis of (Malikah & Nandiroh, 2024; Yilmaz, 2024; Grosu et al., 2024; Fomina et al., 2021; Cabrilo et al., 2024; Pfeil, 2023; Semenova, 2017; Ramanauskaite & Rudzioniene, 2013; IAS 38, n. d.).

Each method has its advantages and limitations, so the choice depends on the specifics of the company, the purpose of the evaluation, and the availability of data. To ensure accuracy and completeness, a combination of several methods is often used. European countries actively apply integrative methods for assessing intellectual capital, which include both financial and non-financial indicators such as brand, patents, technologies, and knowledge (Paszko, 2020). Ukraine can adapt these models to local realities to evaluate the value of intangible assets, intellectual property, and human capital, which are key to the development of innovative sectors of the economy.

4. Best European Practices for Ukraine

The evaluation of intellectual capital as an object of accounting and reporting requires the integration of modern digital tools and methods that adequately reflect its value in the context of digital transformation. The experience of EU countries such as Sweden, the Netherlands, Estonia, and France demonstrates the effectiveness of using digital platforms, blockchain technologies, and integrating innovation indicators into national accounting and reporting strategies.

Adopting the principles of the EU Digital Compass 2030 allows the development of comprehensive methodologies for evaluating intellectual capital, contributing to sustainability, innovation, and compliance with environmental standards. These innovations enhance transparency, efficiency, and the social impact of intellectual capital in the context of the EU's digital economy.

Based on the conducted research, proposals have been formulated to improve approaches to evaluating intellectual capital as an object of accounting and reporting, considering the EU's digital strategy, the experience of member states, and Ukraine's national characteristics. These proposals include the following aspects (*Figure*).

Integration of Digital Indicators

- Evaluating an organization's online reputation through the analysis of social media and customer reviews.
- Measuring influence in digital networks using metrics such as the number of followers, audience engagement, or influence index.
- Collecting and analyzing data on customer experience, including satisfaction, loyalty, and repeat interactions.
- Assessing the level of technological adaptation, including the adoption of innovative digital solutions and process automation

Expanding the Scope of Accounting

- Representing human capital through quantitative and qualitative indicators, such as education levels, professional training, and employee competencies.
- Evaluating relational capital, including partnerships, stakeholder reputation, and the quality of external relations.
- Implementing dynamic metrics to monitor changes in knowledge, innovation levels, and digital skills.
- Integrating digital accounting standards that account for the speed of technology adoption and business adaptation to digital trends.

Digital Identification of Assets

- Using blockchain to record intellectual property rights, patents, and licenses.
- Analyzing big data to identify key intangible assets, such as employee knowledge and skills.
- Employing unique digital markers to identify and track intangible assets throughout their lifecycle.
- Ensuring transparency in reporting through automated processes for asset evaluation and validation

Alignment with EU Objectives

- Implementing eco-innovations as part of intellectual capital aligned with the EU Green Deal.
- Assessing the contribution of intellectual capital to sustainable development through the use of renewable resources and carbon footprint reduction.
- Integrating digital competencies into corporate sustainability strategies in line with the EU Digital Compass 2030 objectives.
- Developing evaluation methodologies that account for the social impact of intellectual capital, such as increasing access to digital technologies

Disclosure in Non-Financial Reporting

- Reflecting a company's innovation activity through intellectual capital indicators in ESG reports.
- Demonstrating the company's social impact through its contribution to human capital development and digital transformation.
- Disclosing data on intellectual assets that contribute to achieving environmental goals, such as the development of eco-friendly technologies.
- Integrating intellectual capital indicators to illustrate the company's long-term sustainability and competitiveness.

Improving approaches to intellectual capital valuation based on the EU experience

Source: compiled by the authors on the basis of EU Digital Strategy (2025); A Europe fit for the digital age (2024); IAS 38 (n. d.); Directive 2022/2464/EU (2022); Grosu et al. (2024); Pfeil (2023); Semenova et al. (2024); Svarc et al. (2021); Yilmaz (2024).

The proposed approaches would contribute not only to a more comprehensive representation of intellectual capital in reporting but also to aligning Ukraine with the requirements of the digital economy and EU strategies.

For Ukraine, it is essential to consider the key challenges and opportunities in the evaluation of intellectual capital that arise in the context of digital transformation and the development of advanced technologies such as artificial intelligence, big data, and blockchain. However, Ukraine must address several critical issues, including improving intellectual property protection legislation, enhancing access for small and medium-sized enterprises to advanced technologies, and reducing the digital divide between regions.

By integrating EU experience into the development of policies and practices for assessing intellectual capital, Ukraine can improve the management of innovative resources, creating conditions for the more efficient use of digital platforms and data. It is equally important to ensure a balance between technological development and ethical standards in this process, which would help Ukraine avoid potential risks such as privacy violations or misuse of intellectual property.

The integration of digital technologies into the processes of analyzing, evaluating, and accounting for intellectual capital opens new opportunities to enhance transparency, ensure better access to financing and investments, and strengthen the country's innovation ecosystem. Through the development of digital platforms and tools for monitoring intangible assets, Ukraine can optimize the management of intellectual resources, improve the efficiency of human capital and innovation utilization, and lay the foundation for attracting foreign investment, fostering the growth of technology startups, and expanding export potential.

This is particularly relevant in the face of military aggression, where technology transfers and the effective use of intellectual capital can strengthen Ukraine's defense capabilities, support the modernization of the military-industrial complex, and ensure the stability of critical infrastructure. During the post-war reconstruction period, the evaluation and development of intellectual capital will play a crucial role in creating a modern innovation-driven economy, attracting international aid and investors, and forming new competitive industries focused on high-tech exports.

Conclusions

The research results have been identified contemporary approaches to evaluating intellectual capital in the EU, its impact on the digital economy and innovation development, and adaptive opportunities for Ukraine. These findings enable efforts to be directed toward improving the intellectual resource management system in Ukraine, supporting integration into the European community and digital transformation.

The evaluation of intellectual capital is a key factor in implementing the EU's digital strategy, as it fosters innovation-driven development, supports the digital transformation of businesses, and enhances the transparency of asset management. The ability to reliably measure and rationally utilize intangible resources, such as knowledge, technology, and data, forms the foundation for digital leadership, promotes the unification of corporate reporting, attracts investment, and supports the development of a single digital market. Therefore, intellectual capital assessment is one of the essential tools for achieving the strategic goals of the European Union in digitalization, social and economic development.

The list of components of intellectual capital has been expanded to include: Human, Structural, and Relational Capital; Innovation, Social, and Emotional Capital; Digital Capital; Artificial Intelligence Capital; Customer Capital; Digital Reputation Capital; Ecological Capital; Intellectual Property. The assessment toolkit should be as adaptable and diverse as the concept of intellectual capital itself. The identified components offer a comprehensive understanding of intellectual capital, laying the groundwork for its thorough analysis and effective evaluation.

Methodological approaches to evaluating intellectual capital based on market, cost, and income methods have been outlined and complemented by non-financial, integrative, and IT-based methods. All these approaches ensure greater accuracy, transparency, and objectivity in assessing the components of intellectual capital, which is vital for improving decision-making processes, optimizing resource allocation, and attracting investments.

The research confirmed that intellectual capital is a primary driver of innovation, enhances competitiveness, and ensures sustainable economic growth within the EU's digital strategy. This underscores the importance of integrating assessment results into strategic management and decision-making at the corporate and government levels.

The analysis demonstrated that adapting European practices for evaluating intellectual capital in Ukraine would improve the management of intangible assets, facilitate integration into the EU single digital market, and enhance the innovative capacity of enterprises. Recommendations have been proposed for implementing these practices, taking into account the specific features of the national economy.

Future research prospects will include more European case studies of implementing modern approaches to intellectual capital evaluation and conducting surveys of Ukrainian companies on their readiness to adopt such methods. It is also necessary to continue deepening research into Ukraine's integration opportunities into European digital programs and the single digital market through the implementation of intellectual capital evaluation standards. These directions will contribute not only to the theoretical justification but also to the practical realization of effective mechanisms for managing intellectual assets in the digital era.

REFERENCE/СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ

A Europe fit for the digital age. (2024). Priorities. Strategy and policy. European Commission. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age_en

Belimenko, O. (2024). Economic resilience of the enterprise. *Scientia fructuosa*, *154*(2), 63–77. https://doi.org/10.31617/1.2024(154)04	Беліменко, О. (2024). Економічна стійкість підприємства. *Scientia fructuosa*, *154*(2), 63–77. https://doi.org/10.31617/1.2024(154)04

Cabrilo, S., Dahms, S. & Tsai, F.-S. (2024). Synergy between multidimensional intellectual capital and digital knowledge management: Uncovering innovation performance complexities. *Journal of Innovation & Knowledge*, *9*(4), 100568. https://doi.org/10.1016/j.jik.2024.100568

Conceptual Framework for Financial Reporting. (2018). IFRS Foundation. https://www.mof.gov.ua/storage/files/2019_RB_ConceptualFramework_ukr_AH%20(2).pdf	*Концептуальна основа фінансової звітності*. (2018). Фонд МСФЗ. https://www.mof.gov.ua/storage/files/2019_RB_ConceptualFramework_ukr_AH%20(2).pdf

Digital Decade 2024 report calls for strengthened collective action. (2024). Directorate-General for Communication. European Commission. https://commission.europa.eu/news/digital-decade-2024-report-calls-strengthened-collective-action-2024-07-03_en

Directive 2013/34/EU on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings. (2013). https://eur-lex.europa.eu/eli/dir/2013/34

Directive 2014/95/EU on the disclosure of non-financial and diversity information. Non-Financial Reporting Directive (NFRD). (2014). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0095

Directive 2022/2464/EU of the European Parliament as regards corporate sustainability reporting. Corporate Sustainability Reporting Directive (CSRD). (2022). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022L2464

EU Digital Strategy. (2025). EU4Digital. https://eufordigital.eu/discover-eu/eu-digital-strategy/

Fomina, O., Avhustova, O., & Shushakova, I. (2021). Assessing the Intangible Assets. *Business Inform*, (4), 154–160. https://doi.org/10.32983/2222-4459-2021-4-154-160	Фоміна, О., Августова, О., & Шушакова, І. (2021). Оцінка вартості нематеріальних активів. *Бізнес Інформ*, (4), 154–160. https://doi.org/10.32983/2222-4459-2021-4-154-160

Grosu, V., Butnaru (Ciobotar), A., Mihalciuc, C., & Cosmulese, C. (2024). Accounting Perspectives on Valuation of Intellectual Capital Versus Artificial Intelligence. *Communications of International Proceedings*, (6), Art. ID 4333824. https://doi.org/10.5171/2024.4333824

Heidor, A., & Kashpruk, A. (2022). IT enterprise knowledge management system for remote work. *Scientia fructuosa*, *133*(5), 5–17. https://doi.org/10.31617/visnik.knute.2020(133)01	Гейдор, А., & Кашпрук, А. (2022). Система управління знаннями ІТ-підприємства при дистанційному режимі роботи. *Scientia fructuosa*, *133*(5), 5–17. https://doi.org/10.31617/visnik.knute. 2020(133)01
Iankovets, T. (2019). Digital technologies in increasing brands value. *Scientia fructuosa*, *126*(4), 85–100. https://doi.org/10.31617/visnik.knute.2019(126)08	Янковець, Т. (2019). Цифрові технології підвищення вартості брендів. *Scientia fructuosa*, *126*(4), 85–100. https://doi.org/10.31617/visnik.knute.2019(126)08
Ilyina, A. (2023). Electronic governance in the human capital assessment system. *Scientia fructuosa*, *151*(5), 20–33. https://doi.org/10.31617/1.2023(151)02	Ільїна, А. (2023). Електронне урядування в системі оцінки людського капіталу. *Scientia fructuosa*, *151*(5), 20–33. https://doi.org/10.31617/1.2023(151)02

Intellectual Property in the digital age. (2023, November 10). European Commission. https://intellectual-property-helpdesk.ec.europa.eu/news-events/news/intellectual-property-digital-age-2023-11-10_en

IAS 38 – Intangible Assets. (n. d.). IAS Plus. https://www.iasplus.com/en/standards/ias/ias38

Irtyshcheva, I., Trushliakova, A., & Sirenko, I. (2020). Strategic human capital management in the context of Digitalization. *Baltic Journal of Economic Studies*, *6*(5), 178–183. https://doi.org/10.30525/2256-0742/2020-6-5-178-183

Malikah, A., & Nandiroh, U. (2024). Intellectual Capital and Value of the Firm: A Systematic Literature Review. *International Journal Of Humanities Education and Social Sciences*, *3*(4). https://doi.org/10.55227/ijhess.v3i4.777

Martins, A., & Albino, L. (2024). Intellectual Capital: Revisiting an Analytical Model. *Journal of Risk and Financial Management*, (17), 478. https://doi.org/10.3390/jrfm17110478

Mazaraki, A., Boiko, M., Bosovska, M., & Kulyk, M. (2022). Revenue Management Data Digital Transformation. In *2022 IEEE 4th International Conference on Modern Electrical and Energy System (MEES)*, (1–5). https://doi.org/10.1109/MEES58014.2022.10005639

Odobasa, R., & Marosevic, K. (2023). Expected contributions of the European corporate sustainability reporting Directive (CSRD) to the sustainable development of the European Union. *EU and Comparative Law Issues and Challenges Series (ECLIC)*, (7), 593–612. https://doi.org/10.25234/eclic/27463

Paszko, J. (2020). Intellectual capital of European Union countries (EU-28) – measurement concept. Optimum. *Economic Studies*, *3*(101), 107–122. https://doi.org/10.15290/oes.2020.03.101.09

Pelle, A., & Vegh, M. (2015). EU member states' ability to attract intellectual capital in times of crisis. *Competitiveness Review*, *25*(4), 410–425. https://doi.org/10.1108/CR-03-2015-0013

Pfeil, Oliver P., (2023). *The Valuation of Intellectual Capital.* Cambridge. http://dx.doi.org/10.2139/ssrn.388100

Ramanauskaite, A., & Rudzioniene, K. (2013). Intellectual capital valuation: methods and their classification. *Ekonomika*, *92*(2), 79–92. https://doi.org/10.15388/Ekon.2013.0.1413

Semenova, S. (2024). Digitalization of accounting processes and financial forecasting: the experience of EU member states. *Economy and Society*, (65). https://doi.org/10.32782/2524-0072/2024-65-18

Semenova, S., Fomina, O., & Moshkovska, O. (2021). Accounting for innovations in value management of companies in the context of globalization. In *Globalization and its Socio-Economic Consequences. EDP Sciences*, (92), Art. 02057. https://doi.org/10.1051/shsconf/20219202057

Semenova, S. (2017). Intellectual capital accounting as a component of economic systems development. *European Science*, (2), 20–28. https://european-science.sk/storage/journals/essays/2-2017/17.pdf

Semenova, S., Shpyrko, O., Androsenko, O., Afanasieva, I., Kolumbet, O., & Vorchakova, I. (2024). The essence of Goodwill in disclosing the intangible value of business in the context of digital transformation. *Financial and credit activity: problems of theory and practice*, *4*(57), 98–113. https://doi.org/10.55643/fcaptp.4.57.2024.4449

Svarc, J., Laznjak, J., & Dabic, M. (2021). The role of national intellectual capital in the digital transformation of EU countries. Another digital divide? *Journal of Intellectual Capital*, 22(4), 768–791. https://doi.org/10.1108/JIC-02-2020-0024

Umantsiv, H., & Kotsupal, O. (2022). Predictive information in integrated reporting. *Scientia fructuosa, 146*(6), 114–127. https://doi.org/10.31617/1.2022 (146)09

Уманців, Г., & Коцупал, О. (2022). Прогнозна інформація в інтегрованій звітності. *Scientia fructuosa, 146*(6), 114–127. https://doi.org/10.31617/1.2022(146)09

Umantsiv, H. (2023). Reporting on sustainable development in the context of corporate social responsibility. *Scientia fructuosa*, *149*(3), 59–71. https://doi.org/10.31617/1.2023(149)05

Уманців, Г. (2023). Звітність про сталий розвиток у вимірі корпоративної соціальної відповідальності. *Scientia fructuosa*, *149*(3), 59–71. https://doi.org/10.31617/1.2023(149)05

The 17 GOALS (The Sustainable Development Goals). (n. d). United Nations. https://sdgs.un.org/goals

Vo, D. H., & Tran, N. P. (2024). Does Digital Transformation Moderate the Effect of Intellectual Capital on Firm Performance? J Knowl Econ (2024). https://doi.org/10.1007/s13132-024-02270-8

Vorobei, Yu. (2018). Information support for the protection of intellectual capital of an international company. *Foreign trade: economics, finance, law*, *101*(6), 62–71. https://doi.org/10.31617/zt.knute. 2018(101)06	Воробей, Ю. (2018). Інформаційна підтримка захисту інтелектуального капіталу міжнародної компанії. *Зовнішня торгівля: економіка, фінанси, право*, *101*(6), 62–71. https://doi.org/10.31617/zt.knute.2018(101)06

Yilmaz, A. A. (2024). Unlocking the Power: How Digital Transformation Fuels Intellectual Capital. *Journal of Business Research-Turk*, *16*(3), 1355–1375. https://doi.org/10.20491/isarder.2024.1860

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ACCOUNTING POLICY OF UKRAINIAN CORPORATIONS

The need to provide information about the company and its activities to users of reporting raises the question of the organization and methodology of its generation in accounting and its reflection in the reporting, and thus the accounting policy of the enterprise.

Traditionally, the accounting policy of the enterprise is focused on financial accounting and reporting. In view of this, the following question requires further study, such as: should the purpose of accounting policy be limited exclusively to providing financial reporting, or can it serve as the basis for preparing other types of reporting (in particular, integrated). The hypothesis is the statement that the purpose of accounting policy is not limited exclusively to providing financial reporting, it can serve as the basis for preparing extended reporting (in particular, integrated). The following methods were used, such as: analysis and synthesis; comparison; systematization; deduction. In the process of research, approaches to defining the concept of "accounting policy" and its purpose (goals) in national and international regulatory documents and scientific publications were analyzed. The analysis made it possible to establish that current international regulatory documents, unlike national ones, do not prohibit the disclosure of principles,

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ОБЛІКОВА ПОЛІТИКА УКРАЇНСЬКИХ КОРПОРАЦІЙ

Через необхідність надання інформації про підприємство та його діяльність для користувачів звітності постає питання щодо організації та методики її генерування в обліку та відображення у звітності, а отже й до облікової політики підприємства. Традиційно облікова політика підприємства орієнтована на фінансовий облік і звітність. З огляду на це, потребує подальшого вивчення питання, чи є необхідність обмежувати призначення облікової політики суто забезпеченням фінансової звітності, чи вона може слугувати основою для підготовки інших видів звітності (зокрема інтегрованої). Гіпотезою виступає твердження, що призначення облікової політики не обмежується винятково забезпеченням фінансової звітності, вона може слугувати основою для підготовки розширеної звітності (зокрема інтегрованої). Використано методи: аналізу та синтезу, порівняння, систематизації, дедукції. У ході дослідження проаналізовані підходи до визначення поняття "облікова політика" та її призначення (мети) у вітчизняних і міжнародних нормативних документах та вітчизняних і закордонних наукових публікаціях. Проведений аналіз дозволив встановити, що чинні міжнародні нормативні документи, на відміну від національних, під час формування облікової політики не забороняють розкривати принципи,

methods and procedures when forming an accounting policy, which, although they contradict IFRS, do not go beyond the Conceptual Framework and legislation. That is, the accounting policy of the enterprise, if necessary and in compliance with the specified criteria, may disclose the principles, methods and procedures for maintaining accounting and preparing not only financial statements, but also integrated or other corporate reporting. At the same time, the basis for developing an enterprise's accounting policy should be regulatory documents that determine the requirements for preparing the relevant types of reporting.

Keywords: accounting policy, financial reporting, integrated reporting, information support, suppliers of financial capital, business valua.

методи та процедури, які хоч і суперечать МСФЗ, але не виходять за межі Концептуальної основи та законодавства. Тобто в обліковій політиці підприємства за необхідності і з дотриманням зазначених критеріїв можуть бути розкриті принципи, методи та процедури ведення обліку та складання не тільки фінансової звітності, а й інтегрованої або іншої корпоративної звітності. При цьому основою для розробки облікової політики підприємства мають стати нормативні документи, що визначають вимоги до складання відповідних видів звітності.

Ключові слова: облікова політика, фінансова звітність, інтегрована звітність, інформаційне забезпечення, постачальники фінансового капіталу, вартість бізнесу.

JEL Classification: G31, G32, M41.

Introduction

Modern requirements of financial capital providers for expanded information about the enterprise and its activities raise questions about the organization and methodology of its generation in accounting and reflection in financial reporting. As Raičević and Stojiljković (2022) note, "the reliability and authenticity of financial reporting is achieved primarily by the correct choice of methods and procedures for assessing materially significant balance sheet items, that is, by the correct choice of accounting policy".

In connection with the above mentioned, the issue of forming an enterprise's accounting policy in order to improve the quality of its reporting becomes relevant.

Given the impact of accounting policy on the organization and methodology of accounting and reporting, there are many studies by national and foreign authors, in particular on the compliance of its purpose with the requirements for information provision of reporting users. Thus, an analysis of the essence of an enterprise's accounting policy was carried out by Britton and Waterston (2006), Mukhopadhyay (2024), Raicevic (2021), Romashko and Korol (2023), Tuovila (2022), Tiscenco et al. (2023), Baranovskaya (2005), Voitenko (2010), Popitich (2016), Prykhodko (2013), Pushkar (2003), Suk (2005); on approaches to the formation and choice of accounting policy – Cojocaru (2021), Zhytnyi (2005, 2009), Pushkar and Shchyrba (2010), Nesterenko (2017), Panteliychuk (2002), Cherniy (2012), Shmyhel (2021).

The monitoring of scientific and special publications demonstrates their significant contribution to the study of these issues. Despite this, scientists do not have a common opinion on the role of accounting policy in the information provision of enterprise reporting. Given the new requests to provide suppliers of financial capital with expanded information about the activities of the enterprise, the following question requires further study: is it necessary to limit the purpose of accounting policy exclusively to providing

financial reporting, or can it serve as the basis for preparing extended reporting (in particular, integrated)?

Given the above, the hypothesis of the research is the statement that the purpose of accounting policy is not limited exclusively to providing financial reporting, it can serve as the basis for preparing extended reporting (in particular, integrated).

The aim of the research is to clarify the essence and purpose of the enterprise's accounting policy in order to justify the expediency of reflecting in the order on accounting policy the principles, methods and procedures for preparing not only financial, but also integrated reporting.

The following methods were used in the research: analysis and synthesis (to determine the approaches of regulatory documents and scientists to the interpretation of the essence and purpose of the accounting policy of the enterprise); comparison (to determine the similarities and differences between the approaches of regulatory documents and scientists to the interpretation of the essence and purpose of the accounting policy of the enterprise); systematization (to reflect information on the purpose of the accounting policy of the enterprise); deduction (to formulate conclusions and proposals).

In the four sections of the main part of the research, the features of the definition of the concept of "accounting policy" by national and international regulatory documents, domestic and foreign scientists are consistently highlighted, the interpretation of the purpose of the accounting policy (in particular, in the context of reporting), accounting policy is considered as the basis for accounting and preparing financial and integrated reporting, and regulatory documents are analyzed, which are the basis for disclosing the methodology and procedures for accounting and evaluation for information support of integrated reporting.

1. Definition of the term "accounting policy"

To achieve this aim, we will consider how the concept of "accounting policy" is defined by international and domestic regulatory documents (*Table 1*), as well as by national and foreign scientists (*Table 2*).

In national regulatory documents (Law of Ukraine No. 996-XIV, 1999, July 16; Order of the Ministry of Finance of Ukraine No. 73, 2013, February 7), the definitions of the concept under research are identical. Regulatory documents of other countries (Australian Accounting Standards Board 108, 2023; Indian Accounting Standard 8, 2023; Financial Reporting Standard 102, 2024; Riccardi, 2016) have identical or similar definitions of the concept under study, since they are based on IAS 8 (2012). The common denominator between the definition of the concept in Ukrainian legislation and the legislation of other countries is the purpose of the accounting policy, which consists in using it to present financial statements. This does not refer to information provision for suppliers of financial capital and improving the

quality of the enterprise's reporting. The exception is the Chinese Accounting Standards (Riccardi, 2016), which link accounting policies to reporting without specifying its type. This approach allows a certain degree of freedom in determining the purpose, objectives and methods of accounting and reporting in accounting policies by enterprises.

Table 1

Definition of the term "accounting policy" in regulatory documents

Regulatory documents	Term definition
National	
Law of Ukraine "On Accounting and Financial Reporting in Ukraine" (Law of Ukraine No. 996-XIV, 1999, July 16)	A set of principles, methods and procedures used by the enterprise for accounting, preparation and submission of financial statements
NSBO 1 "General Requirements for Financial Reporting" (Order of the Ministry of Finance of Ukraine No. 73, 2013, February 07)	
Methodological Recommendations on the Accounting Policy of an Enterprise, approved by Order of the Ministry of Finance of Ukraine dated 27.06.2013 No. 635 (Order of the Ministry of Finance of Ukraine No. 635, June 27)	Principles, methods and procedures used by the enterprise for accounting, preparation and submission of financial statements and for which the regulatory legal acts on accounting provide for more than one of their options, as well as preliminary estimates used by the enterprise for the purpose of allocating costs between the relevant reporting periods. It is inappropriate to include single-variant methods of assessment, accounting and procedures in such an administrative document.
	Element of the accounting organization system at the enterprise
International	
International Accounting Standard 8 "Accounting Policies, Changes in Accounting Estimates and Errors" (IAS 8, 2012)	Specific principles, foundations, agreements, rules and practices applied by a business entity in the preparation and presentation of financial statements
Regulatory documents of other countries	
Australian Accounting Standards Board 108 "Accounting Policies, Changes in Accounting Estimates and Errors" (Australian Accounting Standards Board 108, 2023)	Specific principles, bases, arrangements, rules and practices that an entity applies in preparing and presenting financial statements
Indian Accounting Standard 8 "Accounting Policies, Changes in Accounting Estimates and Errors" (Indian Accounting Standard 8, 2023)	Specific principles, bases, arrangements, rules and practices that an entity applies in preparing and presenting financial statements
IFRS 102 Financial Reporting Standard for the United Kingdom and the Republic of Ireland (Financial Reporting Standard 102, 2024)	Specific principles, bases, arrangements, rules and practices that an entity applies in preparing and presenting financial statements
Chinese Accounting Standards No. 28 "Changes in Accounting Policies and Accounting Estimates and Corrections of Errors" (Riccardi, 2016)	Specific accounting principles, bases and methods adopted by an entity for accounting recognition, measurement and reporting

Source: compiled by the authors.

Table 2

Approaches to the concept definition of "accounting policy" by scholars

Aspects	Scholars
Single-aspect approach	
Methodological or instrumental approach	Britton & Waterston (2006), Cojocaru (2021), Butynets (2000), Luczyk (2015), Panteliychuk (2002), Suk (2005)
Multi-aspect (combined) approach	
Legal and methodological	Deriy (2003), Kolos (2015), Kucherenko (2009), Mulyk (2015), Shmygel (2021)
Informational and methodological	Raičević, Stojiljković (2022), Tuovila (2022), Mulyk (2015), Nesterenko (2017), Olikhovsky (2012)
Methodological, legal and informational	Mukhopadhyay (2024), Popitich (2016)
Legal and informational	Pushkar (2011)

Source: compiled by the authors.

Therefore, in national and foreign scientific publications, when defining the concept of "accounting policy", different approaches are used, highlighting different aspects. At the same time, the methodological aspect largely defines the accounting policy as a set of principles, methods, and procedures for accounting and reporting. The legal and informational aspects characterize the accounting policy as the rights and obligations of the accounting system, but do not emphasize the methodological component of accounting. The methodological, legal, and informational aspects define the accounting policy as the basis (methodology) for accounting, preparation, and submission of reporting, taking into account the requirements of the law. When combining the methodological and informational aspects, the accounting policy is defined as an information base and the basis for accounting. A feature of the latter approach is the emphasis on meeting the information needs of external users of reporting. It is interesting because each time the definition of accounting methods in the accounting policy is carried out taking into account the information needs of reporting users.

2. Purpose of accounting policies

When determining the essence of accounting policy, scholars also interpret its purpose differently, namely as:

• preparation and presentation of financial statements (Britton, Waterston, 2006; Mukhopadhyay, 2024; Tuovila, 2022; Cojocaru, 2021; Kucherenko, 2009);

• preparation and presentation of reporting (Panteliychuk, 2002; Mulyk, 2015);

• provision of information to external users (meeting their needs) (Raičević & Stojiljković, 2022; Nesterenko, 2017; Kolos, 2015);

• preparation and presentation of integrated reporting (Nesterenko, 2017; Kolos, 2015).

In general, it can be concluded that accounting policies provide internal users with the necessary information, which allows them to make

adequate management decisions. At the same time, the authors Raičević and Stojiljković (2022), Nesterenko (2017) and Kolos (2015) define accounting policy as a tool for providing external users with accounting information.

In some publications, the authors directly try to define the purpose of accounting policy as:

• determining the accounting methodology (Voytenko, 2010; Kazak, 2019; Romasho, Korol, 2023);

• preparing financial statements (Raičević, Stojiljković, 2022; Baranovska, 2005; Voytenko, 2010; Prykhodko, 2013; Cherniy, 2012; Luchik, 2015; Kazak, 2019);

• facilitating management decision-making (Baranovska, 2005; Cojocaru, 2021; Zhytny, 2005; Pushkar, 2010; Kazak 2019);

• ensuring the information needs of internal and external users (Nesterenko, 2017; Kazak, 2019);

• ensuring the calculation of indicators for the taxation system (Kazak, 2019).

At the same time, Kazak (2019) points to the influence of accounting policy on achieving maximum investment attractiveness for external users; Tiscenco et al. (2023) – on the calculation of financial reporting items (indicators). Since the database for compiling corporate reporting is formed in the accounting process using the principles, methods and procedures defined by the accounting policy of the enterprise, this gives grounds to recognize that accounting policy affects the formation of reporting, which is compiled based on accounting data. Baranovska (2005), studying the purpose of the accounting policy of the enterprise, identifies six areas of its influence. Some of them are of interest for our study. Thus, within the social direction, the author notes "the creation of social guarantees to protect external users by ensuring the unity of interpretation of accounting data and financial reporting indicators"; within the economic direction – "obtaining the effect of using rational accounting policy, which is manifested in the optimal provision of information for management, reducing the volume of document flow, increasing the effectiveness of internal control"; informational direction – the possibility of developing "forecasts of the future state of the object" (Baranovska, 2005). At the same time, Baranovska studies accounting policy in the context of calculating indicators of not only financial, but also management reports. Nesterenko also considers a variant of the accounting policy goal of reflecting financial and non-financial information about the activities of a business entity in integrated reporting and proposes to introduce a new variant of accounting policy – the so-called "integrated accounting policy" (Nesterenko, 2017).

Based on the results of the analysis, it can be concluded that the accounting policy can become the basis for the formation of information for the preparation of not only financial, but also other, in particular integrated, reporting. Properly defined methods of accounting and analytical calculations in the accounting policy can improve the quality of information support for reporting users, in particular suppliers of financial capital.

Based on the analysis, we will schematically depict approaches to determining the purpose of the accounting policy of the enterprise (*Figure*).

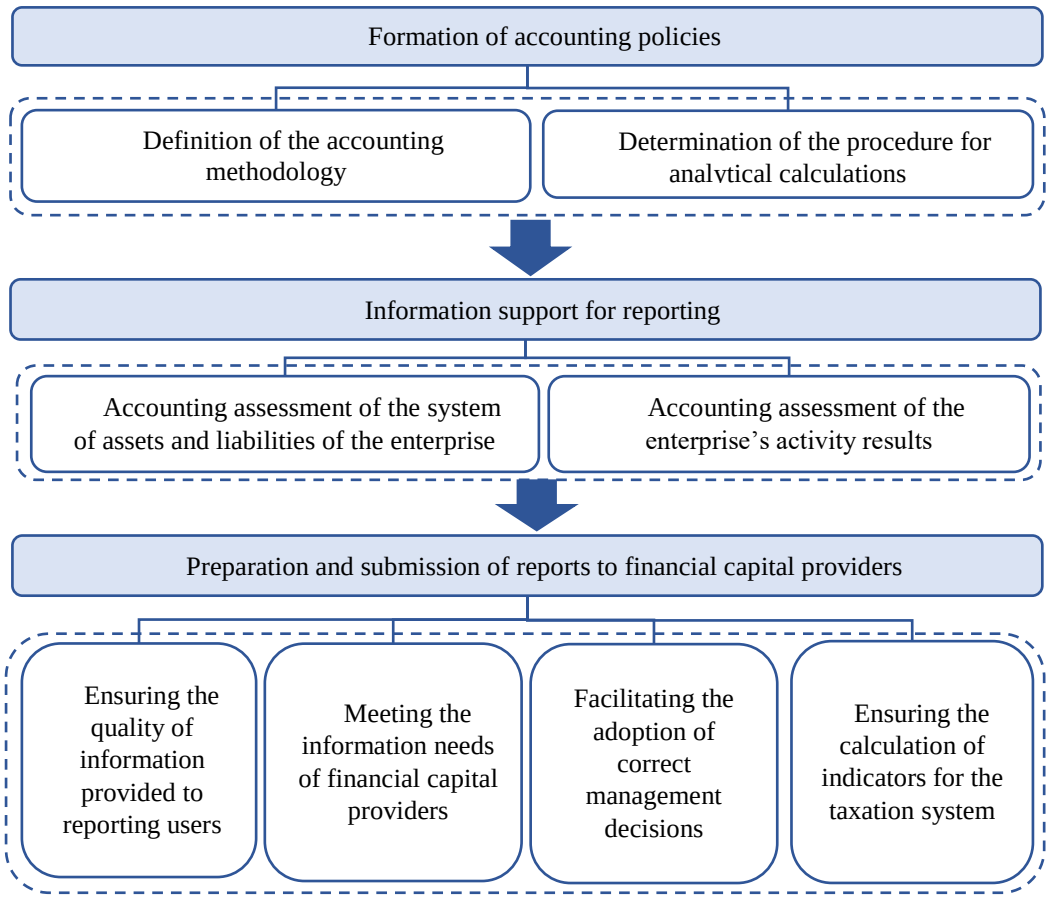

Figure. Approaches to determining the purpose of accounting policy

Source: compiled by the authors according to (Raičević & Stojiljković, 2022; Baranovska, 2005; Voitenko, 2010; Prykhodko, 2013; Cojocaru, 2021; Zhytnyi, 2005; Pushkar, 2010; Nesterenko, 2017; Chernii, 2012; Luchyk, 2015; Kazak, 2019).

3. Methods of accounting and preparation of financial and integrated reporting in the accounting policy

As one of the reservations regarding the expansion of the purpose and, accordingly, the content of the accounting policy, scientists mention the issue of presenting the accounting methodology and the preparation of financial and integrated reporting: in a single order on the accounting policy or separately. For example, Dzemishkevych suggests drawing up an additional order on reporting at the enterprise (Dzemishkevych, 2015). Nesterenko claims that such an approach will "overburden the work of the accounting department and contradict generally accepted accounting rules, since integrated reporting is not a separate process" and believes that "the main task for business structures that form or plan to form integrated reporting is, on the contrary, the implementation of its requirements into an already established accounting system thanks to the accounting policy"

(Nesterenko, 2017). We agree that the rules and procedures necessary for the formation of integrated reporting should be provided in the accounting policy, provided that they are not regulated, but do not contradict the legislation.

To support our opinion, we refer to International Accounting Standard 8 Accounting Policies, Changes in Accounting Estimates and Errors (IAS 8, 2012). The standard states that "in exercising judgment in developing accounting policies, management shall consider the most recent pronouncements of other standards-setting bodies that use a similar conceptual framework for developing standards, other professional accounting literature and accepted industry practices, to the extent that they do not contradict the following sources:

a) the requirements of IFRSs that deal with similar and related matters;

b) the definitions, recognition criteria and measurement concepts for assets, liabilities, income and expenses in the Conceptual Framework" (IAS 8, 2012).

Therefore, subject to compliance with the above provisions of IAS 8, the accounting policy of the enterprise may include additional methods and procedures for providing users of reporting with information about the activities of the enterprise that meets their needs. In this case, it is necessary to understand whether the current regulatory documents allow disclosure in the accounting policy of approaches to methods and procedures for accounting and valuation for information support of integrated reporting. For this purpose, let us analyze the provisions of IFRS C1 "General requirements for disclosure of financial information related to sustainable development" (IFRS S1, 2023).

4. Regulatory documents when disclosing accounting and valuation methodologies and procedures for information support of integrated reporting

IFRS S1 (IFRS S1, 2023) provides for the provision of financial and non-financial information related to sustainable development to users of reporting. The standard provides for disclosure of information in various parts of the reporting (for example, notes to the financial statements) or in management comments to the financial statement or other similar report that is part of the financial statements (for example, integrated reporting). Therefore, guided by the requirement of IFRS S1, the accounting policy must disclose not only the principles, methods and procedures for maintaining accounting and preparing financial statements, but also others that are the basis of integrated or other reporting in which the enterprise reflects information about its activities related to sustainable development.

It is also worth noting that according to the IRF (2021), if for the information (indicators) of the integrated report there is similar information (indicators) in other reporting (for example, financial), then in the integrated report the information must be generated in accordance with the principles and using the methods of such reporting (financial) (IRF, 2021). This once

again confirms the view that the accounting methodology and preparation of such forms of reporting (financial, integrated, etc.) should be disclosed within the framework of a single accounting policy.

Since the IFRS C1 purpose is to expand the possibilities of presenting information about the activities of the enterprise in addition to the "classical" IFRSs, such reporting principles as materiality, relevance, fair presentation and others, which are defined in the Conceptual Framework for Financial Reporting (Conceptual Framework for Financial Reporting, 2018) and IFRS C1, are similar to each other. IFRS C1 (IFRS S1, 2023) and IRF (IRF, 2021) have a relatively strategic focus and are focused on disclosing information about the activities of the enterprise in the short, medium and long term. At the same time, IRF (IRF, 2021) more fully discloses the principles of relations with interested parties than the Conceptual Framework for Financial Reporting (2018) and IFRS C1 (IFRS S1, 2023).

Therefore, the principles of the above-mentioned reporting standards constitute a system that should become the basis for the formation of an enterprise's accounting policy for both financial and other reporting. This approach makes it possible to increase the efficiency of information provision for reporting users by expanding the possibilities of generating additional information necessary for suppliers of financial capital and reflecting it in reporting.

Conclusions

The conducted research confirmed that current international regulatory documents, unlike national ones, do not prohibit the disclosure of principles, methods and procedures when forming accounting policies, which, although they contradict IFRS, do not go beyond the Conceptual Framework and legislation.

That is, the accounting policy of the enterprise, if necessary and in compliance with the specified criteria, should disclose the principles, methods and procedures for maintaining accounting and preparing not only financial statements, but also integrated or other corporate reporting. At the same time, the basis for developing the accounting policy of the enterprise should be regulatory documents that determine the requirements for preparing the relevant types of reporting. At the same time, the requirements (principles, methods and procedures) relating to other types of reporting should be disclosed in separate sections or annexes to the order on the accounting policy of the enterprise.

The results of the research confirmed the correctness of the hypothesis that the purpose of accounting policy is not limited exclusively to providing financial reporting, that is, it can serve as the basis for the preparation of extended, in particular integrated, reporting.

Further research should be aimed at determining approaches to the formation of a unified accounting policy as a basis for determining accounting methods and procedures to inform the preparation of financial and extended, including integrated, reporting.

REFERENCE/СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ

Australian Accounting Standards Board 108 "Accounting Policies, Changes in Accounting Estimates and Errors". (2023). https://aasb.gov.au/admin/file/content105/c9/AASB108_08-15_COMPmar21_01-23.pdf	
Baranovska, T. V. (2005). *Accounting policy of the enterprise in Ukraine: theory and practice* (author's abstract of the dissertation for the ZPSY in Economics). ZPSY, Zhytomyr, Ukraine.	Барановська, Т. В. (2005). *Облікова політика підприємства в Україні: теорія і практика* (автореф. дис. на здобуття наук. ступення канд. екон. наук). ЖДТУ, Житомир, Україна.
Britton, A., & Waterston, C. (2006). *Financial accounting*. London: Financial Times/ Prentice Hall.	
Butynets, F. F. (2000). Theory of Accounting. Zhytomyr: ZSTU.	Бутинець, Ф. Ф. (2000). *Теорія бухгалтерського обліку*. Житомир: ЖІТІ.
Cherniy, M. Ya. (2012). Formation of accounting policy of enterprises based on organizational and technological features of activity. Problems of theory and methodology of accounting, control and analysis, *2*(23), 381–388.	Черній, М. Я. (2012). Формування облікової політики підприємств на основі організаційно-технологічних особливостей діяльності. *Проблеми теорії та методології бухгалтерського обліку, контролю і аналізу, 2*(23), 381–388.
Cojocaru, A. (2021). Options for selecting and applying accounting policies in assessing financial position and performance. *ECONOMICA*, *4*(118), 105–124.	
Conceptual Framework for Financial Reporting. (2018). https://mof.gov.ua/storage/files/2019_RB_ConceptualFramework_ukr_AH.pdf.	*Концептуальна основа фінансової звітності*. (2018). https://mof.gov.ua/storage/files/2019_RB_ConceptualFramework_ukr_AH.pdf.
Derii, V. A. (2003). *Organization of accounting in an enterprise.* Ternopil: Dzhura.	Дерій, В. А. (2003). *Організація бухгалтерського обліку в підприємстві*. Тернопіль: Джура.
Dzemishkevych, I. O. (2015). Features of reflecting the methodology for forming integrated reporting in the accounting policy of the enterprise. *Development of accounting, analysis and audit in the conditions of transformation of the management system.* 34–38. April 22, 2015, Cherkasy.	Дземішкевич, І. О. (2015). Особливості відображення методики формування інтегрованої звітності в обліковій політиці підприємства. *Розвиток бухгалтерського обліку, аналізу та аудиту в умовах трансформації системи управління*. (с. 34–38). Черкаси.
Financial Reporting Standard 102 "The Financial Reporting Standard applicable in the UK and Republic of Ireland". (2024). https://www.frc.org.uk/library/standards-codes-policy/accounting-and-reporting/uk-accounting-standards/frs-102/	
IFRS S1. (2023). *International financial reporting standards S1 "General Requirements for Disclosure of Sustainability-related Financial Information"*. https://www.ifrs.org/issued-standards/ifrs-sustainability-standards-navigator/ifrs-s1-general-requirements/	
Indian Accounting Standard 8 "Accounting Policies, Changes in Accounting Estimates and Errors". (2023). https://resource.cdn.icai.org/75317asb60889.pdf	
International Accounting Standard 8 "Accounting Policies, Changes in Accounting Estimates and Errors". (2012). https://zakon.rada.gov.ua/laws/show/929_020#Text	*МСБО 8.* (2012). *Міжнародний стандарт бухгалтерського обліку 8 "Облікові політики, зміни в облікових оцінках та помилки"*. https://zakon.rada.gov.ua/laws/show/929_020#Text
IRF. (2021). *Integrated Reporting Framework*. https://www.integratedreporting.org/resource/international-ir-framework/	
Kazak, O. O. (2019). Theoretical principles of accounting policy formation of modern enterprises. *Effective Economy*, (9), http://www.economy.nayka.com.ua/pdf/9_2019/59.pdf	Казак, О. О. (2019). Теоретичні засади формування облікової політики сучасних підприємств. *Ефективна економіка,* (9), http://www.economy.nayka.com.ua/pdf/9_2019/59.pdf

Kolos, I. V. (2015, April 16-17). Accounting policy as an element of enterprise reporting. *Current problems of economic and social development of food industry enterprises*, 12–14, Kyiv.	Колос, І. В. (2015, квітня16-17). Облікова політика як елемент звітності підприємства. *Актуальні проблеми економічного та соціального розвитку підприємств харчової промисловості,* 12–14, Київ.
Kucherenko, T. (2009). Regulation of accounting policy of financial reporting. Accounting and Audit, (5), 24–34.	Кучеренко, Т. (2009). Регламентування облікової політики фінансової звітності. *Бухгалтерський облік і аудит,* (5), 24–34.
Law of Ukraine, № 996-XIV. (1999, July). *On Accounting and Financial Reporting in Ukraine*. (https://zakon.rada.gov.ua/laws/show/996-14#Text	Закон України № 996-XIV. (1999, 16 липня). *Про бухгалтерський облік та фінансову звітність в Україні* https://zakon.rada.gov.ua/laws/show/996-14#Text
Luchik, G. M. (2015). Accounting policy as a tool for forming accounting and analytical information in management. Effective Economy, (12). http://www.economy.nayka.com.ua/?op=1&z=4664	Лучик, Г. М. (2015). Облікова політика як інструмент формування обліково-аналітичної інформації в управлінні. *Ефективна економіка,* (12). http://www.economy.nayka.com.ua/?op=1&z=4664
Mukhopadhyay, S. (2024). Accounting Policies. *Wall Street Mojo*. https://www.wallstreetmojo.com/accounting-policies/	
Mulyk, T. O. (2015). Accounting policy as a tool for tax management. *Global and national problems of the economy*, (4). http://global-national.in.ua/archive/4-2015/211.pdf	Мулик, Т. О. (2015). Облікова політика як інструмент управління оподаткуванням. *Глобальні та національні проблеми економіки,* (4). http://global-national.in.ua/archive/4-2015/211.pdf
Nesterenko, O. O. (2017). Methodological aspects of the formation of an integrated accounting policy. *Economic Strategy and Development Prospects of the Trade and Services Sector*, *2*(26), 29–44.	Нестеренко, О. О. (2017). Методологічні аспекти формування інтегрованої облікової політики. *Економічна стратегія і перспективи розвитку сфери торгівлі та послуг, 2*(26), 29–44.
Olikhovsky, V. Ya. (2012). Theoretical aspects of tax planning. *Bulletin of the National University "Lviv Polytechnic". "Management and Entrepreneurship in Ukraine: Stages of Establishment and Development Problems"*, (722), 177–181.	Оліховський, В. Я. (2012). Теоретичні аспекти податкового планування. *Вісник Національного університету "Львівська політехніка". "Менеджмент та підприємництво в Україні: етапи встановлення і проблеми розвитку",* (722), 177–181.
Order of the Ministry of Finance of Ukraine, № 635. (2013). *On approval of Methodological recommendations on the accounting policy of the enterprise and amendments to some orders of the Ministry of Finance of Ukraine*. https://zakon.rada.gov.ua/rada/show/v0635201-13#n12	Наказ Міністерства фінансів України № 635. (2013, 27 червня). *Про затвердження Методичних рекомендацій щодо облікової політики підприємства та внесення змін до деяких наказів Міністерства фінансів України* https://zakon.rada.gov.ua/rada/show/v0635201-13#n12
Order of the Ministry of Finance of Ukraine, № 73. (2013). *On approval of the National Accounting Regulation (Standard) 1 "General Requirements for Financial Reporting* (https://zakon.rada.gov.ua/laws/show/z0336-13#Text	Наказ Міністерства фінансів України. № 73. (2013, 7 лютого). *Про затвердження Національного положення (стандарту) бухгалтерського обліку 1 "Загальні вимоги до фінансової звітності* https://zakon.rada.gov.ua/laws/show/z0336-13#Text
Panteliychuk, L. (2002). Formation of accounting policy is an important stage of enterprise work. *Accounting and Audit*, (9), 3–11.	Пантелійчук, Л. (2002). Формування облікової політики – важливий етап роботи підприємства. *Бухгалтерський облік і аудит,* (9), 3–11.
Popitich, T. (2016). Accounting policy: conceptual apparatus and classification. *Institute of Accounting, Control and Analysis in the Conditions of Globalization: International Scientific Journal*, (2), 63–74.	Попітіч, Т. (2016). Облікова політика: понятійний апарат і класифікація. *Інститут бухгалтерського обліку, контроль та аналіз в умовах глобалізації*: *міжнар. наук. Журнал,* (2), 63–74.
Prykhodko, I. P. (2013). Accounting policy of a modern enterprise: theoretical aspects of formation. *Economy and State*, (5), 73–76.	Приходько, І. П. (2013). Облікова політика сучасного підприємства: теоретичні аспекти формування. *Економіка та держава,* (5), 73–76.

Pushkar, M. S. (2003). *Accounting Policy and Reporting*. Ternopil: Carte Blanche.	Пушкар, М. С. (2003). *Облікова політика і звітність.* Тернопіль: Карт-бланш.
Pushkar, M. S., & Shchyrba, M. T. (2010). *Theory and practice of accounting policy formation.* Ternopil: Carte-blanche.	Пушкар, М. С., & Щирба, М. Т. (2010). *Теорія і практика формування облікової політики.* Тернопіль: Карт-бланш.

Raicevic, J. (2021). Accounting policies in the function of quality assessment of financial statements. *Economic Themes*, *59*(3), 357–373.

Raičević, J., & Stojiljković, M. (2022). The importance of choosing and applying accounting policies in the corporate management system. *Proceedings of the 9th International Scientific Conference – FINIZ 2022*. https://doi.org/10.15308/finiz-2022-32-38

Riccardi, L. (2016). *China Accounting Standards. Introduction and Effects of New Chinese Accounting Standards for Business Enterprises*. Singapore: Springer. https://www.econbiz.de/Record/china-accounting-standards-introduction-and-effects-of-new-chinese-accounting-standards-for-business-enterprises-riccardi-lorenzo/10011396617.

Romasho, O., Korol, S. (2023). Accounting policy of the organization: principles of formation and main aspects. *Effective economy*, 10, 1–18.	Ромашо, О., Король, С. (2023). Облікова політика організації: принципи формування та основні аспекти. *Ефективна економіка,* 10, 1–18.
Shmyhel, O. (2021). Peculiarities of forming an enterprise's accounting policy in a competitive environment. *Economic Discourse*, *1*(1–2), 66–73.	Шмигель, О. (2021). Особливості формування облікової політики підприємства в конкурентному середовищі. *Економічний дискурс, 1*(1–2), 66–73.
Suk, P. (2005). Accounting policy of the enterprise. *Accounting in agriculture*, (1), 2–4.	Сук, П. (2005). Облікова політика підприємства. *Бухгалтерія в сільському господарстві*, (1), 2–4.

Tiscenco, V., Badicu, G., & Cosmulese, C. G. (2023). Theoretical foundations and conceptual delimitations of accounting policies. *European Journal of Accounting, Finance and Business*, (11), 16–21.

Tuovila, A. (2022). What Are Accounting Policies and How Are They Used? With Examples. *Investopedia*, https://www.investopedia.com/ terms/a/account.

Voitenko, T. V. (2010). Accounting policy – 2010: main points. *Taxes and accounting*, (1–2), 16–22.	Войтенко, Т. В. (2010). Облікова політика – 2010: головне. *Податки і бухгалтерський облік*, (1–2), 16–22.
Zhytnyi, P. (2005). Problems of accounting policy formation and ways of their solution. *Accounting and Audit*, (3), 19–22.	Житний, П. (2005). Проблеми формування облікової політики та шляхи їх вирішення. *Бухгалтерський облік і аудит,* (3), 19–22.
Zhytnyi, P. (2009). Principles of accounting policy formation. *Accounting and Audit*, (4), 25–28.	Житний, П. (2009). Принципи формування облікової політики. *Бухгалтерський облік і аудит,* (4), 25–28.

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ACCOUNTING FOR ANTI-CRISIS MANAGEMENT OF THE BANK'S CREDIT PORTFOLIO

The credit portfolio is one of the key portfolios that ensures the bank's profitability, and therefore its quality is constantly in the focus of anti-crisis management. In the course of the research, a hypothesis was put forward that bank accounting accounts are an important source of information for anti-crisis management of its credit portfolio, which allows management to make operational administrative decisions and respond in a timely manner to any negative changes in the portfolio, which, in turn, helps to prevent crisis phenomena or reduce their negative impact. To verify it, the content of the information, the accounting sources of its receipt, and the directions of its use in the process of anti-crisis management of the bank's loan portfolio were investigated, in particular, for identifying crisis phenomena in the loan portfolio and monitoring its quality. The quality analysis of loan portfolios of Ukrainian banks has been revealed that more than 30% of these portfolios are non-performing loans, which negatively affects the banks' financial results. The largest share of non-performing loans was accumulated by state banks, in particular, JSC CB "PrivatBank". Among loans granted to individuals, non-performing loans make up about 17%, among loans granted to legal entities more than 40%. This indicates the presence

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ОБЛІКОВЕ ЗАБЕЗПЕЧЕННЯ АНТИКРИЗОВОГО УПРАВЛІННЯ КРЕДИТНИМ ПОРТФЕЛЕМ БАНКУ

Кредитний портфель (КП) є одним з ключових портфелів, що забезпечує прибутковість діяльності банку, а тому його якість постійно перебуває в центрі уваги антикризового управління. У ході дослідження висунута гіпотеза про те, що рахунки бухгалтерського обліку банків є важливим джерелом інформації для антикризового управління його кредитним портфелем, яка дозволяє менеджменту приймати оперативні управлінські рішення та вчасно реагувати на будь-які негативні зміни портфеля, що, своєю чергою, допомагає запобігти кризовим явищам або зменшити їх негативний вплив. Для її перевірки досліджено зміст інформації, облікові джерела її отримання та напрями використання у процесі антикризового управління КП банку, зокрема для ідентифікації кризових явищ у кредитному портфелі та моніторингу його якості. Проведений аналіз якості кредитних портфелів банків України показав, що понад 30% з них є непрацюючими кредитами, а це негативно впливає на фінансові результати банків. Найбільшу частку непрацюючих кредитів акумулювали державні банки, зокрема АТ КБ "Приватбанк". Серед кредитів, наданих фізичним особам, непрацюючі становлять близько 17%, серед кредитів, наданих юридичним

of significant problems in the credit portfolios of banks and requires the application of various anti-crisis measures. An important role in the anti-crisis management of the bank's loan portfolio is played by the diagnosis of crisis phenomena, in which information support, in particular accounting, plays a crucial role. The accounting support for the diagnosis of crisis phenomena in the credit portfolio was considered. Directions for using the bank's analytical accounting parameters to identify crisis phenomena in the loan portfolio has been proposed. An example of the early detection of debtors with signs of potential problems using the analytical accounting parameter S191 "Code of the level of loan delinquency" has been given. The accounting support for monitoring the bank's credit portfolio, which is a mandatory stage of anti-crisis management and allows assessing the effectiveness of anti-crisis measures, as well as identifying new problems in the credit portfolio, has been studied. Algorithms for calculating the quality indicators of the bank's loan portfolio have been proposed, based on the use of information from analytical and synthetic accounting accounts.

Keywords: crisis, anti-crisis management, bank, credit portfolio, accounting, accounting provision, accounting accounts.

особам, – понад 40%. Це свідчить про наявність значних проблем у кредитних портфелях банків і вимагає застосування різноманітних антикризових заходів. Важливу роль в антикризовому управлінні кредитним портфелем банку відіграє діагностика прояву кризових явищ, в якій визначальну роль відіграє інформаційне забезпечення, зокрема облікове. Розглянуто облікове забезпечення діагностики кризових явищ у кредитному портфелі. Запропоновано напрями використання параметрів аналітичного обліку банку для ідентифікації кризових явищ у кредитному портфелі. Наведено приклад раннього виявлення боржників з ознаками потенційної проблемності із застосування параметру аналітичного обліку S191 "Код рівня прострочення кредитів". Досліджено облікове забезпечення моніторингу кредитного портфеля банку, що є обов'язковим етапом антикризового управління та дає змогу оцінити ефективність антикризових заходів, а також виявити нові проблеми у кредитному портфелі. Запропоновано алгоритми розрахунку показників якості кредитного портфеля банку, що базуються на використанні інформації аналітичних та синтетичних рахунків бухгалтерського обліку.

Ключові слова: криза, антикризове управління, банк, кредитний портфель, облік, облікове забезпечення, рахунки бухгалтерського обліку.

JEL Classification: E50, G21, G30, M41, M49.

Introduction

Over the past decade, Ukrainian banks have been in a state of almost constant turbulence, which was caused first by the financial crisis of 2014 and the cleaning of the banking system, then by the Pandemic, and today is being exacerbated by the long-term war with russia. Constant negative external influence causes crisis phenomena in banks, where one of the key objects of influence is the loan portfolio (LP), the quality of which directly depends on the solvency of borrowers, currency risks, the state of collateral, etc.

In these conditions, the role of LP anti-crisis management is increasing, which is constantly encountering new challenges. One of the factors of effective LP anti-crisis management is high-quality information support, which can be considered from different perspectives, in particular by the source of origin, the nature of information, the periodicity of formation, etc. And each type of information plays its own role in such management.

In this research, the main subject is focused on accounting information support and its use in the process of anti-crisis management of the bank's loan portfolio. Today, the scientific literature largely focuses on the features of bank loan portfolio management under martial law. In particular, Bugel (2024)

examines the impact of the macroeconomic environment and growing credit risks on the quality of the loan portfolio, as well as management methods that are appropriate to apply in these conditions. Many scientific works by Ukrainian authors are devoted to credit risk management (Shalygina, 2024; Dotsenko, 2024), the problems of non-performing loans (Usatyuk, 2024) or their regulation, adaptation of bank credit policy (Vladyka et al., 2024) and increasing the efficiency of bank loan portfolio management (Zharikova et al., 2023) under martial law.

Similar problems are also being addressed by foreign scholars in their countries. In particular, authors, as Rahman et al. (2021), pay attention to the issues of resolving non-performing loans using the example of Bangladesh; Venugopal (2024) examines the impact of loan portfolio composition on the performance of different types of banks in India; Walkhoff and Ziegenhagen (2024) analyze the challenges facing banks in the face of geopolitical upheavals, including wars in Ukraine and the Middle East, supply chain disruptions, rising energy costs, significant price increases, funding costs, and cybercrime, and how this affects banks' non-performing loans and changing approaches to managing them.

The issue of bank crisis management is considered in the scientific literature mostly in general at the bank level (Dragan et al., 2021; Marynchak & Savchyn, 2023; Ryzhonkov & Azarenkova, 2023; Azarenkov, 2024) or from the perspective of ensuring the stability of the banking system (Cociug & Postolache, 2020; Vakhovich et al., 2023). Foreign authors also consider the impact of crises on bank activities in general (Mecatti, 2023), bank crisis management strategies (Davis et al., 2024), as well as the content of various stages of such management, in particular, crisis prevention, preparedness for them, response to them and recovery after them (Jayasundera, 2023).

It's worth to note little attention to crisis management of specific portfolios or areas of bank activity in the scientific literature. Thus, Zhovtanetska (2015) considers anti-crisis management of deposit and loan portfolios, Kovalenko (2024) considers the choice of a strategy for anti-crisis management of cash flows in the interest-bearing business of banks.

Regarding the information support of a bank's anti-crisis management, the authors Dragan et al. (2022) usually focus on financial reporting, which is an important source of consolidated information on various areas of a bank's activity. At the same time, foreign scholars pay attention to the impact of information on anti-crisis management. Thus, Anderson and Copeland (2019) analyze how information management during crises and the transparency of banks affect their stability; Vukajlović et al. (2019) conduct a statistical analysis of the impact of information on anti-crisis management and the actions of managers, which confirms the relevance of studying the information, including accounting, support of anti-crisis management.

The issue of accounting support for anti-crisis LP management is insufficiently studied in the scientific literature. But it is the accounting information accumulated in the accounts of analytical and synthetic accounting

that serves as a source of operational information for the anti-crisis management of the bank's LP and is one of the most important when making management decisions, which determined the choice of the research topic.

The research aim is to develop suggestions for the information usage accumulated in the accounts of synthetic and analytical accounting of banks in the anti-crisis management of the bank's credit portfolio.

In the research it was hypothesized that bank accounting records are an important source of information for anti-crisis management of its credit portfolio, which allows management to make operational administrative decisions and respond in a timely manner to any negative changes in the portfolio, which, in turn, helps to prevent crisis phenomena or reduce their negative impact. To verify this, the content of the information, accounting sources of its receipt and directions of use in the process of anti-crisis management of the bank's credit portfolio were investigated, in particular for identifying crisis phenomena in the credit portfolio and monitoring its quality.

To achieve the aim, the following research methods were used: induction and deduction; analysis and synthesis to study the quality of the credit portfolio of Ukrainian banks and their changes in recent years; empirical research, to review the types and content of information accumulated in the bank's credit accounting accounts; generalization, to develop directions for the use of accounting information in the process of anti-crisis management of the credit portfolio. The research is based on the regulatory documents of the National Bank of Ukraine on bank accounting study, official websites and reports of banks, scientific publications of foreign and national experts.

The main part of the research consists of three interrelated sections. The first examines the quality of loan portfolios of Ukrainian banks and its changes in recent years; the second considers the accounting support for the diagnosis of crisis phenomena in the LP; the third one is the accounting support for monitoring the loan portfolio.

1. Loan portfolios quality of Ukrainian banks

Over the past decade, Ukrainian banks have been going through difficult times. After the crisis of 2008–2009, a new crisis occurred in the banking sector in 2014–2015 and was, as the NBU notes, "the deepest since independence" (NBU, 2016). As a result of this crisis, "the level of negatively classified loans increased to the highest historical values" (NBU, 2016, June). Later, after the cleaning up of the banking system and the application of stabilization measures at the level of both the NBU and the banks themselves, the quality of banks' LP began to gradually improve. As can be seen from *Figure 1*, before the start of the full-scale invasion, the share of non-performing loans in Ukrainian banks, for which the NBU began to publish full-fledged statistics in February 2017, showed a tendency to decrease in all bank groups. However, the war with the russian federation brought new risks

and the share of such loans began to grow sharply from March 2024. However, this growth was not as large as in 2014–2015, and from the beginning of 2023, a reduction in the share of non-performing loans began to be observed, but to this day, banks' loan portfolios remain under the influence of war risks, and as of 01.01.2025, the share of non-performing loans on average in the banking system is over 30%.

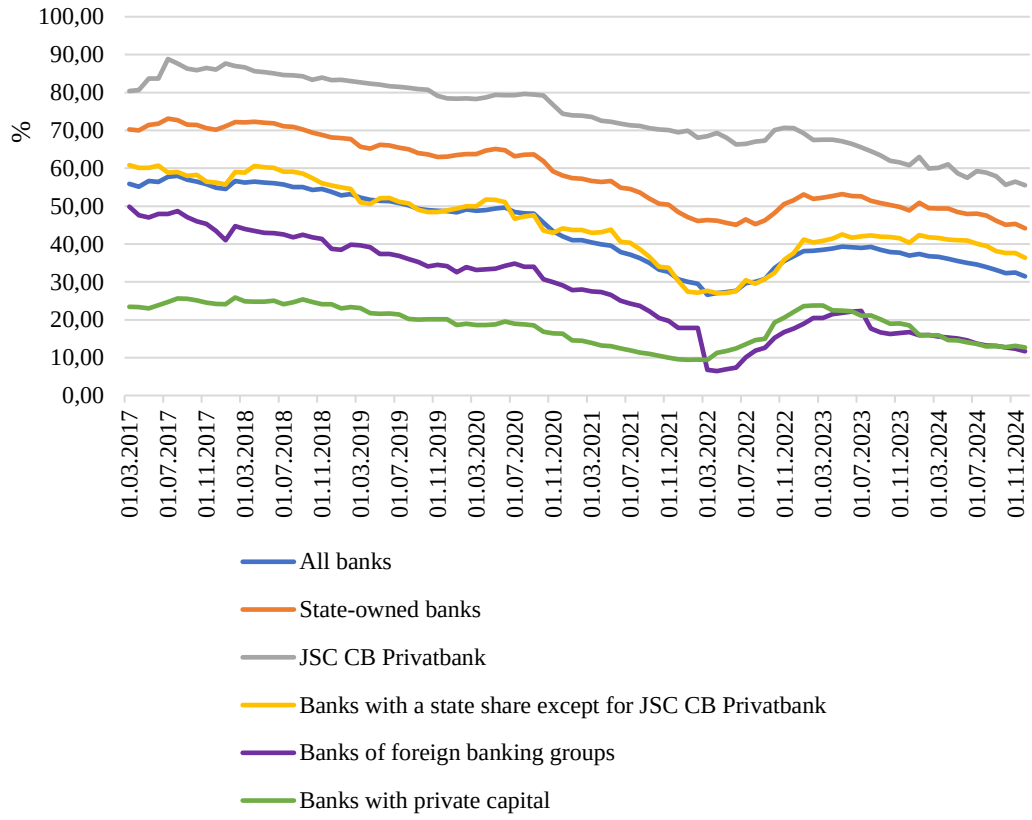

Figure 1. Dynamics of the share of non-performing loans in the loan portfolios of Ukrainian banks during 01.03.2017 – 01.01.2025

Source: compiled by the authors according to (NBU, b. d. a).

The largest share of non-performing loans throughout the analyzed period is observed in JSC CB "PrivatBank" and other banks with a state share. It was the ineffective credit policy that became one of the key reasons for the nationalization of JSC CB "PrivatBank", and the problem of non-performing loans has not been overcome in this bank to this day. At the same time, banks of foreign banking groups and banks with private capital demonstrate a significantly lower share of non-performing loans compared to the market average, but it still exceeds 10%.

It is worth noting that according to the Regulation on the Organization of the Problem Asset Management Process in Ukrainian Banks, "a bank is considered to have a significant level of problem assets if the ratio of the total amount of debt on loans granted to legal entities and individuals classified as non-performing assets to the total amount of debt on loans granted to legal entities and

individuals exceeds five percent" (NBU, 2019, July 18). Therefore, the banking system of Ukraine can be characterized as having a significant level of problem assets and being in a state of crisis, therefore requiring constant anti-crisis measures.

As it can be studied from *Figure 2*, the portfolio of loans provided by Ukrainian banks to individuals demonstrates better quality than the portfolio of loans provided to legal entities. Thus, in the portfolio of individuals, the share of loans of the best quality (class 1) is over 80%, while in the portfolio of legal entities is only about 10%. The low quality of loans provided to legal entities is also evidenced by the presence of about 39% of class 10 loans, which are non-performing.

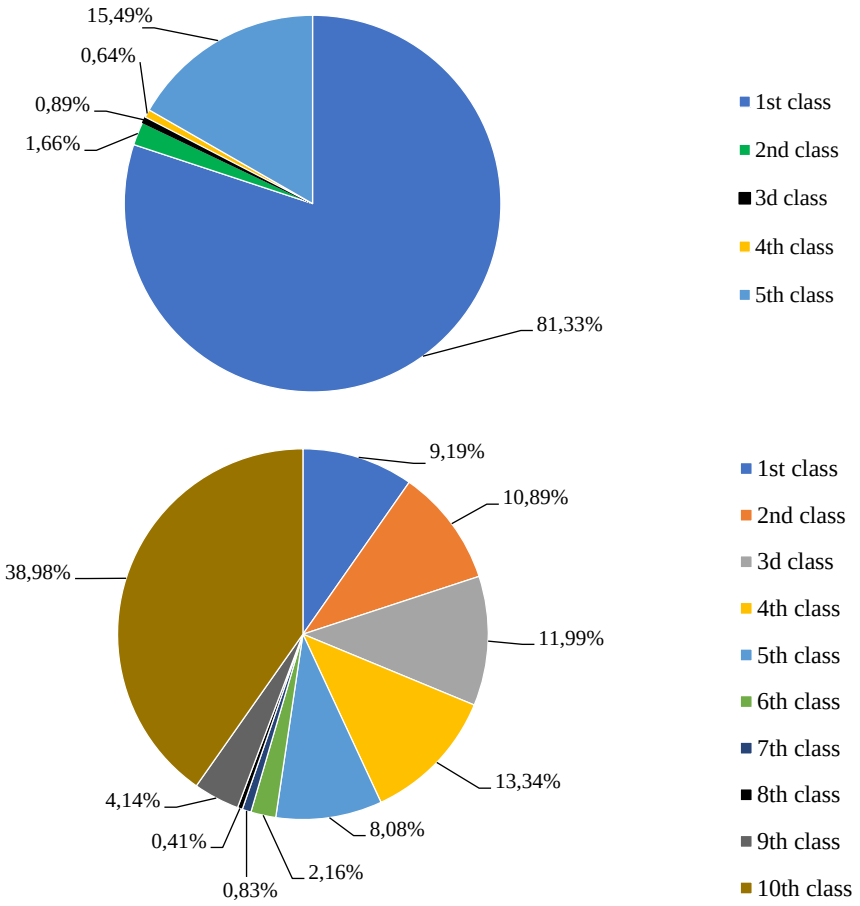

Figure 2. The structure of loans granted to individuals (a) and legal entities (b) by classes of debtor in Ukrainian banks, January 01, 2025

Source: compiled by the authors according to (NBU, b. d. b).

Analysis of the loan portfolios quality of Ukrainian banks shows that they are under the influence of crisis phenomena in the economy, which requires banks to constantly take anti-crisis measures of both preventive and reactive nature, since the state of the loan portfolio directly affects the performance of the bank.

2. Accounting support for crisis phenomena diagnostics in the loan portfolio

Anti-crisis management of the bank's LP requires a large amount of information, which is formed both at the bank level and at the borrower level, and is also collected from other sources. One of such sources of information is the bank's accounting, namely the accounts of analytical and synthetic accounting and the forms of financial, statistical and management reporting, which summarize the information accumulated in the accounts in different sections.

To form the accounting support for anti-crisis management of the bank's credit portfolio, the authors used the Chart of Accounts for Accounting of Banks of Ukraine and the Instructions for its Application (NBU, 2017, September 11), the List of References Used for Forming Statistical Reporting Indicators (NBU, b. d. c) and the Methodology for Calculating the Grouping of Accounts of the Chart of Accounts for Accounting of Banks of Ukraine (NBU, 2022).

In order to further consideration of the accounting support for identifying crisis phenomena in LP, we will first determine the filling of this portfolio by accounting accounts.

The loan portfolio is the set of all loans granted by a bank with the aim of generating income. Burlaenko (2016) also clarifies that in addition to loans, the LP includes guarantees, advances, and commitments to extend credit. In accounting terms, LP can be represented as the sum of balances at a certain date on the balance sheet accounts of the Chart of Accounts of Banks of Ukraine (NBU, 2017, September 11) groups 151-154, sections 20-24, and debit balances on accounts 2600, 2607, 2620, 2621, 2627, 2650, 2657 minus credit balances on accounts 2609, 2629, 2659 (hereinafter referred to as BSA), as well as on off-balance sheet accounts of groups 900, 910, 912 (hereinafter referred to as OBSA).

Diagnosis of crisis phenomena is the first and defining stage of anti-crisis management of the bank's credit portfolio, on which the arsenal of anti-crisis measures applied and their effectiveness subsequently depend. One of the key features of anti-crisis management is its efficiency in making management decisions, which in turn requires immediate identification of problems in LP. This requirement is met by the analytical accounting of the bank, which allows daily monitoring of changes for each loan and each borrower and timely diagnosis of problematic or potentially problematic situations.

Analytical accounting of the bank uses a large number of parameters that detail information about each loan in different sections. The list of parameters of analytical accounting of banks is determined by the Rules for organizing statistical reporting submitted to the National Bank of Ukraine (NBU, 2018, November 13). For each parameter, the NBU website provides directories of possible values (NBU, b. d. c).

Anti-crisis management of the bank's LP is carried out at various stages of the bank's credit process and includes both preventive and reactive measures.

Preventive anti-crisis management of the bank's credit portfolio is aimed primarily at preventing the manifestation of crisis phenomena, in particular problem and non-performing loans. The main task of preventive anti-crisis LP management is the early detection of debtors with signs of potential problems.

One of the first signs of such debtors is the appearance of overdue debt on the loan. Identifying overdue debt on loans from the first day of overdue allows grouping the balances on the above-listed balance sheet accounts of the credit portfolio in terms of the values of the analytical accounting parameter S191 "Code of the level of overdue loans", which can take values from 1 (not overdue) to 7 (classified as hopeless). Information on this parameter allows not only to identify the facts of overdue, but also to track the age of such overdue loans and to strengthen anti-crisis measures as this age increases. The more important this parameter becomes, the more problematic such a loan becomes from the point of view of anti-crisis management. And therefore, the bank gradually moves from preventive to reactive anti-crisis measures, which are no longer preventive in nature, but are aimed at overcoming problems in LP.

Examples of other parameters of analytical accounting of banks and directions of using information formed according to these parameters in the diagnosis of crisis phenomena in LP are given in *Table 1*.

Table 1

Use of bank analytical accounting parameters to identify crisis phenomena in the loan portfolio

Analytical accounting parameter	Directions for use in crisis management
DSTI "Code of the average level of the ratio of the debtor's monthly total expenses for servicing the total amount of debt to the amount of its monthly total net income"	Identification of debtors who have insufficient income to repay the loan debt
F075 "Code of signs that, in accordance with Regulation No. 351 (NBU, 2016, June 30), indicate a high credit risk of a counterparty/bank related party"	dentification of debtors – individuals assigned to debtor class 5 and legal entities assigned to debtor class 9 or 10, and the criteria for such assignment
F075G "Presence of a default event / signs of high credit risk"	Identification of debtors with high credit risk or default events
F076 "Code of signs that, in accordance with Regulation No. 351, indicate a default event of a counterparty/bank related party"	Identification of debtors – legal entities that have been recognized as in default and are assigned to debtor class 10, as well as the criteria for such assignment
F077 "Code of the sign of timeliness of debt payment by the counterparty/bank related party in accordance with paragraphs 59, 67^5 of Regulation No. 351"	Identification of debtors for which the debtor class was adjusted after the assessment of the financial position based on the presence of debt overdue
F094 "Code of the attribute of the loan to the uncontrolled territory"	Identification of debtors registered in the non-controlled territory or loans for which collateral is located in the non-controlled territory
F095 "Code of the feature on the completeness of the security of obligations under the loan agreement between the bank and the borrower"	Identification of loans for which obligations are not fully secured
F137 "Factor code for changes in the volume of non-performing assets"	Determining the grounds on which the loan was recognized as non-performing or the recognition of a non-performing loan was terminated
FST "Code for changes in the stage of impairment/expected credit loss model recognized under International Financial Reporting Standard 9 "Financial Instruments"	Identification of loans for which there has been a change in the stage of impairment, especially downward

End of Table 1

Analytical accounting parameter	Directions for use in crisis management
K065 "Code of the type of client's connection with the state that carries out armed aggression against Ukraine"	Identification of debtors with ties to the state that carries out armed aggression against Ukraine
K160 "Debtor's class"	Grouping of borrowers by classes of debtors and identification of debtors with the worst classes
S187 "Code for the period of time elapsed since the asset was classified as non-performing"	Grouping of loans by the period of time elapsed since they were classified as non-performing in order to identify the most uncollectible loans and make decisions on the application of measures to liquidate such loans
S190 "Code for the period of debt overdue"	Identification of debtors whose contractual maturity has expired
S191 "Code for the level of loan arrears"	Distribution of debtors by the level of overdue loans

Source: compiled by the author according to (NBU, 2016, June 30; NBU, b.d.c.)

Thanks to daily monitoring of analytical accounting accounts for each parameter, bank management has the opportunity to respond in a timely manner to changes taking place and promptly apply anti-crisis management measures. Of course, monitoring analytical accounts is a painstaking job, and today management is helped by the settings of bank automation systems, as well as advanced technologies, in particular artificial intelligence, which not only allow diagnosing crisis situations, but also automatically, without the intervention of bank employees, to apply the simplest management tools, in particular SMS-informing the client, automatic phone call, etc.

3. Accounting support for monitoring the bank's loan portfolio

The anti-crisis management purpose of the loan portfolio is to improve its quality, which can be assessed by indicators of its profitability, riskiness, security, etc. Today, there are many publications in which the authors analyze various indicators of the credit portfolios of Ukrainian banks in general or individual banks (Bugel, 2024; Shalygina, 2024; Dotsenko, 2024; Vladyka et al., 2024; Zharikova et al., 2023, etc.). However, all these developments, given the availability of public information, are carried out on the basis of NBU statistical data or data from banks' financial statements and notes to them, provided on the banks' websites. And such information is sufficient for external users. However, for anti-crisis management at the bank level, such information is practically not used, since it has a significant time lag.

LP monitoring is important for anti-crisis management both for the purpose of diagnosing crisis phenomena and for assessing the effectiveness of the application of anti-crisis measures, and therefore is an integral element of such management. LP monitoring can be carried out with different periodicity, which, as a rule, directly depends on the depth of the manifestation of

crisis phenomena. The information support for calculating the quality indicators of the loan portfolio at the bank level is the data of the synthetic and analytical accounting of the bank directly, or information grouped by various characteristics in financial, statistical and management reporting. *Table 2* is proposed an algorithm for calculating the indicators of monitoring the quality of the bank's LP based on accounting information.

Table 2

Samples of indicators' calculation for monitoring the quality of a bank's loan portfolio*

Loan portfolio risk indicator	Calculation formulas	
	According to the generally accepted methodology	According to accounting data
Loan portfolio problem ratio (L_problem)	$L\text{problem} = \frac{LPoverdue}{LP}$ Where $LP_{overdue}$ – overdue loans; LP – loan portfolio volume	$K_{problem} = \frac{BSA\ of\ LP\ (S190 \neq 0)}{BSA\ of\ LP + OBSA\ of\ LP}$ BSA of LP (S190≠0) – the sum of balances as of a certain date on accounts of groups 151-154**, sections 20-24 and debit balances on accounts 2600, 2607, 2620, 2621, 2627, 2650, 2657 minus credit balances on accounts 2609, 2629, 2659, excluding loans (hereinafter referred to as balance sheet accounts of the loan portfolio), for which the analytical accounting parameter S190 = 0 OBSA of LP – the amount of balances as of a certain date on off-balance sheet accounts of groups 900, 910, 912 (hereinafter referred to as off-balance sheet accounts of the loan portfolio)
Share of doubtful loans (L_doubt)	$L_{doubt} = \frac{LP_{doubt}}{LP}$ LP_{doubt} – is the amount of doubt ful loans	$L_{doubt} = \frac{BSA\ of\ LP\ (S191 = 7)}{BSA\ of\ LP + OBSA\ of\ LP}$ BSA of LP (S191 = 7) – the sum of balances as of a certain date on the balance sheet accounts of granted loans and accrued interest for which the analytical accounting parameter S191 = 7
Loan portfolio provisioning ratio (L_ratio)	$L_{ratio} = \frac{P}{LP}$ P – provisions for loan losses	$L_{ratio} = \frac{S_{balance}}{BSA\ of\ LP + OBSA\ of\ LP}$ $S_{balance}$ – the sum of balances on a certain date on accounts of accrued reserves of account groups 151-154, sections 20-24 and accounts 3690, 3692
Net worth ratio of the loan portfolio (NWR)	$NWR = \frac{LP - P}{LP}$	NWR=1 – $\frac{Sbalance}{BSA\ of\ LP+OBSA\ of\ LP}$
Non-performing loan ratio (NPL)	$NPL = \frac{NPLA}{LP}$ $NPLA$ – amount of non-performing loans	$NPL = \frac{BSA\ of\ LP\ (F137 = 01-20) - -BSA\ of\ LP(F137 = 21-25)}{BSA\ of\ LP + OBSA\ of\ LP}$ *BSA of LP* (F137=01-20) – the amount of balances as of a certain date on the balance sheet accounts of the loan portfolio for which the analytical accounting parameter F137 has a value from 01 to 20; *OBSA of LP* (F137=21-25) – the amount of balances as of a certain date on the balance sheet accounts of the loan portfolio for which the analytical accounting parameter F137 has a value from 21 to 25
Average yield of the loan portfolio ($\mathbf{Y_{LP}}$)	$Y_{LP} = \frac{\%earned}{\overline{LP}}$ $\overline{LP}$ average volume of the loan portfolio % earned – interest earned on loans for the period	$Y_{LP} = \frac{CTA_{\%accrued}}{(BAbeg_{BSA\ of\ LP+OBSA\ of\ LP} + BAend_{BSA\ of\ LP+OBSA\ of\ LP})/2}$ $CTA_{\%accrued}$– the amount of credit turnover for the period on accrued interest accounts on the balance sheet accounts of the loan portfolio $BAbeg_{BSA\ of\ LP+OBSA\ of\ LP}$ – the amount of balances at the beginning of the period on balance sheet and off-balance sheet accounts of the loan portfolio $BAend_{BSA\ of\ LP+OBSA\ of\ LP}$ – the amount of balances at the end of the period on balance sheet and off-balance sheet accounts of the loan portfolio

End of Table 2

Loan portfolio risk indicator	Calculation formulas	
	According to the generally accepted methodology	According to accounting data
Average yield of certain groups of loans ($\mathbf{Y_i}$)	$Y_i = \frac{\%_{receiv\ i}}{\overline{LP_i}}$ $\%_{receiv\ i}$ – interest received on the i-th group of loans for the period $\overline{LP_i}$ – average volume of the *i*-th group of loans	$Y_i = \frac{BA_{\%accrued\ i}}{(Abeg_{BSA\ of\ Lp\ i} + Aend_{BSA\ of\ LP\ i})/2}$ $BA_{\%accrued\ i}$ – the amount of credit turnover for the period on accounts of accrued interest on balance sheet accounts of the i-th group of the loan portfolio $Ab_{BSA\ of\ Lp\ i}$ – the amount of balances at the beginning of the period on the balance sheet accounts of the i-th group of the loan portfolio $Aend_{BSA\ of\ LP\ i}$ – the sum of balances at the end of the period on the balance sheet accounts of the second group of the loan portfolio

*Analytical accounting parameters are given according to (NBU, n. d.)
** Numbers of sections, groups, and accounts are given according to (NBU, 2017, September 11)

Source: author's calculation.

The proposed calculation algorithms provide the opportunity to promptly monitor the loan portfolio and timely diagnose deterioration in its quality in order to determine or adjust anti-crisis measures, as well as to assess the effectiveness of the implementation of the bank's anti-crisis program.

Conclusions

Anti-crisis management of the loan portfolio is important in terms of ensuring the stability of the bank's activities and generating its income. The deterioration of the LP quality affects both the bank's liquidity, since proceeds from loan repayment are reduced, and its profitability due to a decrease in income. The results of the analysis showed that during 2017–2024, Ukrainian banks have low quality loan portfolios, as evidenced by a high share of non-performing loans, which exceeds 30% at the beginning of 2025. At the same time, the quality of loans granted to legal entities is worse than the quality of loans granted to individuals. This confirms the presence of crisis phenomena in the loan portfolios of banks.

The authors have proven that synthetic and analytical accounting accounts are an important source of information at different stages of anti-crisis management of the bank's loan portfolio. Based on accounting data, the following are carried out:

- diagnostics of manifestations of crisis phenomena in the bank's LP, which is the basis for making decisions on the list and directions of applying anti-crisis measures in order to overcome such phenomena;
- assessment of the effectiveness of applying anti-crisis measures and their effectiveness;
- constant LP monitoring in order to prevent crisis phenomena.

Based on the content analysis of the reference books used to form the indicators of the bank's statistical reporting, the authors propose directions for applying the parameters of analytical accounting to identify crisis phenomena in the loan portfolio, which will allow to promptly identify portfolio problems and take timely anti-crisis measures. The use of loan portfolio quality indicators, the calculation algorithms of which are based on information from the analytical and synthetic accounting accounts of banks, will allow for continuous monitoring of the loan portfolio in order to identify problems and assess the effectiveness of anti-crisis measures. This confirms the hypothesis.

Future scientific research is promising in terms of expanding the spectrum of accounting information usage in anti-crisis management to other areas of the bank's activity, which will generally increase the effectiveness of the bank's anti-crisis management.

REFERENCE/СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ

Anderson, H., & Copeland, A. (2019). *Information Management in Times of Crisis. Federal Reserve Bank of New York Staff Reports*, (907). December. https://www.newyorkfed.org/research/staff_reports/sr907	
Azarenkov, S. (2024). Anti-crisis management in the system for ensuring the Financial security of banks. *Scientific Bulletin of the Odessa National Economic University*. *3-4*(316-317), 30–40. https://doi.org/10.32680/2409-9260-2024-3-4-316-317-30-40	Азаренков, С. Г. (2024). Антикризове управління в системі забезпечення фінансової безпеки банків. *Науковий вісник Одеського національного економічного університету*, *3-4*(316-317), 30–40. https://doi.org/10.32680/2409-9260-2024-3-4-316-317-30-40
Buhel, Yu. (2024). Features of Managing the Credit Portfolio of Banking Institutions During Wartime. *Economic analysis*, *34*(3), 246–256. https://doi.org/10.35774/econa2024.03.246	Бугель, Ю. (2024). Особливості управління кредитним портфелем банківських установ в умовах війни. *Економічний аналіз*, *34*(3), 246–256. https://doi.org/10.35774/econa2024.03.246
Burlayenko, T. I. (2016). Peculiarities of managing the bank's credit portfolio. *Global and national economic problems*, (14), 744–748. http://global-national.in.ua/archive/14-2016/218.pdf	Бурлаєнко, Т. І. (2016). Особливості управління кредитним портфелем банку. *Глобальні та національні проблеми економіки*, (14), 744–748. http://global-national.in.ua/archive/14-2016/218.pdf
Cociug, V., & Postolache, V. (2020). The Anti-Crisis Management System Of Financial Stability Of The Banking System, Journal of Financial and Monetary Economics, *Centre of Financial and Monetary Research "Victor Slavescu"*, *8*(1), 80–88, October.	
Davis, J., Okanga, B., & Sambumbu, A. M. (2024). Bank Crisis Management Strategies for Leveraging Effective Performance of the Barbados' Banking Institutions in Times of Crisis. *Journal of Advanced Research in Leadership*, *2*(2), 1–21. https://doi.org/10.33422/jarl.v2i2.564	
Dotsenko, I. (2024). Management of credit risks of banking institutions under the conditions of marital state. *Modeling the development of the economic systems*, (1), 156–162. https://doi.org/10.31891/mdes/2024-11-22	Доценко, І. (2024). Управління кредитними ризиками банківських установ в умовах воєнного стану. *Modeling the development of the economic systems*, (1), 156–162. https://doi.org/10.31891/mdes/2024-11-22
Dragan, O. O., Gerasimenko, I. O., & Vernyuk, N. O. (2021). Anti-crisis management of the bank in conditions of financial market instability. Zbirnyk naukovykh prats Umanskoho natsionalnoho universytetu sadivnytstva, P. 2, (99), 40-49. https://doi.org/10.31395/2415-8240-2021-99-2-40-49	Драган, О. О., Герасименко, І. О., & Вернюк, Н. О. (2021). Антикризове управління банком в умовах нестабільності фінансового ринку. *Збірник наукових праць Уманського національного університету садівництва.* Ч. 2, (99), 40-49. https://doi.org/10.31395/2415-8240-2021-99-2-40-49

Drahan, O., Gerasymenko, I., Zubchenko, V., & Gavryk, O. (2022). Financial reporting as an instrument of anti-crisis management. AIC *Economics and Management.* (1), 131–139. https://doi.org/10.33245/2310-9262-2022-172-1-131-139. https://econommeneg.btsau.edu.ua/uk/content/finansova-zvitnist-yak-instrument-antykryzovogo-menedzhmentu	Драган, О. О., Герасименко, І. О., Зубченко, В. В., & Гаврик, О. Ю. (2022). Фінансова звітність як інструмент антикризового менеджменту. *Економіка та управління АПК*, (1), 131–139. https://doi.org/10.33245/2310-9262-2022-172-1-131-139. https://econommeneg.btsau.edu.ua/uk/content/finansova-zvitnist-yak-instrument-antykryzovogo-menedzhmentu
Jayasundera, S. (2023). Crisis Management in the Banking Sector. *Disaster Recovery Journal*. https://drj.com/journal_main/crisis-management-in-the-banking-sector/	
Kovalenko, V. V. (2024). Anti-crisis manageent strategy of cash flows of the interest business of banks. *Scientific Bulletin of the Odessa National Economic University. 1-2*(314-315). P. 57–69. https://doi.org/10.32680/2409-9260-2024-1-2-314-315-57-69	Коваленко, В. В. (2024). Стратегія антикризового управління грошовими потоками процентного бізнесу банків. *Науковий вісник Одеського національного економічного університету, 1-2*(314-315), 57–69. https://doi.org/10.32680/2409-9260-2024-1-2-314-315-57-69
Marynchak, L. R., & Savchyn, L. M. (2023). Anti-crisis banking management in emergency situations. Scientific *Herald Of Ivano-Frankivsk National Technical University of Oil and Gas, edition topic: "Economy and management of oil and gas industry", 1*(27), 101–110. https://doi.org/10.31471/2409-0948-2023-1(27)-100-110	Маринчак, Л. Р., & Савчин, Л. М. (2023). Антикризове банківське управління в надзвичайних ситуаціях. *Науковий вісник Івано-Франківського національного технічного університету нафти і газу. Серія: Економіка та управління в нафтогазовій промисловості, 1*(27), 101–110. https://doi.org/10.31471/2409-0948-2023-1(27)-100-110
Mecatti, I. (2023) The Crisis Management of Smaller Banks: Perspectives of Reform. *European Company and Financial Law Review*, 660–691. https://ssrn.com/abstract=4602928 or http://dx.doi.org/10.2139/ssrn.4602928	
NBU (2016, June 30 b). *Provisions on the determination by banks of Ukraine of the amount of credit risk for active banking operations, approved by Post. The Board of the NBU dated June 30, 2016. No. 351* Legislation of Ukraine. https://zakon.rada.gov.ua/laws/show/v0351500- 16#Text	НБУ. (2016, 30 червня б). *Положення про визначення банками України розміру кредитного ризику за активними банківськими операціями, затв. Пост. Правління НБУ від 30.06.2016 р. № 351 (Редакція від 25.02.2025).* Законодавство України. https://zakon.rada.gov.ua/laws/show/v0351500-16#Text
NBU. (2017 a). *Plan of accounting accounts of banks of Ukraine, approved. Post. The Board of the National Bank of Ukraine dated September 11, 2017. No. 89.* Legislation of Ukraine. https://zakon.rada.gov.ua/laws/show/v0089500-17#n26	НБУ. (2017, 11 вересня). *План рахунків бухгалтерського обліку банків України, затв. Пост. Правління Національного банку України від 11.09.2017 р. № 89. (Редакція від 02.12.2022*) Законодавство України. https://zakon.rada.gov.ua/laws/show/v0089500-17#n26
NBU. (2018, November 13). *Rules for the organization of statistical reporting submitted to the National Bank of Ukraine. Approval Post. NBU Management Board No. 120 of November 13, 2018.* Legislation of Ukraine. https://zakon.rada.gov.ua/laws/show/v0120500-18#n161	НБУ. (2018, 13 листопада). *Правила організації статистичної звітності, що подається до Національного банку України. Затв. Пост. Правління НБУ від 13.11.2018 № 120. (Редакція від 01.11.2024).* Законодавство України. https://zakon.rada.gov.ua/laws/show/v0120500-18#n161
NBU. (2019, July 18). *Regulations on the organization of the process of managing problem assets in banks of Ukraine, approved by Post. The Board of the NBU dated July 18, 2019. No. 97.* Legislation of Ukraine. https://zakon.rada.gov.ua/laws/show/v0097500-19#Text	НБУ. (2019, 18 липня). *Положення про організацію процесу управління проблемними активами в банках України, затв. Пост. Правління НБУ від 18.07.2019 р. № 97. (Редакція від 01.01.2025*). Законодавство України. https://zakon.rada.gov.ua/laws/show/v0097500-19#Text
NBU. (2022). *Methodology for calculating the grouping of accounts of the Chart of Accounts of accounting of banks of Ukraine*. https://bank.gov.ua/admin_uploads/article/Method_aggregation_zal_2022-02-01.pdf?v=9	НБУ (2022). *Методика для розрахунку групування рахунків Плану рахунків бухгалтерського обліку банків України.* https://bank.gov.ua/admin_uploads/article/Method_aggregation_zal_2022-02-01.pdf?v=9

NBU. (2016, June). *Financial Stability Report. June*. https://bank.gov.ua/admin_uploads/article/FSR_2016R1.pdf?v=9	НБУ. (2016, червень). *Звіт про фінансову стабільність. Червень.* https://bank.gov.ua/admin_uploads/article/FSR_2016R1.pdf?v=9
NBU. (n. d. a). *Supervisory Data. The amount of credit operations and the rate of non-performing exposures*. https://bank.gov.ua/ua/statistic/supervision-statist	НБУ. (б. д. *a*). *Наглядова статистика. Обсяги активних операцій та частка непрацюючих активів в цілому по системі*. https://bank.gov.ua/ua/statistic/supervision-statist
NBU. (n. d. b). *Supervisory statistics. Distribution of loans granted to individuals and legal entities in national and foreign currencies and the amount of credit risk by classes of debtor* in accordance with Regulation No. 351 (by banks). https://bank.gov.ua/ua/statistic/supervision-statist	НБУ. (б. д. *b*). *Наглядова статистика. Розподіл кредитів, наданих фізичним та юридичним особам у національній та іноземній валютах, та розміру кредитного ризику за класами боржника* відповідно до Положення № 351 (у розрізі банків). https://bank.gov.ua/ua/statistic/supervision-statist
NBU. (n. d. c). *List of reference books that use the report to form indicators of statistical quality*. https://bank.gov.ua/ua/statistic/nbureport/registers	НБУ (б. д. *c*) *Перелік довідників, які використовуються для формування показників статистичної звітності*. https://bank.gov.ua/ua/statistic/nbureport/registers
Rahman, Md. A., Chowdhury, M. M., & Haque, Md. A. (2021). Challenges for Banks during Loan Adjustment: A Case Study in Bangladesh. *EBAUB Journal*, (3) January. https://www.researchgate.net/publication/350353659_	
Ryzhonkov, I., & Azarenkova, H. (2023). Anti-crisis management of bank activities under conditions of internal threats. *Financial and credit systems: prospects for development*. *3*(10). 18–24. https://doi.org/10.26565/2786-4995-2023-3-02	Рижонков, І., & Азаренкова, Г. (2023). Антикризове управління діяльністю банку в умовах внутрішніх загроз. *Фінансово-кредитні системи: перспективи розвитку*, *3*(10), 18–24. https://doi.org/10.26565/2786-4995-2023-3-02
Shalyhina, I. (2024). Loan portfolio of ukrainian banks during the war: effective formation and minimization of risks. Sustainable *Development of Economy*, *2*(49), 186–194. https://doi.org/10.32782/2308-1988/2024-49-29	Шалигіна, І. (2024). Кредитний портфель українських банків під час війни: ефективне формування та мінімізація ризиків. *Сталий розвиток економіки*, *2*(49), 186–194. https://doi.org/10.32782/2308-1988/2024-49-29
Usatyuk, L. (2024). Peculiarities of working with NPL in conditions of military aggression. *Legal practice*. https://pravo.ua/osoblyvosti-roboty-z-npl-v-umovakh-voiennoi-ahresii/	Усатюк, Л. (2024). Особливості роботи з NPL в умовах воєнної агресії. *Юридична практика*. https://pravo.ua/osoblyvosti-roboty-z-npl-v-umovakh-voiennoi-ahresii/
Vakhovych, I., Biloshapka V., & Ivashyna O. (et al.). (2023). Modelling of the anti-crisis management system in the banking sector of the Ukrainian economy to ensure its financial stability. *Financial and Credit Activity Problems of Theory and Practice*, *5*(52), 52–66. https://doi.org/10.55643/fcaptp.5.52.2023.4185	Вахович, І., Білошапка, В., Івашина, О., Івашина, С., Корнєєв, В., & Ходжаян, А. (2023). Моделювання системи антикризового управління у банківському секторі економіки україни для забезпечення його фінансової стабільності. *Фінансово-кредитна діяльність: проблеми теорії та практики*, *5*(52), 52–66. https://doi.org/10.55643/fcaptp.5.52.2023.4185
Venugopal, S. K. (2024). Loan Portfolio Management and Bank Efficiency: A Comparative Analysis of Public, Old Private, and New Private Sector Banks in India, *Economies*, *MDPI*, *12*(4), 1–17. https://ideas.repec.org/a/gam/jecomi/v12y2024i4p81-d1367741.html	
Vladyka, Yu., Turova, L., & Tarasenko, T. (2024). Adaptation of credit policy of commercial banks in the conditions of marital state. *Economy and Society*, (61). https://doi.org/10.32782/2524-0072/2024-61-103	Владика, Ю., Турова, Л., & Тарасенко, Т. (2024). Адаптація кредитної політики комерційних банків в умовах воєнного стану. *Економіка та суспільство*, (61). https://doi.org/10.32782/2524-0072/2024-61-103
Vukajlović, V., Simeunović, I., Beraha, I., & Brzaković, M. (2019). Importance of information in crisis management: Statistical analysis. *Industrija, 47*(3), 37–53. https://doi.org/10.5937/industrija47-23274	
Walkhoff B., & Ziegenhagen, S. (2024). The resurgence of problem loan management – challenges for banks. https://www.bankinghub.eu/research-markets/problem-loan-management-banks	

Zharikova, O., Pashchenko, O., & Smalyuh, M. (2023). Ensuring effective management of the credit portfolio of a commercial bank in the conditions the modern crisis. *Economics and Business Management*, *14*(2), 46–57. https://doi.org/10.31548/economics14(2).2023.046

Zhovtanetska? Ya. V. (2015). Anti-crisis management of deposit and loan portfolios of banks. *Formation of market relations in Ukraine*. (7), 89–93. http://nbuv.gov.ua/UJRN/frvu_2015_7_24	Жовтанецька, Я. В. (2015). Антикризове управління депозитним та кредитним портфелями банків. *Формування ринкових відносин в Україні*, (7), 89–93. http://nbuv.gov.ua/UJRN/frvu_2015_ 7_24

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ACCOUNTING IDENTIFICATION AND VALUATION OF FINANCIAL INSTRUMENTS

In the globalization context of financial markets and the growing impact of economic instability, the development of effective models of accounting identification and valuation of financial instruments is extremely relevant. This provides business entities with stability and transparency in financial reporting, contributing to increase investor confidence. The research aim is to determine the specifics of accounting identification and valuation of financial instruments in modern conditions of globalization and high instability, as well as to substantiate ways of their improvement, taking into account changes in international and national standards, in the context of ensuring transparency and effective management of financial risks. The hypothesis of the research is that modern changes in the standards of accounting and valuation of financial instruments affect the level of transparency of financial reporting and the effectiveness of financial risk management, while adapting the accounting of financial instruments to international requirements will contribute to their more objective reflection in the financial reporting of enterprises. The methods of systematic and comparative analysis, classification, logical generalization have been applied. The paper highlights the theoretical principles of accounting identification and valuation of financial instrument; in particular, the essence of various business models for managing them has been considered. An analysis of existing approaches to the valuation of financial instruments is carried out, including initial and subsequent valuation, in particular methods of fair value, and problems arising in the valuation process in conditions of instability have been considered. Prospects for improving the accounting of financial instruments in Ukraine were identified, including

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ОБЛІКОВА ІДЕНТИФІКАЦІЯ ТА ОЦІНКА ФІНАНСОВИХ ІНСТРУМЕНТІВ

В умовах глобалізації фінансових ринків і зростання впливу економічної нестабільності розроблення ефективних моделей облікової ідентифікації та оцінки фінансових інструментів є надзвичайно актуальним. Це забезпечує суб'єктам господарювання стабільність і прозорість у фінансовій звітності, сприяючи підвищенню довіри інвесторів. Метою статті є визначення специфіки облікової ідентифікації та оцінки фінансових інструментів у сучасних умовах глобалізації та високої нестабільності, а також обґрунтування шляхів їх удосконалення з урахуванням змін у міжнародних і національних стандартах для забезпечення прозорості та ефективного управління фінансовими ризиками. Дослідження ґрунтується на гіпотезі, що сучасні зміни у стандартах обліку та оцінки фінансових інструментів впливають на рівень прозорості фінансової звітності та ефективність управління фінансовими ризиками, водночас адаптація обліку фінансових інструментів до міжнародних вимог сприятиме їх об'єктивнішому відображенню у фінансовій звітності підприємств. Застосовано методи системного та порівняльного аналізу, класифікації, логічного узагальнення. Висвітлено теоретичні засади облікової ідентифікації та оцінки фінансових інструментів, зокрема сутність різних бізнес-моделей та управління ними. Проведено аналіз наявних підходів щодо оцінки фінансових інструментів, включаючи первісну та подальшу оцінку, зокрема методи визначення справедливої вартості, та розглянуто проблеми, що виникають у процесі оцінки в умовах нестабільності. Обґрунтовано перспективи вдосконалення обліку фінансових інструментів в Україні, включаючи їх адаптацію до міжнародних

their adaptation to international standards, automation of accounting processes and development of recommendations for managing financial risks according to modern challenges.

Keywords: financial instruments, accounting, valuation, business model, volatility, risks, subsequent valuation, fair value.

стандартів, автоматизацію процесів обліку та формування рекомендацій щодо управління фінансовими ризиками в умовах сучасних викликів.

Ключові слова: фінансові інструменти, облік, оцінка, бізнес-модель, нестабільність, ризики, подальша оцінка, справедлива вартість.

JEL Classification: D80, E60, G28.

Introduction

Ensuring the stability and sustainable development of business entities, primarily the sustainability of their financial results, requires increased attention to the issue of holding financial instruments and various business models of management in modern conditions of globalization and uncertainty. The approach to their accounting, valuation and disclosure in financial reporting also depends on the choice of the financial instrument management model. The purpose of holding specific financial instruments affects the way they are reflected in the reporting and the directions of use of these instruments by the business entity.

The range of issues regarding the identification and valuation of financial instruments is in the field of view of a number of domestic authors. In particular, Nagorna thoroughly examines the features of IFRS 9 "Financial Instruments" (Nagorna, 2022). Pylypenko and Demska consider the specifics of the impact of accounting policies on financial assets of business entities on the financial performance of their functioning (Pylypenko & Demska, 2020). Rapa studies the essence of financial instruments and existing approaches to their valuation (Rapa, 2023). Burdenko highlights the scientific basis for interpreting the essence of financial instruments and focuses on approaches to their classification according to relevant characteristics (Burdenko, 2006). Logvinov draws attention to the role of financial instruments in the development of cross-border cooperation relations (Logvinov, 2024). Nazarova and Zadniprovsky investigate the audit of the assessment of financial instruments (Nazarova & Zadniprovsky, 2018).

Shepelyuk and Yunatsky consider discounting as a financial tool for valuing accounting objects, detailing the difficulties of its implementation in the context of using international standards (Shepelyuk & Yunatsky, 2019). Yatsun and Vdovenko characterize the specifics of the use of financial instruments to achieve sustainable development goals (Yatsun & Vdovenko, 2024).

Snigurska defines the means of valuing assets in the context of forming reserves for impairment compensation, based on the main provisions of IFRS 9 (Snigurska, 2017). Popko and Lukova identify methodological approaches to improving the assessment of such a financial instrument of business entities as long-term debt (Popko & Lukova, 2023).

At the same time, given the changes that have occurred in the field of accounting and valuation of financial instruments in Ukraine in recent years, it is important to conduct a comparative analysis of these changes from the point of view of existing models and approaches.

The research aim is to determine the features of accounting identification and valuation of financial instruments in the context of globalization and high economic instability, as well as to substantiate ways to improve them in view of changes in international and national standards, in the context of ensuring transparency and effective management of financial risks.

The research is based on the hypothesis that modern changes in accounting standards and valuation of financial instruments affect the level of transparency of financial reporting and the effectiveness of financial risk management, while adapting the accounting of financial instruments to international requirements will contribute to their more objective reflection in the financial reporting of enterprises.

The methodological basis of the conducted scientific research is the methods of systemic and comparative analysis (when studying changes in accounting standards for financial instruments), classification (in the process of considering and comparing business models for managing financial instruments), logical generalization (for formulating recommendations for improving approaches to assessing and managing financial risks).

The information base of the research was regulatory and legal acts, international financial reporting standards, national accounting regulations (standards), scientific works of experts in the field of financial accounting.

The main part of the article has three interrelated sections. The first section considers the theoretical principles of accounting identification and assessment of financial instruments, in particular, the essence of various business models for managing them is analyzed. The second section is devoted to the analysis of existing approaches to assessing financial instruments, including initial and subsequent assessment, in particular methods for determining fair value, and also examines the problems that arise in the assessment process in conditions of instability. The third section examines the prospects for improving the accounting of financial instruments in Ukraine, including their adaptation to international standards, automation of accounting processes, and the formation of recommendations for managing financial risks in modern challenges.

1. Overview of business models for managing financial instruments

According to International Financial Reporting Standards (IFRS) and National Accounting Regulations (Standards) in Ukraine (NAR(S)), financial instruments are contracts that create a financial asset for one party and a financial liability or equity instrument for the other. According to IAS 32 "Financial Instruments: Presentation", a financial instrument can be either simple or complex, depending on its terms. The most common types of financial instruments are: assets (cash, securities, receivables); liabilities (payables, bonds, loans); equity instruments (shares, equity contributions), etc. (IAS 32, 2012).

The business models for managing financial instruments are considered firstly. According to IFRS 9 "Financial Instruments", business models for managing financial instruments determine how an entity manages its financial assets to generate cash flows (IFRS 9, 2012). Business models

influence the methods of measuring and reporting financial instruments. There are three main business models (Rapa, 2023):

"Hold to collect contractual cash flows" – entities that choose this model hold financial assets to collect regular cash flows (interest or principal). Financial assets held under this model are measured at amortized cost. Under this model, the priority is to receive stable cash flows, as well as the absence of plans to sell financial assets in the short term. "Hold to collect cash flows and sell" focuses on using a more flexible approach, in which the entity has the opportunity to both receive certain cash flows through financial assets and sell them on the market. Due to this, they can respond to the financial market conditions, achieving the optimal ratio between liquidity and stability indicators. The model involves the sale of financial assets in order to obtain additional benefits. Financial assets are valued according to the specified model using the fair value through other comprehensive income (FVOCI) indicator;

"Active trading (other models)" is used by entities that actively sell and purchase financial instruments, receiving profit due to fluctuations in market prices. Financial instruments are valued at fair value through profit or loss (FVPL).

The chosen business model significantly affects the way financial instruments are reflected in the reporting. Entities that use models to obtain cash flows are guided by conservative valuation methods, while active trading and risk hedging involve the use of fair value. This affects their financial transparency, risk level, and flexibility.

Table 1 provides a comparative description of business models for managing financial instruments of business entities.

Table 1

Comparative characteristics of business models for managing of financial instruments of business entities

Criteria	Model		
	Holding to receive contractual cash flows	Holding to receive cash flows and sale	Active trading (speculative model)
The purpose of retention	Generating stable cash flows	Receiving cash flows and possible sale	Sale for profit from market changes
Main instruments	Bonds, loans, other debt obligations	Bonds, shares, other financial assets	Shares, derivatives, short-term financial assets
Valuation at the balance sheet date	Amortized cost	Fair value through other comprehensive income (FVOCI)	Fair value through profit or loss (FVPL)
Flexibility in sales	Low	Medium	High
Priority	Receiving income from interest and principal	Balance between income from cash flows and ability to sell	Maximizing profit from market fluctuations
Risks	Low market risks, high credit risk	Moderate market risks	High market risks
Type of entities applying the model	Banks, investors with long-term strategies	Companies with a mixed investment strategy	Investment funds, traders
Frequency of revaluation	Low (revaluation only for credit risks)	Regular revaluation in line with market value	Constant revaluation at market prices
Impact on the financial statements	Stable financial performance	Changes in the value of assets are recognized in equity	High volatility of financial results

Source: compiled by the author on the basis of (IFRS 9, 2012; IAS 32, 2012; NP(S)BU 13, 2001).

The correct choice of a business model for managing financial instruments allows business entities to effectively plan their cash flows, manage risks, and ensure proper reflection of financial results in reporting.

2. Challenges and comparative analysis of financial instruments valuation types in accounting

Burdenko emphasizes that both IFRS and NAR(S) require business entities to disclose, rather than hide, information in their financial statements about the size and consequences of the financial instruments they have used, since many financial instruments are used to manage financial risks, but their use is also accompanied by significant risks (Burdenko, 2006).

Valuation of financial instruments at the date of acquisition or origination is an important stage in their accounting. This stage determines the initial value of financial assets or liabilities and establishes the basis for subsequent assessments and reflection of changes in value. Therefore, the main features of the valuation of financial instruments at the date of acquisition/origination are determined by International Financial Reporting Standards (IFRS 9 "Financial Instruments") and national standards NAR(S) 13 "Financial Instruments") (IFRS 9, 2012; NP(S)BO 13, 2001).

The initial valuation of financial instruments is important in this context. At the date of acquisition or origination of a financial instrument, the enterprise must measure it at fair value. According to NAR(S) 13 "Financial Instruments", their initial measurement and recognition is carried out at actual cost, which is the sum of the fair value and costs incurred in connection with the acquisition or disposal of such instruments NAR(S) 13, 2001). This rule applies to both financial assets and financial liabilities. A distinction is made between fair value and initial cost, taking into account transaction costs.

Fair value is the price that would be received to sell an asset or paid to settle a liability in an orderly transaction between market participants at the measurement date. For financial instruments, fair value is usually determined based on quoted market prices, if available.

For financial assets, if the financial instrument (for example, a stock or bond) is traded in an active market, fair value is determined at current market prices. For financial liabilities, fair value may include a market interest rate or the amount payable at the measurement date.

If certain financial instruments are not designated as being at fair value through profit or loss (FVPL), transaction costs are included in the initial cost. These are additional costs incurred as a result of the purchase, the emergence of a financial liability (taxes, commissions, fees).

If financial assets provide cash flows or are intended for sale (amortized cost or FVOCI), transaction costs are included in the fair value.

For financial instruments measured at fair value through profit or loss (FVPL), transaction costs are not included in the initial cost because they relate to expenses of the reporting period.

Let us consider the methods of valuing financial instruments depending on their category. At the date of acquisition, financial instruments are classified depending on the business model of the entity and the characteristics of the instruments themselves. Accordingly, their further accounting approaches are determined:

Financial assets measured at amortized cost. If the entity aims to hold financial assets to receive contractual cash flows and these cash flows consist of repayment of the principal amount of the debt and interest, such assets are measured at amortized cost. At the date of acquisition, the asset is recognized at fair value plus transaction costs, for example, bonds that the entity plans to hold to maturity to receive fixed interest payments.

Financial assets measured at fair value through other comprehensive income (FVOCI) are those assets that the entity holds to receive cash flows or their subsequent sale. They are measured at fair value plus transaction costs. Subsequent changes in their value are recognized in other comprehensive income of the entity.

Financial instruments measured at fair value through profit or loss (FVPL) include those that the entity holds for speculative trading or if they do not meet the criteria for other categories. They are initially measured at fair value, with transaction costs not added to the initial cost but recognized as expenses of the period (derivatives, including forwards, futures, options and other instruments).

Pylypenko and Demska believe that the predominance of fair value in the valuation of financial assets can be justified by the volatility of financial instrument markets, and the variability in the recognition of the results of their revaluation is due to the basis of the conceptual framework of financial reporting on a combination of financial and physical concepts of capital preservation (Pylypenko & Demska, 2020).

The main methods of subsequent valuation are: valuation at amortized cost, at fair value through profit or loss (FVPL) and at fair value through other comprehensive income (FVOCI) (*Table 2*).

Table 2

Comparative characteristics of subsequent measurement of financial instruments in accounting

Characteristics	Methods of valuation		
	At fair value through profit or loss (FVPL)	At fair value through other comprehensive income (FVOCI)	At amortized cost
Category of financial instruments	Speculative assets/liabilities, derivatives	Assets held to collect cash flows or to be sold	Assets held to collect fixed cash flows
Purpose of holding	Short-term transactions to take advantage of market changes	Held for sale or stable income with the possibility of sale	Receiving stable cash flows (interest, debt repayment)
Initial measurement	Fair value, transaction costs are not taken into account	Fair value, transaction costs are recognized	Fair value plus transaction costs
Subsequent measurement	Revaluation at each reporting date at fair value	Revaluation at each reporting date at fair value	Measurement at amortized cost using the effective interest rate
Recognition of changes in financial statements	Recognized in profit or loss	Recognized in other comprehensive income, with possible reclassification to profit/loss on sale	Recognized through cost amortization and interest income/expense

End of Table 2

Characteristics	Methods of valuation		
	At fair value through profit or loss (FVPL)	At fair value through other comprehensive income (FVOCI)	At amortized cost
Volatility of earnings	High	Low (until the asset is sold)	Low
Impact on the income statement	Directly affects net income	Exposure through OCI, which reduces the impact of market fluctuations on key profitability indicators	Minimal impact, stable cash flows
Application in real conditions	Speculative assets, short-term transactions	Long-term equity investments, strategic investment portfolios	Long-term loans, bonds to maturity
Example of financial instruments	Derivatives, shares for speculation	Shares of non-core companies, long-term investment portfolios	Bonds held to maturity, loans

Source: compiled by the author on the basis of (IFRS 9, 2012; IAS 32, 2012; NSAU 13, 2001).

Determining the fair value of financial instruments is an important, but at the same time complex process due to several key issues, including:

- the instability of market conditions, which can change rapidly, which makes the fair value assessment vulnerable to fluctuations. In the event of the emergence and exacerbation of economic crises or periods of significant fluctuations, asset prices can change dramatically, which complicates the assessment process;
- low market activity – when there is no active sale of financial instruments on the market, the process of assessing such instruments is significantly complicated, given the lack of necessary data. Under such conditions, valuation approaches using models (discounted cash flows) can be introduced, but the reliability of the assessment is significantly reduced;
- the subjective nature of the assessment is a significant number of methods for assessing fair value require the use of certain assumptions and subjectivity, in particular, regarding expected cash flows, the discount rate, risks, which can cause errors;
- liquidity impact for financial instruments with low liquidity, it is difficult to assess using the fair value indicator, because their sale price may differ significantly from the apparent fair value;
- uncertainty risks during assessment, it is advisable to take into account the set of various risks that can affect the current and future value of a financial asset; the greater the degree of uncertainty, the more difficult it is to assess;
- application of different assessment standards means that there are a certain number of standards used when assessing fair value, but their interpretation and implementation practices may vary significantly, which makes the process of comparing assessment results between companies or countries in the world more complicated.

There are a number of recommendations for discounting in terms of risks that can be used by business entities.

First, when discounting cash flows, it is important to take into account as many risks as possible that may ultimately affect the future value of financial instruments (market risks, credit risks, operational risks, as well as risks related to liquidity). Given the above risks, it is worth using adjustments to the basic discount rate, which characterize the specific risks inherent in a particular financial instrument.

Secondly, in order to reduce the uncertainty of the value of future cash flows, it is advisable to use a scenario approach, which is based on assessing several possible scenarios (basic, optimistic, pessimistic are usually distinguished). Each scenario should be assigned a corresponding probability, and the final estimate of fair value should be formed taking into account the averaged results for all the scenarios considered.

Thirdly, the procedure for taking into account high risk requires adding a risk premium to the standard discount rate, which will allow for a more accurate assessment of risky financial instruments in terms of probable losses or profits that may arise in the future, for example, due to market fluctuations or increasing uncertainty.

Fourth, it is worth periodically reassessing the discount rate, without leaving it fixed throughout the entire period of holding the financial instrument. Regular review and adjustment in accordance with relevant macroeconomic fluctuations or changes in the risk profile of the entity will allow you to take into account their impact and respond in a timely manner, ensuring the stabilization of the organization in the market.

Fifth, in order to avoid subjective and ensure transparency of the assessment process, in the absence of direct data for determining the discount rate, it is worth using market rates for similar financial instruments or debt obligations as a guideline.

Sixth, conducting a sensitivity analysis to changes in the discount rate will allow you not only to assess the impact of rate fluctuations on the fair value of the instrument, but also to predict alternative scenarios and the risks associated with them.

It should be noted that the issues of determining the fair value of financial instruments are closely related to the variability of market activity and its determinants, the subjectivity of assessments, which requires the correct choice of a discounting strategy that would take into account all possible risks as fully as possible.

The riskiness of the discounting process is also affected by the gradual depreciation of financial instruments, and accordingly, the increasing need to assess potential credit losses.

In general, impairment of financial instruments is the process of recognizing that a financial instrument (including receivables, loans, bonds) has lost part of its value due to an unreasonably high risk of non-repayment

of debt obligations or deterioration in the solvency of the counterparty. According to IFRS 9 (2012), impairment of financial instruments requires the assessment of expected credit losses and their reflection in financial statements in order to ensure transparency of risks. IFRS 9 introduces the concept of Expected Credit Losses (ECL), which is the basis for determining the impairment of financial instruments. Instead of waiting for insolvency problems to arise, business entities should assess potential losses in advance based on future risks (IFRS 9, 2012).

Credit loss assessment is carried out using two main models. The first is the general model (3-stage), which is used for financial instruments such as loans and receivables, except for those that fall under the simplified model.

The general model consists of three stages:

Stage 1: 12-month expected credit losses are recognized (instruments that have not yet shown a significant increase in credit risk).

Stage 2: Lifetime expected credit losses (instruments that have shown a significant increase in credit risk but are not yet impaired).

Stage 3: Lifetime expected credit losses (instruments that are already impaired).

The transition between stages depends on the increase in credit risk and the need to estimate losses over the life of the financial instrument.

The second is a simplified model, which is used for accounts receivable, lease payments and contract assets. It allows for the recognition of expected losses over the entire life of a financial instrument from the moment of its inception, without using a staged approach. This model reduces the complexity of accounting for such financial assets, allowing entities to avoid a detailed analysis of changes in credit risk at each stage.

The assessment of credit losses and impairment of financial instruments are important elements of accounting policies that reduce the risks associated with non-repayment of debt obligations. The general and simplified models for assessing credit losses ensure the adaptability of the process depending on the type of assets and risk factors.

A comparative analysis of approaches to the assessment and revaluation of financial instruments in accounting, in particular IFRS and NAR(S) in Ukraine, is given in *Table 3*.

IFRS approaches are more detailed, flexible and meet the international requirements of a market economy. They require constant revaluation of asset values based on market data and risk assessment. GAAP, while providing basic requirements for accounting for financial instruments, is more simplified and less demanding in terms of assessing future risks and using fair value.

Table 3

Comparative analysis of approaches to valuation and revaluation of financial instruments in accounting: IFRS and NAR(S) in Ukraine

Criteria	International Financial Reporting Standards (IFRS)	National Accounting Regulations (Standards) (NAR(S))
Legal regulation	IFRS 9 "Financial Instruments"	National Accounting Standard 13 "Financial Instruments"
Categories of financial instruments	Classification depends on the business model and cash flow characteristics. The main categories are: financial assets measured at amortized cost; financial assets measured at fair value through other comprehensive income (FVOCI); financial assets measured at fair value through profit or loss (FVTPL).	Financial assets held for sale; investments held to maturity; receivables
Initial measurement	At fair value. If a financial asset or liability is not at fair value through profit or loss, the cost includes transaction costs	At fair value, but acquisition costs may be used for certain types of assets
Subsequent measurement	Depending on the category of the asset: amortized cost for assets held to collect cash flows; fair value through other comprehensive income for assets held to collect cash flows or for sale; fair value through profit or loss for assets held for trading or speculation.	Fair value measurement is used for assets held for sale, and amortized cost or acquisition cost is used for other categories
Recognition of impairment	The Bank uses an expected credit loss (ECL) model that takes into account future losses and assesses credit risk at 3 stages: 12-month ECLs, long-term ECLs, and actual losses	Recognition of impairment on the basis of actual occurrence of losses, without using the expected loss model. The value of an asset is reduced when there is a realistic threat of its non-recovery
Credit losses	Requires the measurement of expected credit losses from the moment of initial recognition of a financial asset, even if insolvency problems have not yet arisen	It does not contain detailed requirements for estimating expected credit losses. Impairment assessments are usually made only when there is evidence that the debtor's financial condition has deteriorated
Fair value measurement	The approach in accordance with IFRS 13 "Fair Value Measurement" is used, which requires the use of market data or valuation models (discounted cash flows, multiples) in the absence of an active market	Allows for fair value measurements only for assets that are marketable and for which market data are available. The use of valuation models is less common
Recognition of gains/losses on revaluation	Gains or losses resulting from fair value re-measurement are recognized either in profit or loss (for FVTPL instruments) or in other comprehensive income (for FVOCI instruments)	Changes in the value of assets held for sale are recognized in other equity until sold, at which time they are recognized in profit or loss
Restructuring of liabilities	It is treated as a modification of a financial liability with its fair value remeasured and a gain or loss may be recognized as a result of the restructuring	Contains less detailed requirements for restructuring of liabilities, although changes in repayment terms may be recognized as a modification of the contractual terms, but the measurement mechanism is less complex

Source: compiled by the author on the basis of (IFRS 9, 2012; IAS 32, 2012; NSAU 13, 2001).

3. Prospects for improving the accounting of financial instruments in Ukraine

Finding ways to improve the valuation of financial instruments in accounting in Ukraine, despite the circumstances caused by martial law, today seems to be an important task, since in the end it can contribute to increasing the stability of the financial system and increasing investor confidence. Therefore, the following proposals can be distinguished:

- adaptation of international standards and implementation of flexible approaches to their valuation, which will include, in particular, the introduction of adapted international financial reporting standards (IFRS) into the economic activities of Ukrainian business entities, taking into account the specifics of their functioning during martial law in Ukraine, for example, by taking into account simplified fair value valuation procedures for financial instruments;
- implementation of credit risk assessment, in particular through the development of specialized models that will take into account military risks and market instability and uncertainty, based on the application of scenario analytical approaches to assess the predicted consequences;
- conducting regular monitoring of the financial market based on specially developed or improved existing mechanisms to obtain up-to-date information on price trends, liquidity and other important factors affecting the process of evaluating financial instruments;
- improving the transparency of financial reporting by detailing the disclosure of risks, primarily those related to factors associated with the destructive impact of military actions, as well as determining the strength of the impact of these risks on the evaluation of financial instruments;
- deployment of state financial support programs for organizations affected by military actions in Ukraine, as well as provision of consulting services to business entities on the correctness of accounting and valuation of financial instruments in conditions of uncertainty;
- organization of training programs and seminars for specialists in the field of accounting and financial management in order to improve their qualifications and expertise in the valuation of financial instruments;
- establishment of cooperation with international financial organizations in order to obtain expert assistance and consultations on the adaptation of accounting standards and valuation methods to the conditions of martial law in Ukraine;
- introduction of the latest information technologies to automate accounting and valuation processes, which will reduce the risks of errors and generally increase the efficiency of valuation.

Significant changes have occurred in International Financial Reporting Standard (IFRS) 9, affecting financial instruments, their classification, valuation and reflection in accounting. Nagorna noted the key changes.

Classification of financial assets: New business models for asset management provide for different approaches to accounting based on expected cash flows. Assets are measured at amortized cost, fair value through other comprehensive income, or through profit/loss.

Expected loss model: Three stages of impairment have been introduced to determine credit losses – basic, special, and simplified approaches, which involve an analysis of credit risk at the date of initial recognition of the asset.

Retrospective application: The transition to IFRS 9 requires a retrospective approach with new calculations, description of models, and revised disclosures (Nagorna, 2022).

IFRS 9 provides clarification on when financial liabilities are derogated from when electronic settlement is used, particularly through digital payment systems. This is in response to the growing popularity of electronic payment solutions and certain reporting challenges (IASB, 2024).

Significant emphasis is placed on the issue of accounting for instruments in connection with macroeconomic challenges, together with risks associated with climate change and political events, in particular the introduction of martial law in Ukraine. In 2022, this led to increased disclosure requirements for entities that are affected by established trade relations or investment patterns in the region, as well as updated rules on hyperinflation for countries where inflation is gaining momentum (Baur, 2023).

The updated requirements of IFRS 9 and IFRS 7 now include expanded classification and measurement approaches for assets that contain ESG (environmental, social and corporate governance) features, the so-called "green" loans. The changes were introduced to clarify the procedure for valuing assets and accounting for assets by companies to ensure the achievement of ESG-related goals, more effective management of credit and investment risks within the framework of hedge accounting (IFRS) (KPMG, 2024).

Asset accounting and financial reporting issues are being updated in view of the impact of factors related to the introduction of martial law in Ukraine, primarily in the direction of forming recommendations for assessing the impairment of assets, as well as financial risk management (KPMG – Ukraine, 2022).

In 2023 The IASB has published amendments to IAS 32 to more accurately classify instruments that contain both debt and equity characteristics, which has become important for improving the comparability of financial statements between companies (IASB, 2023).

As Logvinov notes, financial instruments play a key role in the development of cross-border cooperation, providing the necessary resources and mechanisms for the implementation of joint projects and programs between countries. In the context of economic globalization, the effective use of financial instruments (such as loans, grants, investments, guarantees and other mechanisms) helps to strengthen economic ties, improve infrastructure, stimulate investment and promote sustainable development of regions (Logvinov, 2024).

Yatsun and Vdovenko (2024) emphasize the feasibility of using financial instruments for sustainable development, such as green investments, green bonds, and impact investing, which contribute to the financing of projects with an environmental and social focus.

These changes and innovations should be taken into account when carrying out accounting identification and valuation of financial instruments by domestic business entities.

Conclusions

Thus, the concept of "accounting identification and valuation of financial instruments" refers to the processes of determining and evaluating financial assets, liabilities and capital instruments of enterprises in order to ensure their effective use in financial reporting. This involves the selection of business management models that contribute to the stability of cash flows and risk minimization. The need to improve approaches to the valuation of financial instruments is due to the influence of such global and local factors as economic uncertainty, inflation, exchange rate fluctuations, the impact of military operations and other challenges.

The research has been confirmed that taking into account changes in the standards for accounting and valuation of financial instruments, adapting approaches to their management in accordance with the challenges of globalization, digitalization and economic instability, as well as improving valuation methods have a positive impact on the transparency of financial reporting and the effectiveness of financial risk management.

The research results have been provn that the correct valuation of financial instruments and their reflection in reporting require the use of adapted standards, digital technologies and mathematical modeling. Particular attention should be paid to the use of fair value models, accounting for risks and predicting their impact on financial results.

It was found that the process of improving the valuation of financial instruments in accounting in Ukraine, despite the circumstances caused by the crisis trends in the development of the Ukrainian economy, should be comprehensive and based on a combination of a number of the above-mentioned tools to improve approaches to their accounting, which will allow for a more accurate and reliable valuation of financial instruments and will contribute to the post-war economic recovery of our country. Prospects for further research are aimed at developing tools for digitizing accounting processes for financial instruments, adapting international standards to national conditions, and improving methods for assessing and managing risks, in particular credit and market risks.

REFERENCE/СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ

Baur, David (2023, January 9). *IFRS: December 2022 year-end accounting reminders*. https://www.pwc.ch/en/insights/accounting/ifrs-december-2022-year-end-accounting-reminders.html	
Burdenko, I. M. (2006). Financial instruments: features of their classification. *Actual Problems of Economics*, (4), 24–31.	Бурденко, І. М. (2006). Фінансові інструменти: особливості їх класифікації. *Актуальні проблеми економіки*, (4), 24–31.
IAS 32. (2012). International Accounting Standard 32. Financial Instruments: Presentation. *Official website of the Verkhovna Rada of Ukraine.* https://zakon.rada.gov.ua/laws/show/929_029#Text	МСБО 32. (2012). Міжнародний стандарт бухгалтерського обліку 32. Фінансові інструменти: подання. *Офіційний сайт Верховної Ради України.* https://zakon.rada.gov.ua/laws/show/929_029#Text

IASB. (2024). IASB issues narrow-scope amendments to classification and measurement requirements for financial instruments. *The International Accounting Standards Board (IASB).* https://www.ifrs.org/news-and-events/news/2024/05/iasb-issues-amendments-cmfi-ifrs7-ifrs9/	
IASB. (2023). IASB publishes proposed amendments regarding financial instruments with characteristics of equity. *The International Accounting Standards Board.* https://www.iasplus.com/en-ca/news/part-i-ifrs/november-2023/iasb-publishes-proposed-amendments-regarding-financial-instruments-with-characteristics-of-equity	
IFRS 9. (2012). International Financial Reporting Standard 9. Financial Instruments. No. 929_016 dated 01.01.2012, as amended. *Official website of the Verkhovna Rada of Ukraine.* https://zakon.rada.gov.ua/laws/show/929_016#Text	МСФЗ 9. (2012). Міжнародний стандарт фінансової звітності 9. Фінансові інструменти. №929_016 від 01.01.2012 р., зі змінами та доповненнями. *Офіційний сайт Верховної Ради України*. https://zakon.rada.gov.ua/laws/show/929_ 016#Text
KPMG – Ukraine. (2022). Accounting and financial reporting during wartime. Klynveld Peat Marwick Goerdeler (KPMG) Ukraine. https://kpmg.com/ua/uk/home/media/press-releases/2022/05/oblik-ta-finansova-zvitnist-pidpryyemstv-pid-chas-viyny.html	KPMG – Ukraine. (2022). Облік та фінансова звітність під час війни. *Klynveld Peat Marwick Goerdeler*. https://kpmg.com/ua/uk/home/media/press-releases/2022/05/oblik-ta-finansova-zvitnist-pidpryyemstv-pid-chas-viyny.html
KPMG. (2024). Q2 2024 new IFRS® Accounting Standards and amendments: Are you ready? *Klynveld Peat Marwick Goerdeler*. https://kpmg.com/us/en/articles/2024/ifrs-accounting-standards-amendments.html	
Lohvinov, P. V. (2024). Financial instruments and their role in cross-border cooperation. *Efficient economy*, (7). http://nbuv.gov.ua/UJRN/efek_2024_7_52	Логвінов, П. В. (2024). Фінансові інструменти та їх роль у транскордонному співробітництві. *Ефективна економіка*, (7). http://nbuv.gov.ua/UJRN/efek_2024_7_52
Nahorna, Yu. (2022). IFRS 9 Review. *National Bank of Ukraine.* https://bank.gov.ua/admin_uploads/article/MSFZ_9_Review_pr_2022-09-06.pdf?v=5	Нагорна, Ю. (2022). Огляд МСФЗ 9. *Національний банк України*. https://bank.gov.ua/admin_uploads/article/ MSFZ_9_Review_pr_2022-09-06.pdf?v=5
NAR(S) 13. (2001). National Accounting Regulation (Standard) 13 "Financial Instruments". *Official website of the Verkhovna Rada of Ukraine*. https://zakon.rada.gov.ua/laws/show/z1050-01#Text	НП(С)БО 13. (2001). Національне положення (стандарт) бухгалтерського обліку 13 "Фінансові інструменти". *Офіційний сайт Верховної Ради України.* https://zakon.rada.gov.ua/laws/show/z1050-01#Text
Nazarova, K., & Zadniprovskyi, O. (2018). Audit of valuation of financial instruments. *Bulletin of the Kyiv National University of Trade and Economics*, (4), 85–97.	Назарова, К., & Задніпровський, О. (2018). Аудит оцінки фінансових інструментів. *Вісник Київського національного торговельно-економічного університету*, (4), 85–97.
Popko, Ye., & Lukova, O. (2023). Methodological component of improving the assessment of long-term debt as a financial instrument. *Accounting & Finance*, (3), 12–20. https://doi.org/10.33146/2307-9878-2023-3(101)-12-20	Попко, Є., & Лукова, О. (2023). Методологічний компонент удосконалення оцінки довгострокової заборгованості як фінансового інструменту. *Облік і фінанси*, (3), 12–20. https://doi.org/10.33146/2307-9878-2023-3(101)-12-20
Pylypenko, L. M., & Demska, Yu. V. (2020). The impact of accounting policy for financial assets on the financial and property status and performance of companies. Pryazovskyi economic herald, *1*(18), 300–304. https://doi.org/10.32840/2522-4263/2020-1-52	Пилипенко, Л. М., & Демська, Ю. В. (2020). Вплив облікової політики щодо фінансових активів на фінансово-майновий стан і результати діяльності компаній. *Приазовський економічний вісник, 1*(18), 300–304. https://doi.org/10.32840/2522-4263/2020-1-52
Rapa, N. (2023). Financial instruments and features of their evaluation. *International Scientific and Practical Conference "Development of Socio-Economic Systems in Geoeconomic Space*", 102–103.	Рапа, Н. (2023). Фінансові інструменти та особливості їх оцінки. *Міжнародна науково-практична конференція "Розвиток соціально-економічних систем в геоекономічному просторі*", 102–103.
Shepeliuk, V. A., & Yunatskyi, M. O. (2019). Discounting as a financial instrument for the valuation of accounting objects: implementation problems under IFRS. *Scientific Notes of the University "KROK" (Economic Sciences)*, (2), 80–84. https://doi.org/10.31732/2663-2209-2019-53-80-84	Шепелюк, В. А., & Юнацький, М. О. (2019). Дисконтування як фінансовий інструмент вартісної оцінки об'єктів обліку: проблеми реалізації в умовах МСФЗ. *Вчені записки університету "КРОК". Серія: Економіка*, (2), 80–84. https://doi.org/10.31732/2663-2209-2019-53-80-84

Snihurska, L. P. (2017). Valuation of assets for the purpose of forming provisions for impairment under IFRS 9 "Financial Instruments". *Efficient economy*, (7). http://nbuv.gov.ua/UJRN/efek_2017_7_20	Снігурська, Л. П. (2017). Оцінка активів з метою формування резервів під зменшення корисності за МСФЗ 9 "Фінансові інструменти". *Ефективна економіка*, (7). http://nbuv.gov.ua/UJRN/efek_ 2017_7_20
Yatsun, A., & Vdovenko, N. (2024). Financial instruments of sustainable development in the aspect of modeling the agricultural sector of the economy of Ukraine. *Acta Academiae Beregsasiensis. Economics*, (5), 230–245.	Яцун, А., & Вдовенко, Н. (2024). Фінансові інструменти сталого розвитку в аспекті моделювання аграрного сектору економіки України. *Acta Academiae Beregsasiensis. Economics*, (5), 230–245.

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COMPLIANCE MANAGEMENT ECOSYSTEM OF THE BANK

In 2025, the global banking community, represented by 63 central banks and monetary organizations that are members of the Bank for International Settlements (BIS), can rightfully celebrate the 20th anniversary of the official basic document "Compliance and the compliance function in banks" (BCBS, 2005). It systematically formulates the principles of top management responsibility and the bank's audit department for compliance management; defines the foundations of independence and resource provision of the compliance function in the bank. The document provided a fundamental impetus for the development and implementation of relevant compliance regulations in modern banking at the level of global organizations (such as FATF and others), central and commercial banks of many countries around the world. However, despite such a long period since the date of appearance of this document, in the opinion of the authors, there is currently not enough analytical research on the issue of compliance as an ecosystem of corporate governance in banks. That is why a systematic analysis of the challenges of corporate governance compliance in Ukrainian banks is an important and

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ЕКОСИСТЕМА КОМПЛАЄНС МЕНЕДЖМЕНТУ БАНКУ

У 2025 р. світове банківське середовище, представлене 63 центральними банками та монетарними організаціями – членами Банку міжнародних розрахунків (BIS), може по праву святкувати 20-річний ювілей народження офіційного базового документа "Compliance and the compliance function in banks" (BCBS, 2005). У ньому системно сформульовані принципи відповідальності органів вищого керівництва, підрозділу аудиту банку за комплаєнс-менеджмент, визначені основи незалежності та ресурсного забезпечення комплаєнс-функції в банку. Документ надав фундаментальний поштовх для розвитку та імплементації відповідних регламентів комплаєнс у сучасному банкінгу на рівні глобальних світових організацій (на кшталт FATF тощо), центральних та комерційних банків багатьох країн світу. Проте, попри такий довготривалий термін від дати появи цього документа, з огляду авторів, наразі недостатньо проведено аналітичних досліджень з проблематики комплаєнс як екосистеми корпоративного управління в банках. Тож системний аналіз викликів корпоративного управління комплаєнс у банках України є

relevant topic for research. The aim of the research is to identify challenges for the corporate governance compliance ecosystem in Ukrainian banks and formulate directions for overcoming them in the context of global threats and war. The research is hypothesized that the formation of a compliance ecosystem in a bank contributes to a more systematic assessment of modern compliance risks, ensuring that the banking institution complies with regulatory and ethical requirements, developing and implementing ESG standards, and increasing adaptability to challenges.

To test the formulated hypothesis and achieve the aim, methods of analysis, generalization, formalization and graphical representation of information were used. As a result of the research, the main elements of the corporate governance compliance ecosystem in banks were described and their three functional levels were highlighted; the features of corporate governance compliance in modern realities of Ukraine were identified; the trajectory of changes in compliance components under the influence of challenges, among which the key ones are political, technological, digital, cybersecurity, human factors and war (as a component of a political challenge), were indicated; directions for banks to overcome the specified challenges were proposed.

Keywords: corporate governance, ecosystem, compliance, banks, management ethics, challenges.

важливою та актуальною темою для дослідження. Метою статті є визначення викликів для екосистеми корпоративного управління комплаєнс у банках України та визначення напрямів їх подолання в умовах глобальних загроз та війни. У ході дослідження висунуто гіпотезу, що формування екосистеми комплаєнс у банках сприяє більш системній оцінці сучасних комплаєнс-ризиків, забезпеченню банківською установою відповідності регулятивним та етичним вимогам, розробці й впровадженню ESG стандартів, та підвищенню адаптивності до викликів.

Для перевірки гіпотези та досягнення мети використано методи аналізу, узагальнення, формалізації та графічного представлення інформації. У ході дослідження розглянуто основні елементи екосистеми корпоративного управління комплаєнс у банках і виділено три їх функціональні рівні; визначено особливості корпоративного управління комплаєнс у сучасних умовах України; зазначено траєкторію змін складових комплаєнс під впливом викликів, серед яких ключовими є політичні, технологічні, цифрові, кібербезпеки, людський фактор і війна (як складова політичного виклику). Запропоновано напрями подолання банками зазначених викликів.

Ключові слова: корпоративне управління, екосистема, комплаєнс, банки, етика менеджменту, виклики.

Jel Classification: G34, G38, M14, P41.

Introduction

Modern banking business has been rapidly transforming in recent years from the model of "universal banks or financial banking groups", which sold purely financial services, into complex financial ecosystems, which sell any goods/products/services from all areas of customers' lives. Such financial ecosystems are aimed at the most seamless combination of information, financial, logistical, security and other components of the transaction between the system-seller and the client, at the most convenient time and in the most convenient place. Such a transformation inevitably leads to new challenges of corporate government compliance in the banking sector.

Since 2005, the global banking environment has had an official basic document "Compliance and the compliance function in banks" (BCBS, 2005), which defined the key principles for building compliance management. However, today's challenges require a new interpretation of the requirements of this document.

Ukraine is also making great efforts to legislatively regulate compliance management in the banking system in accordance with existing

international standards and EU legislation, which is confirmed by the current NBU strategy (NBU Strategy, 2023, May 22). However, the war unleashed by the russian federation against Ukraine, which has lasted almost three years, leads to new serious challenges in corporate governance by compliance in banking institutions.

Despite the fact that the term GRC (Governance, risk management and compliance) and the first studies of this concept were proposed back in 2007 (Mitchell, 2007, November), as "an integrated set of capabilities that allow an organization to reliably achieve goals, resolve uncertainty, and act with integrity", in the context of the rapid AI implementation (artificial intelligence) achievements, banking business practice requires additional in-depth research into compliance management as an element of corporate governance.

Karthick et al. (2023, September) conducted a systematic review of the current literature on GRC and a study of existing GRC practices. The study emphasizes that modern GRC platforms are no longer limited to simple compliance with legal requirements and are turning into a strategic function of risk assessment, ensuring business continuity, adhering to ethics and compliance, building information security and strategic planning. The main GAPs in modern research are formulated, namely: the GRC impact on the organizational effectiveness and resilience of the company; best practices for GRC implementation; GRC integration with AI, blockchain, cloud computing; the impact of culture and ethics on GRC practice; measuring the effectiveness of GRC implementation and operation.

Beaumier and Reese's study (2024) outlines some changes on the horizon: in the ever-expanding landscape of financial services regulation, there are signs that the standard for compliance is shifting from technical assessment to outcome-based assessment. Based on a systematic analysis of 15 key compliance priorities, the authors conclude that compliance managers play a key role in defining controls to meet local regulatory requirements for data management and models. One of the key roles of the Chief Compliance Officer (CCO) should be to use AI to develop a registry of regulations and a library of risk controls, with the subsequent maximum automation of the risk assessment processes themselves. The paper also highlights that generative AI has the potential to significantly increase the level of fraud and money laundering risks.

An expert research (Regulatory Compliance in Banking, 2024, October 6) is noteworthy, which formulates seven best practices for effective compliance with regulatory requirements in the banking sector: establishing a clear compliance policy; implementing strong training programs for bank personnel; maximizing compliance automation; integrating compliance and risk assessment; implementing a risk-based approach; encouraging transparent cooperation between bank departments; using the latest technologies/digital platforms for compliance.

Close to the study aim is Murphy's work (2023), in which the author formulated six challenges facing bank compliance officers: transitioning to the role of compliance consumer; obtaining and maintaining regular direct access to the board and management committees and teams; tracking regulatory changes; based on risk findings, convincing the board and senior management of the need to implement cultural changes in the bank; advocating for change when the bank's own CMS (Compliance management system) does not have systemic problems; expanding the support system for compliance officers. It is important to emphasize the conclusion of this study that managing and implementing an effective CMS is difficult, especially for compliance officers in small banks, which lack the resources compared to large institutions in the financial market.

The key forecast challenges that American banks and financial services institutions will face in the next 5 years are formulated in the work of Armstrong & Picone (2024, February 5). These are climate change and ESG (Environmental, Social and Governance) Compliance; cybersecurity and data privacy; AI and the dominant influence of fintechs; operational resilience and business continuity; combating money laundering and financial crime. As a result, banks will need to develop and implement appropriate compliance strategies, namely: investments in the latest technologies; training and compliance culture; proactive risk management; effective interaction with regulatory authorities; organization of specialized audits and confirmation of AML (Anti-Money Laundering) compliance.

Amblard-Ladurantie's research (2024, April 19) is devoted to the analysis and formulation of trends in corporate government compliance and risk management in banks. The paper concludes that ESG compliance is becoming a key driver of change in compliance management. Current and relevant trends in the development of GRC platforms in banks are: integrated GRC platforms; adoption and development of Agile Compliance Frameworks; optimization of GRC processes, strengthening business continuity and coordinated risk management.

Domestic scientists are also working on research in this area, primarily on the essence and components of compliance. Thus, Azarenkova et al. (2023) in their work assessed the popularity of research on the concept of compliance in the works of scientists. These authors noted that among domestic scientists there is no single approach to understanding this concept. In addition, they identified periods when such research had the greatest growth (in relation to the banking sector, this was the period 2018–2019) and identified trends in scientists' research on compliance.

Sheludko (2023a; 2023b) in a series of his works focused on the legal status of the compliance service in Ukrainian banks, its rights, responsibilities, key tasks, guarantees and resources. He identified the qualification

requirements for a candidate for the position and the main tasks of the chief compliance officer of the bank. He proved that a hybrid model of organizing a compliance service is established in Ukraine. In another article, he identified the sources of legal regulation of compliance in Ukrainian banks and the place of international treaties as sources of legal regulation of banking compliance (primarily the Acquis acts of the European Union).

In the research of Grudzevuch et al. (2024) the essence of the concept of compliance and approaches to its organization in banks are defined. The functions of the so-called lines of defense in creating compliance and the benefits of its implementation for banking institutions are determined. Compliance policies are analyzed in accordance with the recommendations of the Basel Committee on Banking Supervision "Compliance and the Compliance Function in Banks".

Ozarko et al. (2024) focused on the role of compliance control, primarily in reducing bank risks. As well as the main functions, tools and principles of its implementation, taking into account the establishment of interaction with other divisions of the bank. In addition, they identified the stages of the evolution of compliance control. The purpose, tasks, functions and principles of compliance control were also investigated in Hura's work (2023). However, significant attention in the research is paid to determine approaches to interpreting the concept of compliance.

The main requirements for implementing compliance in banks, taking into account the requirements of the above-mentioned document of the Basel Committee and the specifics of Ukrainian practice, are disclosed in the publication of Omelchuk and Shvets *(*2017). In addition, the authors identified the features by which an effective compliance system in banking institutions can be determined, as well as the key prerequisites for its formation in Ukrainian banks. Thus, Mulyk's study (2023), in addition to revealing general approaches to organize compliance in banks, also pays attention to the impact of technological innovations and artificial intelligence on the organization of compliance in banks.

Safronenko's publication (2022, August 2) is noteworthy on the role of compliance during the war in Ukraine. In it, she noted the main areas of compliance during the war, primarily regarding the identification and management of operational risk and corporate fraud, emphasized the increased burden on the compliance function, in particular regarding the rescreening of companies and their counterparties regarding sanctions lists and connections with the russian federation; noted the change in focus in anti-corruption compliance.

One of the issues of the compliance system in a bank is ensuring counteraction to the emergence of corruption risk. In this context, it is worth paying attention to the work of Bezverkhyi et al. (2024), in which the authors defined the purpose and objectives of anti-corruption audit, substantiated the conceptual foundations of its implementation in the context of modern

challenges. Regarding anti-corruption compliance (without reference to the banking sector), it is worth noting the study by Nezhyva et al. (2024, August), which noted the need to prioritize anti-corruption measures, especially given the challenges of the globalized world. In addition, the authors proposed their own list of KPIs for assessing the effectiveness of an anti-corruption program, which can be applied in the banking sector with certain adjustments.

The issues of using the compliance system in the context of the global integration of the Ukrainian banking system into international markets, and above all, regarding compliance with the principles of the Basel Committee on Banking Supervision, are set out in the monograph edited by Vnukova and Hlibko (2020). In addition, the authors devoted considerable attention to the disclosure of compliance risks and their consequences, identified external factors that affect banks and require attention from the compliance service, namely: political, economic, social, financial, legal, etc.

As we can see, the subject of compliance is quite relevant for researchers, but most often their attention is focused on organizational and regulatory issues, rather than on assessing challenges.

The research aim is to identify challenges for the corporate governance compliance ecosystem in Ukrainian banks and formulate directions for overcoming them in the context of global threats and war.

The research is hypothesized that the formation of a compliance ecosystem in a bank contributes to a more systematic assessment of modern compliance risks, ensuring that the banking institution complies with regulatory and ethical requirements, developing and implementing ESG standards, and increasing adaptability to challenges.

To substantiate the hypothesis put forward, the levels and elements of the corporate governance by compliance ecosystem were determined; the interrelationships and responsibilities of bank divisions for individual compliance functions were described with the allocation of specific zones; the features of corporate compliance management in modern conditions of Ukraine were highlighted. It was additionally noted that all components of compliance office functionality are currently undergoing significant changes under the influence of challenges, to overcome which it is advisable to take into account the developed proposals in practice.

This research is based on the use of documents from international institutions, in particular, the Basel Committee on Banking Supervision (BCBS, 2005), as well as the National Bank of Ukraine (NBU) and official websites and reports of banks, scientific publications of foreign and Ukrainian specialists, various methods of scientific research, in particular theoretical generalization – in the formation and description of the ecosystem of corporate governance by compliance in modern banks; formalization – to express and describe individual elements of the ecosystem of corporate governance by compliance and the challenges that arise during the war in Ukraine; induction and deduction – in the formulation of conclusions.

The main part of the research consists of three interrelated sections. The first examines the composition and essence of the corporate governance compliance ecosystem in modern banks. The second examines and systematizes the key challenges that arise in the corporate governance compliance of Ukrainian banks. The third examines the features of the corporate governance compliance ecosystem in the Ukrainian banking environment during the war. In the Conclusions section, the authors formulate a list of key recommendations regarding the areas of overcoming challenges in corporate governance compliance in Ukrainian banks.

1. Composition and essence of the corporate governance compliance ecosystem in modern banks

The concept of compliance comes from the English "compliance", which means "conformity", therefore, in general, it determines the compliance of a process or activity with certain established norms.

Analyzing Fox's (2022, February 14) approaches to studying innovations and the effectiveness of the compliance ecosystem (primarily from the point of view of the organization's CCO), as well as using James Moore's well-known concept of "business ecosystem", we can characterize a compliance ecosystem, as a multi-level system of processes, technologies, databases, and various stakeholders that actively interact with each other, are constantly modified and adapted under the influence of external/internal challenges in order to maximally guarantee the organization's compliance with relevant regulations, standards, ethical principles, and effectively manage compliance risks.

Global financial institutions are setting the tone for the development and implementation of compliance management platforms in the modern banking environment. For example, the WBG (World Bank Group) Integrity Compliance Office (Miller, 2024, March) published information on Integrity Compliance Programs to Advance Integrity Principles and Deter Misconduct. The WBG Integrity Compliance Guidelines and Integrity Compliance Program have four key objectives: Prevent, Detect, Investigate, Remediate, which are aimed at constant adaptation and evolution. Therefore, these 4 key objectives are actually aimed at overcoming any challenges that arise in the functioning of banking institutions.

Analyzing existing public scientific research, reports of global banking and financial institutions, and Internet sources that present the opinions of market experts on the topic of development, implementation, and compliance management, the authors came to the conclusion that it is advisable to describe the corporate governance compliance ecosystem in a bank as a basic element of the development of the GRC platform in modern business conditions. It is proposed to include three main levels in such an ecosystem (*Figure 1*).

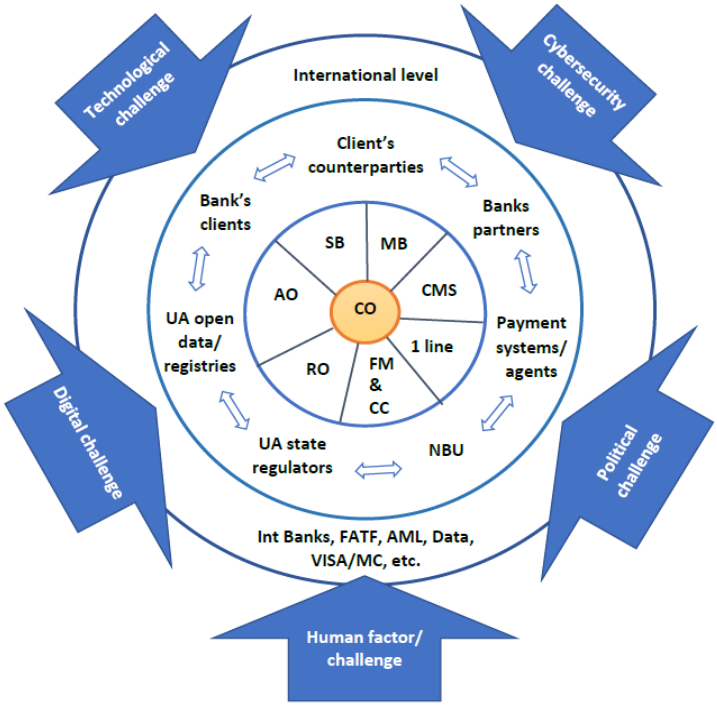

Figure 1. Compliance governance ecosystem in Ukrainian banks

Abbreviations: CO – compliance office; SB – supervisory board; MB – management board; CMS – compliance management system; 1 line – 1st line of bank defense (NBU regulation); FM&CC – financial monitoring & currency control unit; RO – risk office; AO – audit office; FATF – Financial Action Task Force; AML – Anti-money laundering regulation; NBU – National bank of Ukraine; MC – master card

Source: author's interpretation.

Level 1 is about elements of the ecosystem of a specific commercial/public bank. The core of compliance management is the Compliance Office (CO) headed by the CCO (Chief Compliance Officer). From the point of view of the existing regulatory nature of the responsibility/functional purpose of the CO, as well as the rules of corporate governance in banks, the CO at the 1st level of the ecosystem actively interacts with: the bank's supervisory board (direct subordination of the CO to the SB); management board; risk office; the so-called 1st line of defense of the bank; financial monitoring and currency control unit; audit office. At the same time, the CO actively develops, implements and practically uses the compliance management system (CMS).

Level 2 consists ecosystem elements that are located and operate in the legal space of a specific state (in our study it's Ukraine). The key elements of the level are bank clients and their counterparties, market participant banks and payment operators, the NBU and other regulatory structures, the environment with databases. CO through CMS builds channels for exchange, accumulation, and constant analysis of information when interacting with elements of the 2nd level of the ecosystem.

Level 3 describes ecosystem elements that are located and operate in the legal environment of the international/global level or the legal field of other foreign states. These are, first of all, international banks, global payment operators, global financial and banking supervision organizations and are focused on combating money laundering/combating the financing of terrorism. A modern CMS in a bank should also provide for CO effective interaction with the elements of the 3rd level ecosystem in order to ensure the performance of compliance management functions.

In *Figure 1* the authors structured and identified five types of modern challenges that significantly affect dynamic changes in the ecosystem as a whole. Challenges generate changes both within individual ecosystem elements and in the information exchange system between ecosystem elements and the CO. The real impact of each of the challenges on ecosystem elements and on the quality of compliance management/compliance risk assessment for the bank, in the authors' opinion, requires separate specialized studies.

In order to gain a deeper understanding of the areas of functional responsibility of the CO in a modern bank, the authors, based on an analysis of existing research (European Investment Bank, 2024) and sources of information, systematized and identified 7 such key areas (*Figure 2*).

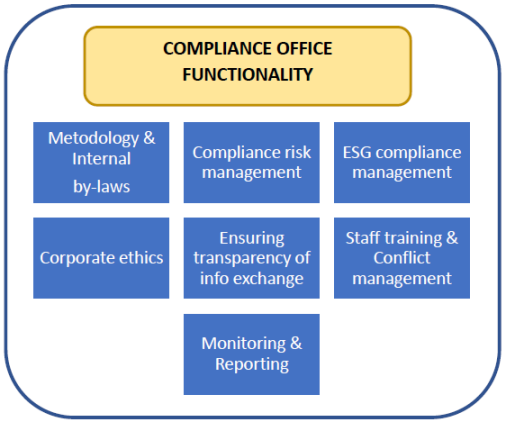

Figure 2. Key functionality of a modern bank's compliance office

Source: author's interpretation based on public sources of information (EIB, n. d.)

It should be emphasized that for modern Ukrainian banks, all components of compliance office functionality are undergoing significant changes, tangible dynamics of development and their new practical content under the influence of the following challenges, such as: political, technological, digital, cybersecurity and human factors. Accordingly, these tasks of transforming the functional responsibility areas of the banks' compliance offices are of primary importance and must find their practical implementation in the development of modern CMS.

The authors have concluded that it is now on the SB and CO of Ukrainian banks, in accordance with the current rules of corporate governance, that the maximum responsibility for the high-quality development and effective implementation of the functional areas "ESG compliance management" and "Corporate ethics" is placed. This is due to the fact that these functional areas are relatively new to the Ukrainian banking environment (Liga Zakon, 2024, September 26), and without their intensive implementation it is impossible to effectively build future business relationships with global donors in the post-war period with the aim of quickly restoring Ukraine.

2. Key challenges that arise in corporate governance by compliance of banks in Ukraine

In today's complex conditions of compliance management formation in Ukrainian banks, the authors consider it necessary to present their own opinion on the essence of the key challenges that arise before the CO team (*Table 1*) and other units of the bank's ecosystem.

Table 1

Identification of problems in compliance management of Ukrainian banks under the influence of global challenges

Key challenges	Issues identification	Key involved units
Political	Banking continuity in wartime. Transaction security (AML/CFT, sanctions). ESG design, implementation and development	CO, SB, MB, RO
Human factor	Lack of professional compliance qualifications among bank managers. Long-term staff shortages due to the war in Ukraine	CO, SB, MB, HR
AI/Digital	Outdated IT architecture of banks. Lack of automated CMS platforms. Lack of regulation of the use of AI	CO, SB, MB, IT, LO
Technological	Outdated technological capabilities of online services. Limited inclusiveness of financial services (e.g., lack of ATMs for the visually impaired, etc.)	IT, CO, SB, MB
Cybersecurity	Protection of sales channels/information exchange. Database protection. Full identification and organization of effective countermeasures against fraud (internal/external)	IT, CO, SB, MB, SO

Abbreviations: CFT – Combating the Financing of Terrorism; CO – Compliance Office; HR – Human Resources; IT – Information Technologies; LO – Legal Office; MB – Management Board; RO – Risk Office; SB – Supervisory Board; SO – Security Office

Source: author's interpretation based on public sources and analyses.

Identification of current problems in compliance management of Ukrainian banks allows us to outline the directions of their further in-depth research. From a practical point of view, key units of the bank ecosystem should plan their activities and effective interaction, if necessary, provide for appropriate expenses in the budget for 2025–2027 to address these problems.

Using the analysis results presented in *Table 1*, the authors propose the following directions for banks to overcome the above-mentioned challenges of the compliance ecosystem:

*Political: s*trengthening the energy, communication stability and seamlessness of banks and banking processes/operations during the war. Development of a 3–5-year strategy for the post-war business model, taking

into account the increased role of the compliance ecosystem and the implementation of ESG standards.

*Human factor: i*mplementation of continuous training programs for bank staff and organization of targeted university training of students in accordance with modern requirements for compliance ecosystems. Development of systems of material incentives, retention, and replacement of personnel for the bank's CO.

*AI/Digital: s*trategizing the development/transformation of the bank's IT architecture for 3–5 years, taking into account modern requirements for compliance management and AI capabilities. Development of internal banking regulations on the use of AI.

*Technological: m*aximum use of a secure cloud environment for organizing storage, data processing, and execution of customer transactions. Early budgeting of costs for means of ensuring the inclusiveness of financial services

*Cybersecurity: u*nconditional compliance by banks with the requirements of The Regulations on the Organization of Measures to Ensure Information Security in the Banking System of Ukraine (NBU, 2017 September 28). Technological and hardware upgrade of banking channels for selling services/data exchange. Review, improvement, automation (using AI achievements) of processes for combating internal and external fraud.

3. Features of the corporate governance compliance ecosystem in the banking environment of Ukraine during the war

The ecosystem of corporate governance compliance in Ukrainian banks (*Figure 1*) under the influence of external and internal challenges requires constant control and adaptive rapid response from the CO. And the war unleashed by russia against Ukraine is one of the most fundamental "political challenges" that has caused changes in compliance management.

Customer service is a key type of business for banks, and it is here that many unresolved issues arise for banking COs. Analysis of modern practices of the corporate governance compliance system (one of the authors of the article is the independent chairman of the supervisory board of JS "ALTBANK"), the results of expert discussions during specialized conferences on compliance management (Extra Consulting, 2024, October 8; NCTBPU, 2024, December; Liga Zakon, 2024, September 26) made it possible to formulate the following features/GAPs of compliance management in the banking environment of Ukraine during the war when providing services to clients:

- The relevance and correctness of the use by banks of the database "State Register of Sanctions" (n. d.) regarding the complete coincidence of the surname, first name and patronymic of sanctioned persons who may act as clients of the banking system. The sources of information in the sanctions register are permanent decisions of the National Security and Defense Council of Ukraine (NSDC), as well as adopted decisions of the courts of

Ukraine on the application of sanctions. As a result, the sanctions register itself is a dynamic and changing information and communication system. Technical information errors periodically occur in it, which complicates the procedure for banks to quickly and as correctly as possible determine whether a client belongs to the list of sanctioned persons.

- Requirement for banks to correctly and quickly verify clients as PEP (politically exposed person). The NBU recommends that financial market participants identify PEP through public databases, namely: the NACP register (National Agency on Corruption Prevention), the free register https://pep.org.ua/, various commercial resources and international comercial databases, such as World Check. At the same time, the NBU does not maintain its own PEP database, due to the fact that the creation of a single state PEP register does not meet FATF international standards. As a result, banks must use information from many sources when studying the client's personal data and his belonging to the PEP category, which requires a large amount of time and human resources. Such a check still does not guarantee 100 percent correctness of verification of the client's belonging to the PEP in comparison with the corresponding NBU verification.
- The need for banking control units to develop and apply procedures for identifying persons (clients/counterparties of bank clients) associated with the russian federation and the republic of belarus who use cash originating from the above-mentioned countries in their business activities. The criteria for verifying such money are not only their belonging exclusively to the national currencies "russian and belarusian rubles", but also belonging to the currencies of the 1st or 2nd international currency classifiers, which certainly complicates this kind of necessary verification.
- The need for further legislative improvement and regulation of the procedure for banks to identify clients who are connected to the russian federation and the republic of belarus due to ownership of various shares of companies in these countries (inaccessibility to many foreign stock registers of these countries; operational impossibility of sale/any legal method of alienation by residents of Ukraine of shares of companies of aggressor countries during the war).
- Lack of regulation at the legislative level of procedures for official exchange of customer data between various participants in the financial market of Ukraine. As a result, each financial and banking institution in Ukraine is trying to form its own database, which a priori will be limited to more reliable data only about the bank's own customers, but not about their counterparties served by other banks.
- The emergence of a new, rather large segment of private sector legal entities that use state funds in their business activities to fulfill certain defense orders during wartime, which involves imposing certain "secret labels" on both bank clients and their counterparties. Such a security/secrecy regime makes it practically impossible to implement any verification procedures if

the bank itself does not have departments/technical facilities/relevant state permits to process this type of information.

Under the influence of the war, migrations and relocations of businesses from combat zones or occupied territories of Ukraine have occurred and continue to occur continuously, not only to the central and western regions of Ukraine, but also abroad, for example, to Poland, Romania, Moldova, the Baltic countries, etc. This process of transformation of business companies creates new chains of production, transportation, sale of goods and services. Accordingly, the procedure for verifying all new chains of business, which banks must follow when verifying clients/counterparties/beneficiaries, is significantly complicated.

Conclusions

The research results have been proved the hypothesis that the formation of a compliance ecosystem in a bank contributes to a more systematic assessment of modern compliance risks, ensuring that the banking institution complies with regulatory and ethical requirements, developing and implementing ESG standards, and increasing adaptability to challenges. And since the main goal of compliance is to ensure it with laws and regulations, prevent violations, minimize and preserve the bank's reputation, the bank's ability to withstand any challenges actually indicates an improvement in the quality of corporate governance.

Such challenges include, first of all, global ones, related to digital transformation; changing worldviews and regarding ethical norms and ESG, as well as the instability of the political situation; the impact of corruption risks; crisis phenomena in the economy and constant regulatory changes in the banking sector. However, the most important challenge at the moment is the war in Ukraine. And during the war, the Ukrainian government imposed additional restrictions that apply to both banks and their clients (primarily regarding the regulation of labor relations, cooperation with foreign companies and the identification of sanctioned persons, strengthening financial monitoring requirements, restrictions on the operation of the Ukrainian foreign exchange market, etc.).

According to the research results, three main groups of features/GAPs of compliance management in the banking environment of Ukraine during the war in the course of providing services to clients can be distinguished. These GAPs are related to:

- the quality of database formation, banks' accessibility to them and the level of automation of processing relevant information;
- the imperfection of the legislative framework at the state level and interstate relations on the exchange of client data;
- the imperfection of banks' internal regulatory procedures for detecting and preventing prohibited client transactions related to russia and the republic of Belarus.

All of the above-mentioned areas of CO responsibility require a substantive practical analysis by the bank's management, initiation of the development of its own IT solutions involving the AI achievements and formulation of initiatives addressed to the NBU to change the current regulations, regarding methodological improvement and increasing the transparency of client data exchange, both at the state level of Ukraine and at the international level (primarily with the border states of the EU, where there was a mass migration of Ukrainian private business under the influence of the war).

Preventive measures are aimed at improving the culture of corporate governance, which includes compliance management. They should ensure the stability of the bank's activities in the current unstable environment and eliminate negative factors. Key recommendations for overcoming challenges in corporate governance and compliance in Ukrainian banks are:

- In the face of modern challenges, the bank's SB is becoming a driving force for building ethical banking and zero tolerance for violations and increasing compliance risks.
- The bank's CO team, with the SB participation and support, should take on the leader role of compliance management transformation in the bank's ecosystem in the next two to three years.
- SB, MB, CO of banks, when strategically planning their activities, must review and approve budget expenditures to overcome the challenges of "AI/Digital", "Technological", "Cybersecurity".
- SB, MB, CO banks need to urgently begin planning their own resources for the ESG development and implementation, as a prerequisite for effectively attracting global investors and donors to the Ukrainian economy in the post-war period.
- SB, MB, CO of banks, in conditions of a total shortage of personnel and an insufficient level of their professionalism in compliance management, either directly or through professional associations of banks, should establish cooperation with the NBU and specialized universities of Ukraine to develop modern student training programs, training/retraining of bank managers on "Modern Compliance Management" subject.

In conclusion, the authors highlight the following relevant areas for further research on the subject covered in the article: *first*, the transformation of the SB role for the development of a modern system of government compliance management in Ukrainian banks during the war and the post-war period of state reconstruction; *second*, the formation of principles for the construction and implementation of a modern CMS for Ukrainian banks with the involvement of AI capabilities and ensuring the relevant cybersecurity requirements.

REFERENCES/СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ

Amblard-Ladurantie, C. (2024, April 19). Governance, Risk and Compliance Trends, 2024. Mega International (Global). https://www.mega.com/blog/grc-trends-2024

Armstrong, M., & Picone, N. (2024, February, 5) Top 5 Regulatory Compliance Issues Facing Financial Services in the Next 5 Years. https://trustyoursupplier.com/top-5-regulatory-compliance-issues-facing-financial-services-in-the-next-5-years

Azarenkova, G., Tsovma, B., & Tomarovych, T. (2023). Theoretical and methodological principles of compliance control in the corporate management system of the bank in modern conditions. *Scientific Bulletin of the Odessa National Economic University:* collection of scientific works; ed.: V. V. Kovalenko (ed. chief). (ISSN 2409-9260). Odesa: Odessa National Economic University, *9*(310), 72–80. http://n-visnik.oneu.edu.ua/collections/2023/310/pdf/72-80.pdf

Азаренкова, Г. М., Цовма, Б. В., & Томарович, Т. В. (2023). Теоретико-методологічні засади комплаєнс-контролю у системі корпоративного управління банку в сучасних умовах. *Науковий вісник Одеського національного економічного університету:* зб. наук. праць; за ред.: В. В. Коваленко (голов. ред.). (ISSN 2409-9260). Одеса: Одеський національний економічний університет, *9*(310), 72–80. http://n-visnik.oneu.edu.ua/collections/2023/310/pdf/72-80.pdf

BCBS. (2005). Compliance and the compliance function in banks. *Task Force on Accounting Issues of the Basel Committee on Banking Supervision*. BCBS. https://www.bis.org/publ/bcbs113.pdf

Beaumier, C., & Reese, B. (2024). Top-of-Mind Compliance Issues for Financial Institutions in 2024. *Protiviti, Global business conculting*. https://www.protiviti.com/gl-en/whitepaper/top-of-mind-compliance-issues-financial-institutions-2024

Bezverkhyi, K., Parasii-Verhunenko, I., Yurchenko, O., Kazak, O., Zhytar, M., & Poddubna, N. (2024). Conceptual basis of anti-corruption audit. *Financial and Credit Activity Problems of Theory and Practice*, *6*(59), 77–89. https://doi.org/10.55643/fcaptp.6.59.2024.4482

Безверхий, К., Парасій-Вергуненко, І., Юрченко, О., Казак, О., Житар, М., & Поддубна, Н. (2024). Концептуальні основи антикорупційного аудиту. *Financial and Credit Activity Problems of Theory and Practice*, *6*(59), 77–89. https://doi.org/10.55643/fcaptp.6.59.2024.4482

EIB. (n. d.). *Roles of the EIB compliance function*. https://www.eib.org/en/about/compliance/index

European Investment Bank. (2024). *EIB Group compliance activity report 2023*. https://www.eib.org/attachments/lucalli/20240120_eib_group_compliance_activity_report_2023_en.pdf

Extra Consulting. (2024, October 8). How do Ukrainian banks overcome the challenges of financial monitoring, currency supervision and compliance? *VI Annual Conference*. https://extra-consulting.net/2024/09/22/compliancerisk2024-conference-october-8-2024/

Extra Consulting. (2024, жовтень 8). Як банки України долають виклики фінмоніторингу, валютного нагляду та комплаєнсу? *VI Щорічна конференція*. https://extra-consulting.net/2024/09/22/compliance-risk2024- conference-october-8-2024/

Fox, T. (2022, February 14). Innovation in Compliance: Compliance Ecosystem – P. 1. *Compliance Podcast Network*. https://compliancepodcastnetwork.net/innovation-in-compliance-compliance-ecosystem-part-1/

Grudzevuch, U., Pylypenko, S., & Ohinok, S. (2024). Compliance policy of ukrainian banks at the present stage. *Economy and Society*, (60). https://doi.org/10.32782/2524-0072/2024-60-128

Грудзевич, У. Я., Пилипенко, С. М., & Огінок, С. В. (2024). Комплаєнс-політика банків україни на сучасному етапі. *Економіка та суспільство*. (60). https://doi.org/10.32782/2524-0072/2024-60-128

Hura, V. (2023). Compliance system as a way of overcoming corruption. *Economy and Society*, (52). https://doi.org/10.32782/2524-0072/2023-52-77

Гура, В. (2023). Система комплаєнс як спосіб подолання корупції. *Економіка та суспільство*, (52). https://doi.org/10.32782/2524-0072/2023-52-77

Karthick, V., Prabhakaran, J., Banu, P., Kumar, U., & Senthil, S. (2023, September). Systematic Literature Review on GRC – A Study on Best Practices and Implementation Strategy in GRC. *Samdarshi ISSN: 2581-3986*, *16*(4), 3558–3570. https://www.researchgate.net/publication/381488401_Systematic_Literature_Review_on_GRC_-A_Study_on_Best_Practices_and_Implementation_Strategy_in_GRC/stats

Liga Zakon. (2024, September 26). Results of ESG & Compliance Forum-2024: *strategies for managing ESG risks and adhering to compliance standards*. https://biz.ligazakon.net/news/230786_pdsumki-esg--compliance-forum-2024-strateg-upravlnnya-esg-rizikami-ta-dotrimannya-standartv-komplans

Liga Zakon. (2024, вересень 26). Підсумки ESG & Compliance Forum-2024: *стратегії управління ESG-ризиками та дотримання стандартів комплаєнс*. https://biz.ligazakon.net/news/230786_pdsumki-esg--compliance-forum-2024-strateg-upravlnnya-esg-rizikami-ta-dotrimannya-standartv-komplans

Miller, Lisa K. (2024, March). *Promoting implementation of integrity compliance programs to advance integrity principles and deter misconduct.* https://www.worldbank.org/content/dam/documents/sanctions/sanctions-board/2024/mar/INTIC_presentation_to_MDB_Sanctions_Boards.pdf	
Mitchell, Scott L. (2007, November). GRC360: A framework to help organizations drive principled performance. *International journal of disclosure and governance*, *4*(4), 279–296. https://doi.org/10.1057/palgrave.jdg.2050066	
Mulyk, A. (2023). General approaches to the organization of compliance in banks. *The collection of "Uzhhorod National University Herald. Series Law"*. (79), P. 1, 272–277. https://doi.org/10.24144/2307-3322.2023.79.1.46	Мулик, А. К. (2023). Загальні підходи до організації комплаєнсу в банках. *Науковий вісник Ужгородського національного університету, Серія Право,* (79), ч. 1, 272–277. https://doi.org/10.24144/2307-3322.2023.79.1.46
Murphy, A. (2023). Supervisory Specialist, Federal Reserve Bank of Kansas City., Consumer Compliance Outlook: First Issue. https://www.consumercomplianceoutlook.org/2023/first-issue/common-challenges-of-community-bank-compliance-officers/	
NBU Strategy. (2023, May 22). *Strategy of the National Bank of Ukraine, Financial fortress*. https://bank.gov.ua/admin_uploads/article/Strategy_NBU_eng.pdf?v=11	
NBU. (2017, September 28). The Regulations on the Organization of Measures to Ensure Information Security in the Banking System of Ukraine: *Approved by Decision of the Board of the National Bank of Ukraine*, (95). https://bank.gov.ua/ua/legislation/Resolution_28092017_95	НБУ (2017, вересень 28). Положення про організацію заходів із забезпечення інформаційної безпеки в банківській системі України: Затверджене *Постанова Правління Національного банку України* (95). https://bank.gov.ua/ua/legislation/Resolution_28092017_95
NCTBPU (National center for the training of bank personnel of Ukraine). (2024, December). Third Annual Conference "Compliance in Ukrainian Banks. *Current and Problematic Issues*". https://www.nctbpu.org.ua/en/activities-en/schedule/1644-tretia-shchorichna-konferentsiia-komplaiens-v-bankakh-ukrainy-aktualni-24.html	NCTBPU (National center for the training of bank personnel of Ukraine) (2024, грудень). Третя щорічна конференція «*Комплаєнс в банках України – актуальні та проблемні питання*». https://www.nctbpu.org.ua/en/activities-en/schedule/1644-tretia-shchorichna-konferentsiia-komplaiens-v-bankakh-ukrainy-aktualni-24.html
Nezhyva, M. O., Mysiuk, V. O., & Nehodenko V. S. (2024, August). Anti-corruption compliance: new business rules. *Economics of Management and Administration.* https://www.researchgate.net/publication/382931738_Antikorupcijnij_komplaens_novi_pravila_vedenna_biznesu [accessed Jan 20 2025]. https://doi.org/10.26642/jen-2024-2(108)-92-102	Нежива, М. О., Мисюк, В. О., & Негоденко, В. С. (2024, серпень). Антикорупційний комплаєнс: нові правила ведення бізнесу. *Економіка управління та адміністрування.* https://www.researchgate.net/publication/382931738_Antikorupcijnij_komplaens_novi_pravila_vedenna_biznesu [accessed Jan 20 2025]. https://doi.org/10.26642/jen-2024-2(108)-92-102
Omelchuk, Ya. A., & Shvets, N. R. (2017). Preconditions for establishment of an efficient compliance system in banking institutions of Ukraine. *Scientific Review. Innovative solutions in modern science*, *10*(19). https://naukajournal.org/index.php/naukajournal/article/view/1387/1484	Омельчук, Я. А., & Швець, Н. Р. (2017). Передумови для формування ефективної системи комплаєнс в банківських установах України. *Науковий огляд. Innovative solutions in modern science 10*(19). https://naukajournal.org/index.php/naukajournal/article/view/1387/1484
Ozarko, O. P., Chikalkin, I. I., Dankiv, N. I., Bavdys, A. E., & Lozynskyi, I. I. (2024). Content of the compliance control function in banking activities. *Scientific Notes of Lviv University of Business and Law*, (41), 424–430. https://nzlubp.org.ua/index.php/journal/article/view/1357	Озарко, О. П., Чікалкін, І. І., Даньків, Н. І., Бавдис, А. Е., & Лозинський, І. І. (2024). Зміст функції комплаєнс-контролю в банківській діяльності. *Scientific Notes of Lviv University of Business and Law*, (41), 424–430. https://nzlubp.org.ua/index.php/journal/article/view/1357. https://doi.org/10.5281/zenodo.13838281
Regulatory Compliance in Banking: Role, Challenges, Consequences, & Solutions. (2024, October 6). *Team FOCAL*. https://www.getfocal.ai/blog/regulatory-compliance-in-banking	
Safronenko, K. (2022, August 2). The Role of Compliance in Wartime. https://kpmg.com/ua/uk/blogs/home/posts/2022/08/rol-komplayensu-pid-chas-viyny.html	Сафроненко, К. (2022, Серпень, 2). *Роль комплаєнсу під час війни*. https://kpmg.com/ua/uk/blogs/home/posts/2022/08/rol-komplayensu-pid-chas-viyny.html

Sheludko, S. A. (2023a). Sources of Legal Regulation of Compliance in Ukrainian Banks. *Law and Innovations*, *2*(42), 34–40. https://doi.org/10.37772/2518-1718-2023-2(42)-4	Шелудько, С. А. (2023a). Джерела правового регулювання комплаєнсу в українських банках. *Право та інновації*, *2*(42), 34–40. https://doi.org/10.37772/2518-1718-2023-2(42)-4
Sheludko, S. A. (2023b). Legal Status of the Compliance Office in Ukrainian Banks. *Problems of Modern Transformations. Series: Law, Public Management and Administration*, (8). https://doi.org/10.54929/2786-5746-2023-8-01-01	Шелудько, С. А. (2023b). Правовий статус служби комплаєнсу в банках України. *Проблеми сучасних трансформацій. Серія: право, публічне управління та адміністрування*, (8). https://doi.org/10.54929/2786-5746-2023-8-01-01
State Register of Sanctions (n. d.). https://drs.nsdc.gov.ua/	Державний реєстр санкцій (н. д.). https://drs.nsdc.gov.ua/
Vnukova, N. M., & Hlibko, S. V. (Eds.). (2020). Modern economic and legal risk-oriented methods of regulating the development of the financial services market. Kharkiv: *Research Institute of the State Academy of Sciences of Ukraine*, 304 p. https://finmonitoring.in.ua/wp-content/uploads/2021/01/monografiya-rop-mono.pdf	Внукова, Н. М., Глібка, С. В. (Ред.). (2020). Сучасні економіко-правові ризик-орієнтовані засоби регулювання розвитку ринку фінансових послуг. Харків. *НДІ ПЗІР НАПрН України*, 304 с. https://finmonitoring.in.ua/wp-content/uploads/2021/01/monografiya-rop-mono.pdf

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COMPARATIVE ANALYSIS OF VALUE ADDED

Value added is a key element of gross domestic product, as well as the basis for creating the prerequisites for economic growth and development. In retail trade (as in trade in general), it reflects the difference between the cost of goods sold and the costs of their acquisition, transportation and storage, creating new economic value through the organization of trade maintenance and the provision of trade services. Value added is an indicator of the effectiveness of retail enterprises, as it demonstrates their ability to generate profit and provide additional opportunities for investment and expansion of activities. The significant importance of this indicator determines the need to study the industry specifics of the formation of added value of retail enterprises in Ukraine under the conditions of permanent shocks of recent years, which is determined by the aim of this research. Based on the analysis of empirical data of retail enterprises in Ukraine and the EU, the hypotheses formulated regarding the industry specifics of the formation of added value (namely, regarding the volume of added value of retail enterprises and its level, as well as the main factor influencing its formation) have not been confirmed for Ukraine. The verification of the truth of these hypotheses was

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КОМПАРАТИВНИЙ АНАЛІЗ ДОДАНОЇ ВАРТОСТІ

Додана вартість є ключовим елементом валового внутрішнього продукту, а також основою для створення передумов економічного зростання та розвитку. У роздрібній торгівлі (як і в торгівлі загалом) вона відображає різницю між вартістю реалізованих товарів і витратами на їх придбання, транспортування та зберігання, створюючи нову економічну цінність через організацію торговельного обслуговування та надання торговельних послуг. Додана вартість є індикатором результативності діяльності підприємств роздрібної торгівлі, оскільки демонструє їхню здатність формувати прибуток і забезпечувати додаткові можливості для інвестування та розширення діяльності. Вагоме значення цього показника обумовлює необхідність дослідження галузевих особливостей формування доданої вартості підприємств роздрібної торгівлі України за умов перманентних потрясінь останніх років, що визначено метою статті. На основі аналізу емпіричних даних підприємств роздрібної торгівлі України та ЄС сформульовані гіпотези щодо галузевих особливостей формування доданої вартості (а саме: щодо обсягу доданої вартості підприємств роздрібної торгівлі та його рівня, а також щодо основного чинника впливу на його формування) не знайшли

carried out on the basis of the use of correlation analysis methods. The hypothesis regarding the reduction of the role of retail enterprises in the formation of added value in the national economy of Ukraine under conditions of permanent shocks and full-scale military operations was also not confirmed. It was established that the indicators of added value by production costs and gross operating rate of retail enterprises in Ukraine are characterized by instability and an overestimated level due to the following reasons: military operations and their associated consequences; macroeconomic instability; structural imbalances of the consumer market; imperfect regulatory framework; expansion of the shadow economy; different levels of labor productivity; peculiarities of consumer demand. To achieve stability and compliance with European standards, it is necessary to strengthen market transparency, tackle the shadow economy, introduce innovative technologies, improve the regulatory framework and increase the efficiency of enterprise management.

Keywords: value added, trade margin (surcharge), margin, price, gross operating margin, retail trade, EU statistics.

свого підтвердження для України. Перевірка істинності цих гіпотез проводилася на основі використання методів кореляційного аналізу. Також не підтвердилась гіпотеза щодо зменшення ролі підприємств роздрібної торгівлі у формуванні доданої вартості в національній економіці України за умов перманентних потрясінь і повномасштабних воєнних дій. Встановлено, що показники доданої вартості за витратами виробництва та валової операційної норми підприємств роздрібної торгівлі в Україні характеризуються нестабільністю та завищеним рівнем через такі причини: воєнні дії та пов'язані з ними наслідки; макроекономічна нестабільність; структурні диспропорції споживчого ринку; недосконала регуляторна база; поширення тіньового сектору економіки; різний рівень продуктивності праці; особливості споживчого попиту. Для досягнення стабільності та відповідності європейським стандартам необхідно посилювати прозорість ринку, боротися з тіньовою економікою, впроваджувати інноваційні технології, удосконалювати регуляторну базу та підвищувати ефективність управління підприємствами.

Ключові слова: додана вартість, торгова націнка (надбавка), маржа, ціна, валова операційна норма, роздрібна торгівля, статистика ЄС.

JEL Classification: M21, L81, D40, C12.

Introduction

Value added (VA) is a key component of GDP and the basis for creating the prerequisites for economic growth and development of the country's economy as a whole, its sectors, and individual business entities, as it reflects the value of a newly created product or service added at each stage of production and illustrates the efficiency of business operations of individual enterprises. The VA development allows stimulating innovation, increasing labor productivity, and contributing to the competitiveness of the economy on a global scale. In the modern world, the VA importance is growing due to the active implementation of digital technologies that change the structure of value creation in many industries. The emphasis on the VA development contributes to the improvement of business processes, the formation of new business models, and the increase in the level of well-being of the population through more efficient use of resources and the creation of high-quality products and services.

VA in retail trade reflects the difference between the cost of goods sold and the costs of their acquisition, transportation, and storage, creating new economic value through the organization of trade services and the provision of trade services. This one is an indicator of the performance of retail trade enterprises (RTE), as it demonstrates their ability to generate

trading profits and provide additional opportunities for investment and expansion of activities.

The research of the RTE added value is important for assessing their contribution to the economy, in particular to the formation of GDP, employment and the development of related industries. It also contributes to increasing the efficiency of business processes, optimizing pricing policy and strengthening competitiveness, especially in the context of digitalization. In addition, such an analysis helps to assess the social effect of the industry and its impact on the well-being of the population, which is important for both enterprises and the sphere of public administration.

One of the most influential economists of the 20th century, Samuelson, in his work "Foundations of Economic Analysis" (Samuelson, 1947), investigated the issue of added value through the prism of costs and production. The author considered the fundamental principles, including the relationship between costs, production and added value, which formed the basis for further research in macroeconomics. In addition, his work "Economics: An Introductory Analysis" (Samuelson, 1948), which became a basic textbook on economics, covers in detail the aspects of value creation in the economy, in particular through the mechanisms of production and consumption. These works are key to understanding the relationships between costs, production, and value added within a national economy.

One of the key authors who created the concept of value chain analysis is Porter. In his book Competitive Advantage: Creating and Sustaining Superior Performance (Porter, 1985), he developed a value chain model (VCM), which analyzes the stages of value creation, starting from the supply of raw materials to the delivery of the final product to the consumer. His work is the basis for understanding competitive advantage in business and the economy as a whole.

Toffler explored the issues of value added in the information society in his famous work "The Third Wave" (Toffler, 1980), which describes three main waves of human civilization development: agrarian, industrial, and information. In the information wave, according to Toffler, technology and knowledge become key factors in creating added value. He emphasizes that the main resource of the economy is information, which provides competitive advantage. Added value in this context is formed through technological innovations, expanding access to information, and changing the methods of production and consumption.

The interesting research is conducted by Coltrane, et al., in which the authors determined that adding value is the process of changing or transforming a product from its initial state to a more valuable one that is preferred in the market. Based on the study of value addition in agricultural products, researchers concluded that it can be achieved through innovation and/or coordination (Coltrain et al., 2000).

Stiglitz and Greenwald in their work "Creating a Learning Society: A New Approach to Growth, Development, and Social Progress" investigated the role of innovation and knowledge in creating added value.

The authors emphasized the importance of investments in education, science, and technology to stimulate economic growth (Stiglitz & Greenwald, 2014).

The practice of creating added value is in the circle of scientific interests of Ukrainian scientists who have studied the issues of structural transformation of the economy and the formation of added value in its key sectors (industry, agriculture, IT, etc.), the innovative component of creating added value and its impact on economic development, the impact of foreign economic activity on the formation of added value in Ukraine, as well as the processes of creating added value in the context of Ukraine's integration into European markets.

Studying scientific publications on the researched issues in recent years, Mirzoeva and Stepasyuk's works deserve attention, who noted that added value characterizes the relations between economic entities that arise in the process of production and sale of products, the elements of which are closely interconnected (Mirzoeva & Stepasyuk, 2023). Determining the value of the created DV is the basis for assessing the efficiency of the enterprise and allows you to establish the ratio of the cost of the produced product and the contribution of the enterprise itself to its production. The researchers consider the main chains of VA formation using the example of oilseed crops.

The importance of using the category of "value added" in enterprise management is also emphasized by Svitovy (2022), noting that the analysis of the magnitude and ratio of the elements of the value added makes it possible to find and involve in production reserves and economic instruments that can significantly increase the indicator under research. The author considered the features of using the category of "added value" at enterprises in the grain production industries.

The formation of the value added in agriculture and agricultural land use was studied by V. Budziak and O. Budziak. The authors identified the main chains of the formation of the value added during the use of agricultural land, investigated the nature of the formation of added value and the level of exhaustion in various forms of management and calculated the value added indicator in agriculture by regions of Ukraine (Budziak V. & Budziak O., 2021). The financial and accounting aspect of determining the added value in agricultural enterprises is considered by a team of authors (Levandivskyi et al., 2021). The formation of value and added value in the agri-food sector was also studied by Rossokha and Nechyporenko (2024). The authors identified trends in value formation in agriculture, which is based on the use of natural, material and labor factors of production and includes stages of adding value in the process of economic activity.

Tarakanov and Makoveyev analyzed the impact of logistics processes on the formation of DV in the system of commodity markets (Tarakanov & Makoveyev, 2015).

The category of "added value" in the discourse of the creative economy was studied by Proskurina (2021), who concluded that the main sources of the formation of the DV of a cultural or creative product are creative work, intangible assets of the manufacturer (brand value, presence of a patent, uniqueness of performance) and a potentially high rate of profit.

Pyroh (2024) conducted the research of modern trends in the integration of Ukraine into European VA chains and identified its features during 2000–2021. Based on recent research and publications on global LDCs, the author has established that in the post-war period, it is advisable for Ukraine to integrate into European LDCs by transforming the industry development model, which will ensure the status of a global and competitive actor in the world and European economies.

Summarizing the results of the existing work of foreign and national scientists, it can be stated that the main areas of their research were the chains of creation of value added tax (means of increasing efficiency and reducing costs), in particular the issues of Ukraine's integration into the European value added tax; the role of innovations in creating added value; the distribution of value added tax between labor, capital and the state; the sectoral structure of the economy (comparison of value added tax in the primary, secondary and tertiary sectors). In addition, a significant number of scientific studies are devoted to the theoretical and practical aspects of collecting value added tax (VAT). Many articles consider the issues of VAT administration, mechanisms of its collection, impact on the economy and possible areas of improvement. Researchers analyze the effectiveness of this form of taxation for both the state budget and business, and also study international experience in VAT applying.

As for the trade sector, the team of authors in the article "The input-output analysis for the wholesale and retail trade industry of the Kazakhstan statistics" (Kerimkhulle et al., 2023) analyzed the VA formation in the wholesale and retail trade of Kazakhstan, identifying its dynamics by stages.

Therefore, scientific research on the issue of the VA formation as a statistical indicator in the retail trade sector, as well as in trade in general, is not systematic, which complicates the search for patterns of its change, assessment of the impact of various factors and development of effective mechanisms for managing the processes of creating added value in this sector.

Given the peculiarities of retail trade as a type of economic activity, the following hypotheses are based on the research, such as: hypothesis 1 is the retail trade as an industry that performs an auxiliary function compared to industry in the national economy, carries out the transformation of the production range into a consumer range and ensures the circulation of goods, should not play a leading role in the formation of added value; Hypothesis 2 is in conditions of permanent shocks and full-scale military operations, the role of retail trade enterprises (RTE) in the formation of added value

decreases (at least does not increase), as the role of processing industry enterprises (in particular, enterprises producing weapons and ammunition) is significantly strengthened; Hypothesis 3 is the gross operating rate of any trade enterprises (including retail) should be significantly lower compared to industrial enterprises; Hypothesis 4 is the main factor influencing the volume of RTE added value is retail turnover.

The aim of the research is to identify industry patterns in the formation of added value of retail enterprises in Ukraine under conditions of permanent shocks.

The presence of a linear statistical relationship between the VA volume at production costs and key indicators of the RTE activity was assessed using the pairwise correlation coefficient in accordance with the traditional method of correlation analysis, which involves checking the statistical significance of the obtained coefficients using the Student's t-test. The construction of the correlation matrix was carried out using the Excel procedure: Data – Data Analysis – Correlation. To test the statistical hypothesis of the homogeneity of samples of gross operating margin indicators for individual groups of retail enterprises, the Anderson homogeneity criterion (also known as the Lehman-Rosenblatt criterion) was used, which involves pairwise comparison of samples and is suitable for a situation with a small number of observations.

The information base of the conducted research is official statistical data published on the website of the State Statistics Service of Ukraine and analytical reports of Eurostat on the formation of GDP in EU countries.

The first section of the article analyzes the value added at production costs of the Ukrainian RTE, compares this indicator with the processing industry and with EU countries. The second section analyzes the gross operating margin of trade enterprises of Ukraine and EU countries, compares this indicator with the processing industry sector. The third section is devoted to the study of the gross trade margin of the Ukrainian RTE and identifying factors influencing the GDP at production costs and the gross trade margin of the RTE in Ukraine based on correlation analysis. The last, fourth section identifies and characterizes the reasons for the instability of the indicators of value added at production costs and the gross operating margin of the RTE in Ukraine, as well as their overestimated level compared to EU countries.

1. Value added by production costs

One of the key economic indicators of structural business statistics, published as part of statistical information on the official website of the State Statistics Service of Ukraine (hereinafter referred to as the State Statistics Service of Ukraine) in the section "Economic Statistics" in the subsection

"Enterprise Activities"[1] (State Statistics Service of Ukraine, 2025), is value added[2] at factor cost.

This indicator is one of three alternative indicators of gross value added, calculated in accordance with the System of National Accounts (SNA 2008) (System of National Accounts 2008, 2009, 6.80, 6.81), along with indicators of gross value added at basic prices and at producer prices. VA is an indicator of the contribution of an individual producer, industry or sector of the economy to the creation of gross domestic product (GDP).

Typically, the value added indicator (not to be confused with the enterprise value added, EVA, used in financial management, in particular in the value-based management system) is not of interest to managers, owners and creditors of enterprises, since it is calculated on the conceptual principles of the 2008 National Statistical Service, which differ from the principles of accounting and financial reporting, and cannot be of significant use in the process of substantiating business decisions at the enterprise level. However, it is of fundamental importance for the purposes of developing state economic policy, monitoring the development of the national economy, macroeconomic analysis and international comparisons, and can also be used in studies of the peculiarities of the functioning of individual industries and groups of business entities. In particular, this indicator allows us to analyze the creation of new value by trade enterprises (belonging to the section "Wholesale and retail trade; repair of motor vehicles and motorcycles", code G according to NACE-2010 (National Classifier of Economic Activities 009:2010, 2010) compared to enterprises in other industries, as well as separately retail trade enterprises (code 47 according to NACE –2010). The 2008 SNA distinguishes between gross and net value added. Gross value added is calculated as the difference between the value of output and the value of intermediate consumption. Net value added involves the additional deduction of the value of consumption of fixed capital (System of National Accounts 2008, 2009, 6.74). This research further considers only gross value added, which is the basis calculating the GDP indicator.

For trade enterprises, the 2008 SNA provides for a significant feature of output measurement (compared to industrial enterprises that produce products). Their output is measured as the total value of the trade margin received for goods that they purchase for resale[3] (System of National Accounts 2008, 2009, 6.146). At the same time, the value of goods sold as part of the intermediate consumption of trade enterprises is not taken into account. Considering the role of trade enterprises in the GDP formation at production costs of all enterprises in Ukraine, it is necessary to note the significant growth of this role in recent years, especially after the beginning

[1] The official Ukrainian translation of the indicator title is controversial, as it negates the fact that it refers to the creation of new value through the contribution of the main production factors of labour and capital in accordance with the neoclassical economic theory views. The terms titles in brackets are in italics.

[2] Some sources use the word value-added (with a hyphen in written form).

[3] In the original English language: Their output is measured by the total value of the trade margins realized on the goods they purchase for resale.

of the large-scale invasion of the russian Federation in 2022. Changes in the sectoral GDP structure at production costs of enterprises during the period 2012–2023 are illustrated in *Figure 1*.

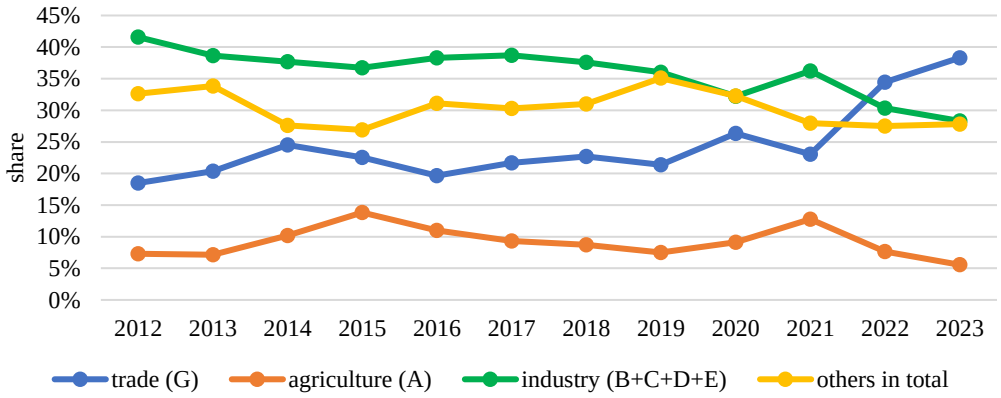
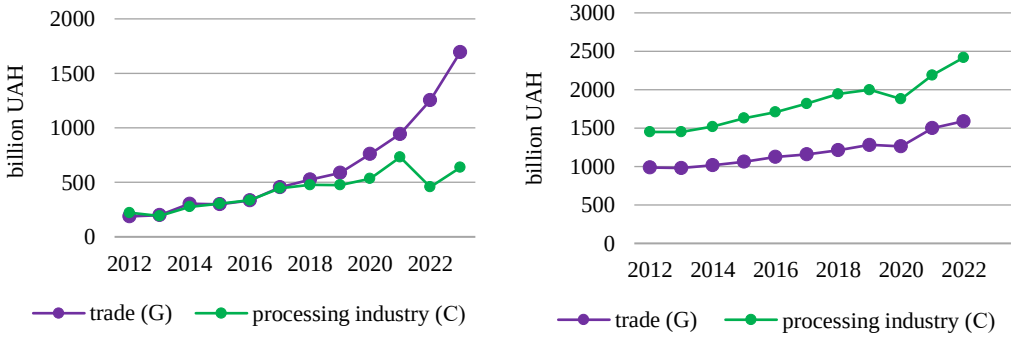


Figure 1. Structure dynamics of added value by production costs of enterprises in Ukraine for 2012–2023.

Source: author's analysis based on data (State Statistics Service of Ukraine, 2025).

According to the results of 2022–2023, the share of added value by production costs of trade enterprises exceeded the share of industrial enterprises (study *Figure 1*), which can be considered an anomaly for a country that claims the status of industrially developed and for membership in the EU. The anomaly of the situation in Ukraine is clearly evident in comparison with the EU. A comparison of added value by production costs of trade enterprises and processing industry (section C) in Ukraine and the EU (hereinafter referred to as the EU – European Union – 27 countries from 2020) is illustrated in *Figure 2*.



a) *b)*

Figure 2. Dynamics of value added at production costs of trade enterprises and the processing industry since 2012:
a) in Ukraine to 2023; *b)* in the EU to 2022.

Source: author's analysis based on data (State Statistics Service of Ukraine, n. d.; Eurostat, n. d.).

In the EU, the indicators of value added at production costs of trade enterprises are approximately 1.5 times lower than those of processing enterprises, and the ratio between the indicators of these two industries is stable. In Ukraine, after 2017, the indicators of value added at production costs of trade enterprises begin to grow exponentially, significantly exceeding the indicators of the processsing industry. According to the results of 2023, the indicators of value added at production costs of trade enterprises in Ukraine exceeded the processing industry by more than 2.6 times.

The identified anomaly in the context of national security is evidence of the absence (or failure to implement) of a state policy to increase the country's defense capabilities in the context of the war that began in 2014. If the state had stimulated the development of the defense industry (the enterprises of which mainly belong to the processing industry), mobilizing appropriate economic resources for this and providing conditions for their proper return, then a similar ratio of the indicators of added value at the production costs of trade enterprises and the processing industry in Ukraine (study *Figure 2a*) would probably be impossible.

In the structure of added value at the production costs of trade enterprises in Ukraine, one can notice an underestimated share of retail trade (G47), if compared with the structure in the EU, as evidenced by the data in *Table 1*.

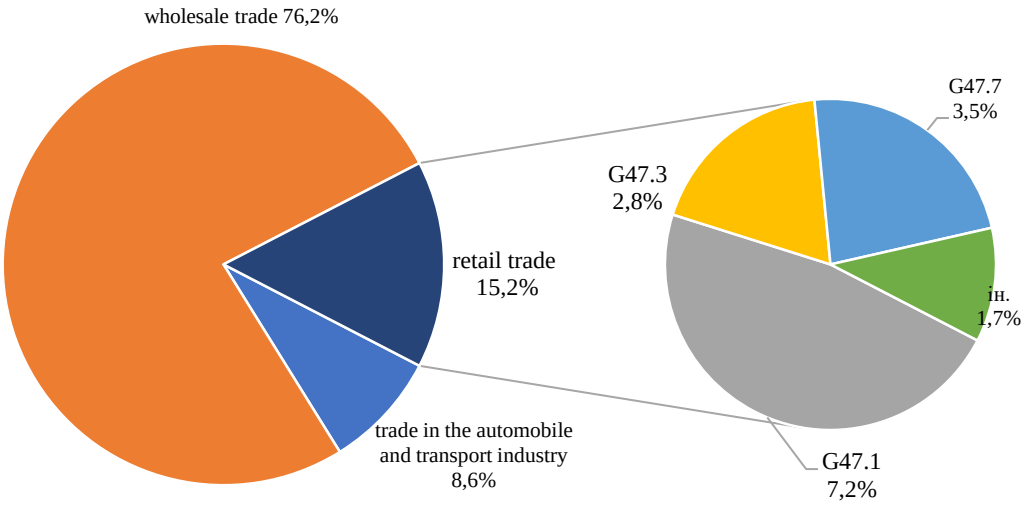
Table 1

Value added (VA) by production costs of retail trade enterprises (G47) in Ukraine and the EU from 2012 to 2023

Year/Indicator	Ukraine		EU	
	VA G47, billion UAH	share in VA of trade enterprises, %.	VA G47, billion euros	share in VA of trade enterprises, %.
2012	35.8	19.1	369.9	37.5
2013	42.4	21.3	370.4	37.8
2014	58.6	19.4	381.7	37.5
2015	55.9	18.7	397.1	37.4
2016	66.6	19.9	418.1	37.2
2017	91.3	20.1	434.0	37.5
2018	115.4	22.0	459.5	37.9
2019	133.2	22.7	488.8	38.1
2020	142.8	18.8	492.9	39.0
2021	256.9	27.2	559.2	37.3
2022	198.6	15.8	583.5	36.7
2023	257.4	15.2	н/д	н/д
Average value	121.2	**20.0**	450.5	**37.6**
Standard deviation	75.9	3.0	70.5	0.6
Coefficient of variation, %.	62.6	15.1	15.7	1.5

Source: Author's own analysis based on data (State Statistics Service of Ukraine, n. d.; Eurostat, n. d.).

The share of value added by production costs of G47 in all trade enterprises in Ukraine is approximately half as low as in the EU as a whole (study *Table 1*, the average value is highlighted in bold), and is also an order of magnitude more variable, as evidenced by the values of the coefficients of variation. The structure of value added by production costs of trade enterprises in Ukraine, including the structure of retail trade by the results of 2023, is illustrated in *Figure 3*.



Abbreviations:
MVM – Motor vehicles and motorcycles (including their repair);
G47.1 – retail trade in non-specialized stores;
G47.3 – retail sale of fuel;
G47.7 – retail sale of other goods in specialized stores;
other – other retail trade: G (47.2+47.4+47.5+47.6+47.8+47.9).

Figure 3. Structure of value added by production costs of trade enterprises in Ukraine, 2023

Source: author's analysis based on data from the State Statistics Service of Ukraine, n. d.

In 2023, almost half of the total value added at the cost of production of retail trade enterprises (study *Figure 3*) was created by retail trade enterprises in non-specialized stores (G47.1), including well-known operators of domestic supermarket chains and the largest representatives of this group: ATB-Market, Silpo-Food, Metro Cash & Carry Ukraine, Fora, Novus Ukraine. But the share of G47.1 enterprise in the total value added at the cost of production of all trade enterprises was only slightly more than 7% due to the hypertrophied share of wholesale trade enterprises. During 2012–2023, the share of G47.1 enterprise in the total VA volume at the cost of production of RTE fluctuated, as evidenced by the data in *Table 2*. The second place in importance in the RTE composition was occupied by enterprises G47.7 (retail trade of other goods in specialized stores).

Table 2

Structure dynamics of value added by production costs of retail trade enterprises in Ukraine from 2012 to 2023, %

Year/Indicator	Share of enterprises			
	G47.1	G47.3	G47.7	G(47.2+47.4+ +47.5+47.6+47.8++47.9)
2012	51.3	12.0	21.8	14.9
2013	55.9	14.9	21.1	8.0
2014	36.1	26.2	26.9	10.8
2015	57.0	9.5	24.9	8.5
2016	40.0	14.5	34.3	11.2
2017	55.7	18.3	19.0	7.1
2018	43.9	19.7	26.9	9.4
2019	53.4	12.4	26.2	7.9
2020	48.6	10.8	30.5	10.1
2021	59.9	11.5	19.2	9.4
2022	44.2	19.2	25.0	11.5
2023	47.3	18.6	23.0	11.2
Average value	49.5	15.6	24.9	10.0
Standard deviation	7.1	4.7	4.3	2.0
Coefficient of variation	14.3	29.7	17.4	20.3

Source: author's analysis based on data (State Statistics Service of Ukraine, n. d.).

In general, as shown in *Table 2*, the structure of added value by production costs of PRT in the context of individual types of economic activity changed without any noticeable patterns.

Added value by production costs of PRT in Ukraine can also be distributed depending on the size of enterprises. This distribution according to the results of 2023 is illustrated in *Table 3*.

Table 3

Composition and structure of value added by production costs of retail trade enterprises in Ukraine in 2023

Type of activity	NACE code	Enterprises*			
		large	medium	small	in total
Retail trade in non-specialized stores	47.1	94.3 (36.6%)	17.6 (6.8%)	9.8 (3.8%)	121.7 (47.3%)
Retail trade in fuel	47.3	21.0 (8.2%)	16.5 (6.4%)	10.3 (4.0%)	47.8 (18.6%)
Retail trade in other goods in specialized stores	47.7	28.6 (11.1%)	20.6 (8.0%)	10.0 (3.9%)	59.2 (23.0%)
Other retail trade	47.2+47.4+47.5+47.6+47.8+47.9	6.9 (2.7%)	9.4 (3.7%)	12.4 (4.8%)	28.7 (11.2%)
Total	47	150.8 (58.6%)	64.1 (24.9%)	42.5 (16.5%)	257.4 (100%)

** The VA amounts are indicated in billion UAH, below them in brackets the specific weight in the total volume of all RTEs is indicated.*

Source: author's analysis based on data (State Statistics Service of Ukraine, n. d.).

In 2023, the main share of value added at the production costs of retail enterprises fell on large enterprises (study *Table 3*). And the main contribution to the VA creation at the production costs of RTE was made by large retail enterprises in non-specialized stores. Such dominance of large RTE does not generally contradict the situation in the EU countries, but it draws attention to the fact that in the second year of the full-scale invasion, large enterprises G47.1 create approximately an order of magnitude (10 times) more value added compared to large enterprises producing weapons and ammunition (NACE code 25.4)[4]. If we compare large enterprises G47.1 and other types of economic activity, then in 2023 G47.1 is inferior in terms of the volume of VA creation at the production costs only to: production, transmission and distribution of electricity (code 35.1); land and pipeline transport (code 49).

2. Gross operating margin

Since the VA indicator at production costs is calculated in monetary terms, its analytical significance for the purposes of economic analysis is limited. In this regard, in the EU until 2020 (inclusive) the main indicators of structural business statistics were supplemented by a relative indicator calculated on the basis of value added at production costs, the indicator of the "gross operating rate" (gross operating rate) (Eurostat, n. d.).

The gross operating[5] rate is calculated as the quotient of dividing the gross operating surplus (gross operating surplus) – the difference between the value added at production costs and personnel costs[6] – by the volume of products (goods, services) sold according to the formula:

$$GOR = \frac{(VA-PC)}{T} = \frac{GOS}{T}, \quad (1)$$

where: *GOR* – gross operating rate;

VA – value added at factor costs;

PC – personnel costs;

GOS – gross operating surplus;

T – turnover.

A feature of the gross operating surplus in the numerator of formula (1) is that, according to the 2008 SNA, it characterizes the balancing item of the income generation account, which for enterprises is called gross profit (or gross income according to the terminology of the State Statistics

[4] By the end of 2023, the added value of production costs of large national enterprises specializing in the production of weapons and ammunition amounted to UAH 9.2 billion (State Statistics Service of Ukraine, n. d.).

[5] The operating rate is called gross in accordance with the SNA 2008, given that its calculation is based on gross value added.

[6] Commission Implementing Regulation (EU), 2020, Annex. IV, sec. F, paragraph 24)

Service of Ukraine; not to be confused with gross profit in the financial statements of enterprises, form No. 2 "Statement of financial results (Statement of comprehensive income)"), and for unincorporated business entities (individual entrepreneurs who use their own labor and unpaid labor of members of their households) – mixed income (System of National Accounts 2008, 2009, p. 7.8, 7.9). It is this gross operating surplus that is the basis for calculating the indicator "entrepreneurial income" and is the closest for enterprises to accounting profit (System of National Accounts 2008, 2009, p. 7.22–7.24), namely to the indicator "earnings before interest and taxes, depreciation and amortization", commonly known by the abbreviation EBITDA.

The available data of the State Statistics Service of Ukraine allow us to calculate the indicator of the gross operating norm of domestic business entities by type of economic activity, starting from 2012. The value of this indicator and the indicators used in calculations according to formula (1) for trade enterprises is illustrated in *Table 4*.

Table 4

Gross operating margin of trade enterprises in Ukraine from 2012 to 2023

Year	Value added by production costs, UAH billion	Personnel costs by production costs, billion UAH	Volume of products (goods, services) sold, billion UAH	Gross operating margin, %
2012	187.8	53.3	1623.6	8.3
2013	198.9	49.0	1612.1	9.3
2014	302.8	50.0	1629.7	15.5
2015	299.5	58.1	1953.3	12.4
2016	334.4	67.9	2385.7	11.2
2017	455.3	94.8	3061.7	11.8
2018	524.7	119.5	3764.4	10.8
2019	587.4	145.9	3958.4	11.2
2020	759.9	160.3	4068.2	14.7
2021	943.1	204.6	5385.0	13.7
2022	1254.1	179.6	4393.7	24.5
2023	1694.4	232.8	5694.3	25.7

Source: author's own analysis based on data (State Statistics Service of Ukraine, b. d.).

According to *Table 4*, there is a significant increase in the gross operating margin of trade enterprises in the years:

- the beginning of military operations in Ukraine in 2014;
- the introduction of quarantine restrictions in connection with the coronavirus pandemic in 2020;
- full-scale invasion – from 2022.

The dynamics of the gross operating margin of trade enterprises is illustrated more clearly and in comparison, with the EU in *Figure 4*.

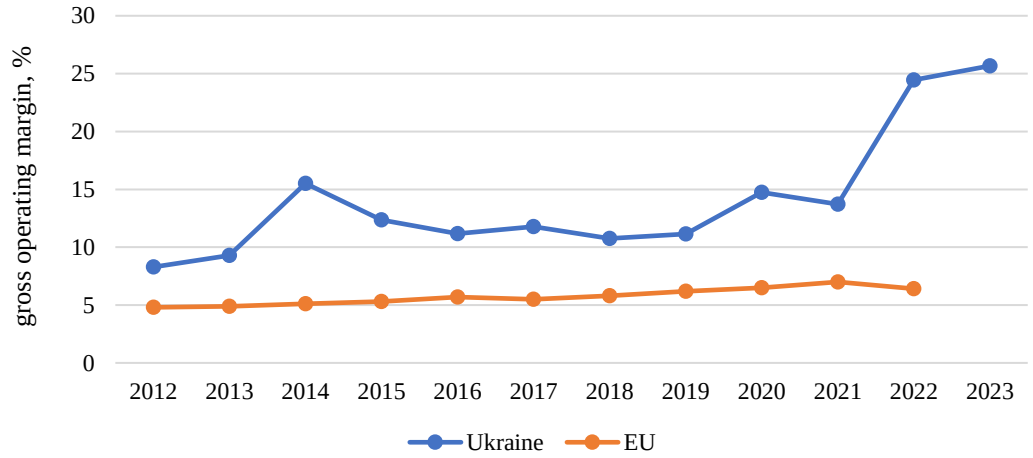


Figure 4. Dynamics of the gross operating margin of trade enterprises in Ukraine and the EU in 2012–2023

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.; Eurostat, n. d.).

In addition to the sudden increases in the gross operating margin of trade enterprises in Ukraine in the indicated years, it is necessary to note a significant excess of this indicator compared to the values observed in the EU (study *Figure 4*). According to the results of 2022, the gross operating margin of trade enterprises in Ukraine exceeded the value for similar EU enterprises by more than 3.8 times, although in 2012 (before the beginning of the period of permanent shocks in the country) this excess was only approximately 1.7 times.

The general values of the gross operating margin, which are given in *Table 4*, have differences for trade enterprises of different sizes, which is illustrated by *Figure 5*.

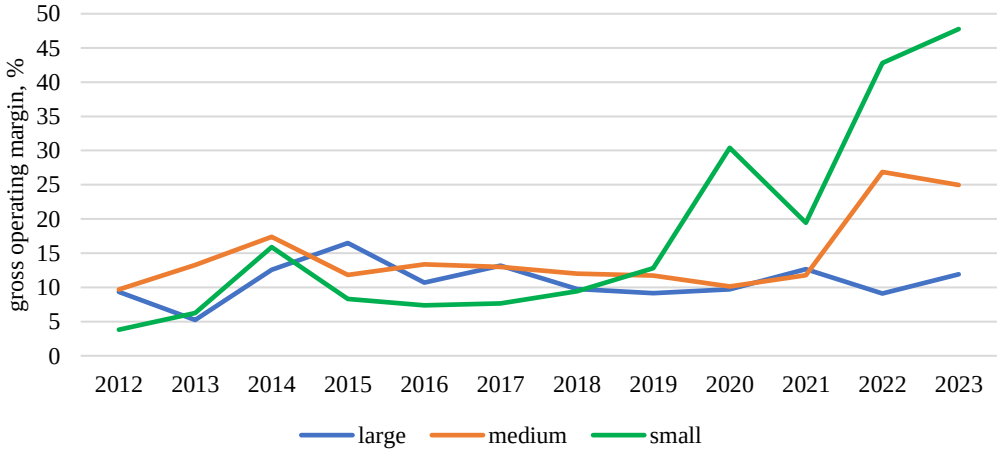


Figure 5. Gross operating margin of trade enterprises of different sizes in Ukraine for 2012–2023

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

The most unstable is the value of the gross operating rate of small trade enterprises (study *Figure 5*). Its growth of more than twofold in 2020 can hypothetically be associated with quarantine restrictions under the conditions of the coronavirus pandemic, but no such changes were observed in the rest of the enterprises (in particular, the gross operating rate even decreased in medium-sized enterprises).

Common to all trade enterprises could be an increase in the gross operating rate in the year of the beginning of the war with the russian federation (2014) and the beginning of the full-scale invasion (2022). But even here there is an exception – the gross operating rate of large trade enterprises in 2022 did not increase, but noticeably decreased, unlike medium-sized and small enterprises. The absence of common features in the dynamics makes it necessary to check the statistical homogeneity of samples of the values of the gross operating rate of trade enterprises of different sizes.

In addition to instability and hypothetical heterogeneity, the gross operating margin of trade enterprises in Ukraine is inherently overestimated, as can be seen in *Figure 6* from the comparison with the gross operating margin of processing industry enterprises.

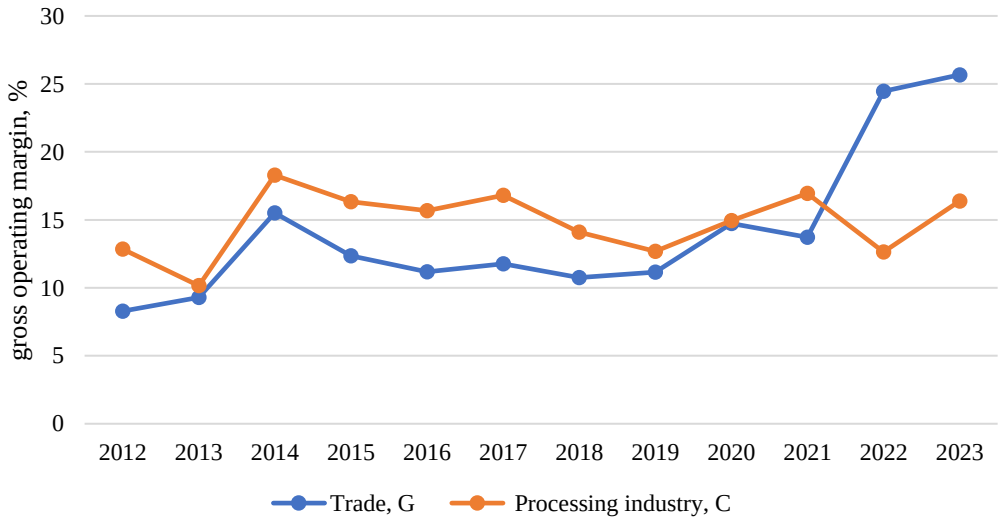


Figure 6. Gross operating margin of trade and manufacturing enterprises in Ukraine in 2012–2023

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

Since 2022, the gross operating margin of trade enterprises has significantly exceeded the value in the processing industry (study *Figure 6*), which should not be observed given the economic nature of value added in trade. Since trade enterprises do not specialize in the production of new goods, but only resell purchased goods, such a ratio of gross operating margin values should be recognized as anomalous and additional research should be carried out to explain it.

Among the possible reasons for such an overestimation of the gross operating margin of trade enterprises in Ukraine are:

- overestimation of the cost of production due to an overly aggressive pricing policy (the policy of forming trade margins and discounts) in conditions of unfair competition, atrophied ethical standards in the trade business (the dominance of speculative sentiments) and inadequate (panic) management response to risks;
- underestimation of intermediate consumption and personnel costs due to wage payments "in envelopes" in order to evade payment of a single contribution to the mandatory state social insurance (ESI).

The second reason in terms of personnel costs, despite its greatest intuitive plausibility, does not explain the anomalous inter-industry correlations observed in Ukraine (such as that illustrated in *Figure 6*), since the problem of wage payments "in envelopes" is inherent not only to trade enterprises. Therefore, it is worth focusing on further in-depth research into the first reason. To verify it, it is necessary to conduct an additional study of a randomized sample of trade enterprises with an emphasis on the gross trade margin indicator (margin) and factors influencing it. However, the feasibility of such a cost study is questionable given the heterogeneity of the gross operating rate indicator of trade enterprises.

If the indicators of the gross operating rate of trade enterprises are heterogeneous (in the sense of the homogeneity of the data sample according to the theory of statistics) for individual groups of enterprises in the industry, then the analysis of average values for this industry does not make sense. Therefore, the next step is to check the homogeneity of the values of the gross operating rate of trade enterprises. First of all (given the aim of the research) it is necessary to check the statistical hypothesis about the homogeneity of the samples of indicators of the gross operating rate of retail and wholesale enterprises in Ukraine, which are visually not homogeneous (*Figure 7*).

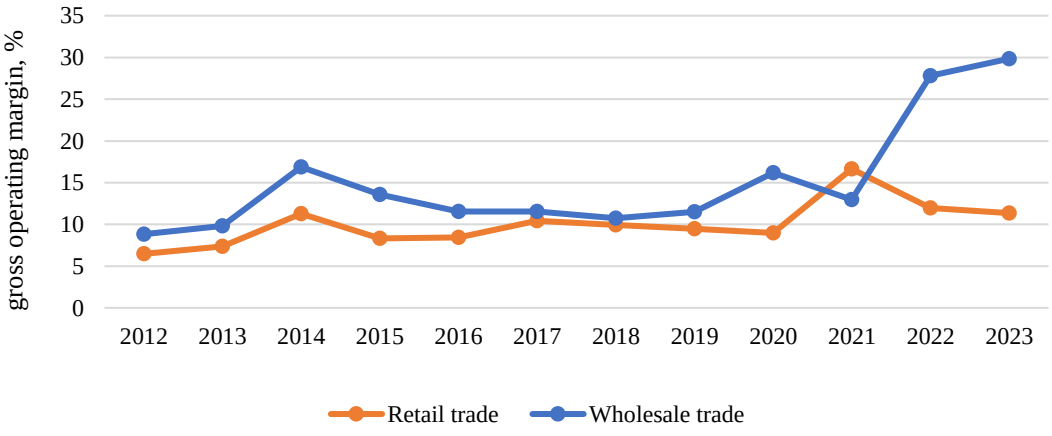


Figure 7. Gross operating margin of retail and wholesale trade enterprises in Ukraine in 2012–2023

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

Samples are considered heterogeneous if the mathematical expectations of the empirical distribution functions of random variables found for these samples are not equivalent.

To test the specified statistical hypothesis, you can use the Anderson[7] homogeneity criterion with pairwise comparison of samples, which involves calculating the statistical indicator (statistics) T (Anderson, 1962):

$$T = \frac{U}{nm(n+m)} - \frac{4mn-1}{6(m+n)}, \quad (2)$$

were: $U = n\sum_{i=1}^{n}(r_i - i)^2 + m\sum_{j=1}^{m}(s_j - j)^2$

r_i and s_j are the ordinal numbers of indicators x_i and y_j in the ascending combined sample (in our case xi and yj are the indicators of the gross operating rate of retail and wholesale enterprises, respectively);

i and *j* are the ordinal numbers (ranks) of the indicators x_i and y_j in their own (separate) ascendingly ordered samples;

n and *m* are the sample size (number of observations) for retail and wholesale enterprises, respectively (*m* = *n* = 12).

The final result of calculations according to formula (2) is the value:

$$T = 0.715.$$

Taking into account the small sizes of both samples (12 observations each), the obtained calculated value of the sample indicator T is subject to adjustment (Anderson, 1962):

$$\tilde{T} = \left[(T - \varepsilon T)/\{45Var(T)\}^{1/2}\right] + 1/6, \quad (3)$$

where: $\tilde{T}$ is the modified (adjusted) calculated sample value of Anderson's statistics taking into account small samples;

εT expected value of *T* (under null hypothesis)[8]:

$$\varepsilon T=16+1/[6(m+n)]\varepsilon T=16+1/6(m+n),$$

Var(T) – variance of *T:*

$$Var(T) = \frac{1}{45}\cdot\frac{m+n+1}{(m+n)^2}\cdot\frac{4mn(m+n)-3(m^2+n^2)-2mn}{4mn}.$$

After performing algebraic transformations, formula (3) can be presented in a more convenient form for practical use:

$$\tilde{T} = \frac{T-\frac{1}{16v}-\frac{3}{256v^2}}{1+\frac{1}{m+n}-\frac{3}{8v}-\frac{9}{128v^2}}, \quad (4)$$

where: *v* is an auxiliary exponent: $v = mn / (m + n)$.

[7] In some sources it is called the "Lehman-Rosenblatt criterion".

[8] The expected value of T (under the null hypothesis) (Anderson, 1962).

The modified estimated sample value of Anderson's statistic according to formula (4) for samples of gross operating margin indicators of retail and wholesale enterprises in Ukraine is:

$$\tilde{T} = 0.721.$$

This value is greater than the critical (threshold) value of the Cramer–von Mises criterion[9] for a significance level of 5% (a typical significance level for such economic studies):

$$\tilde{T}(\alpha{=}0.05) = \omega^2(\alpha{=}0.05) = 0.461 \text{ (Pearson \& Hartley, 1972).}$$

The results obtained show that the hypothesis of homogeneity of the samples of gross operating margin values for wholesale and retail trade enterprises must be rejected as contradicting the observation data. This provides sufficient formal grounds to abandon an in-depth study of the average industry indicators of the gross operating margin of trade enterprises, focusing instead separately on retail trade enterprises.

In turn, in the composition of retail trade, the homogeneity of data on the gross operating margin of large, medium and small enterprises, as well as enterprises of individual types of retail trade (which were considered above): 47.1, 47.3, 47.7 and other types of retail trade, needs to be checked.

Visually, the values of the gross operating margin of large, medium and small retail trade enterprises in dynamics are not homogeneous, as evidenced by *Figure 8* and the data in *Table 5*.

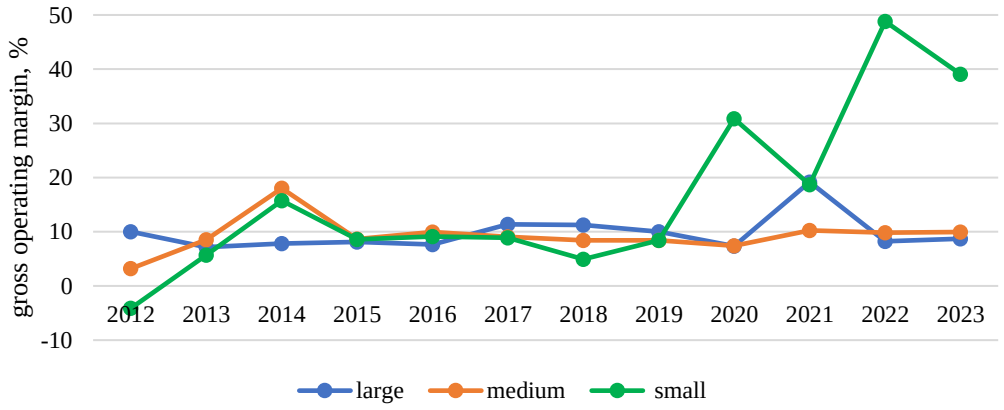


Figure 8. Gross operating margin of retailers of different sizes in Ukraine in 2012–2023[10].

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

[9] The distribution function of the T statistic converges to the theoretical distribution function of the Kramer-Mises statistic; also known in the post-Soviet space as the distribution function $a_1(x)$, since the Anderson criterion is a generalization of the Kramer-Mises criterion for two samples (Anderson, 1962):

$$T = nm/(n+m) \cdot \omega^2,$$

where: ω^2 – is the Kramer-Mises statistic for one pooled sample.
Therefore, the $\tilde{T}$ critical value (α) for comparison with the calculated sample value of Anderson's statistic $\tilde{T}$ is the critical value of the Kramer-Mises statistic $\omega^2(\alpha)$, where: α is the significance level.

[10] Estimates for large and medium-sized enterprises for 2015 were used instead of classified official data on the State Statistics Service website. The indicators of value added, staff costs, and sales were estimated using the average share of large enterprises in all retailers over the period from 2012 to 2023, excluding 2015.

Table 5

Gross operating margin of retailers (G47) of different sizes in Ukraine in 2012–2023, %

Year/Indicator	Enterprises *G47*			All Enterprises *G47*
	large	medium	small	
2012	10.0	3.2	-4.1	6.5
2013	7.2	8.5	5.7	7.4
2014	7.8	18.0	15.7	11.3
2015	8.1*	8.7*	8.6	8.3
2016	7.7	9.9	9.1	8.4
2017	11.4	9.1	8.9	10.4
2018	11.2	8.4	4.9	9.9
2019	10.0	8.4	8.4	9.5
2020	7.3	7.4	30.9	9.0
2021	19.2	10.3	18.7	16.6
2022	8.2	9.8	48.8	12.0
2023	8.7	10.0	39.1	11.3
Average value	9.7	9.3	16.2	10.0
Standard deviation	3.2	3.2	14.9	2.5
Coefficient of variation	32.6	34.2	92.1	25.3

** calculated on the basis of estimated data*

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

Particularly noticeable is the difference in dynamics and the range of fluctuations of the gross operating rate of small RTEs in *Figure 8* and in *Table 5*[11]. But this visual effect is not enough to establish the heterogeneity of values compared to large and medium-sized enterprises.

Pairwise comparison of samples using Anderson's homogeneity criterion according to formula (4) does not allow rejecting the statistical hypothesis of their homogeneity, which is confirmed by the data in *Table 6*.

Table 6

Matrix of modified calculated values of Anderson's statistics based on the results of pairwise comparisons of the gross operating margin of retail trade enterprises (G47) of different sizes in Ukraine for 2012–2023

Enterprises *G47*	Enterprises *G47*		
	large	medium	small
large	0		
Medium	0.117	0	
small	0.167	0.138	0

Source: author's analysis based on data (State Statistics Service of Ukraine, n. d.).

[11] The negative value of the gross operating margin of small retailers in 2012 is consistent with the SNA 2008.

None of the modified calculated values of the Anderson statistic in *Table 6* exceeds the critical value of 0.461 for the 5% significance level. Therefore, all 3 pairs of samples of gross operating rate values of retail trade enterprises of different sizes can be considered homogeneous (the opposite has not been proven).

The value of the gross operating rate of different type enterprises of retail trade in dynamics is illustrated in *Figure 9* and the data in *Table 7*.

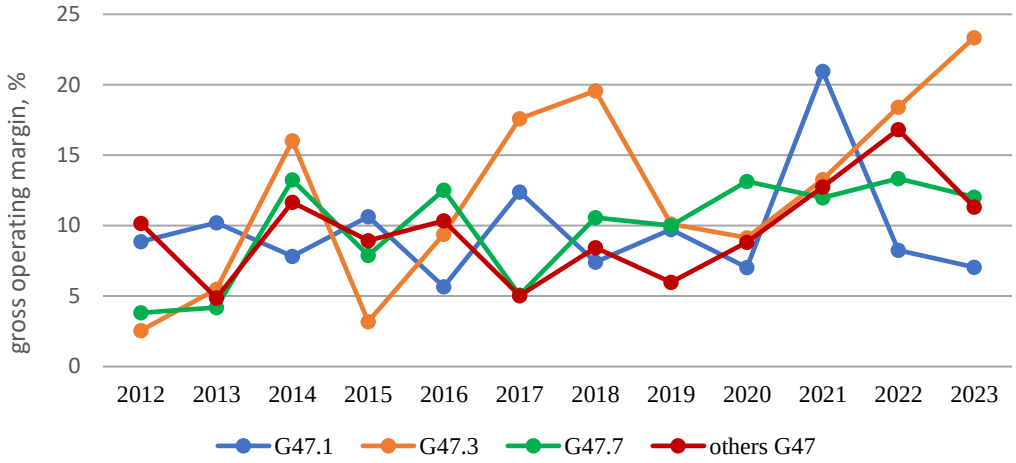


Figure 9. Gross operating margin of different type enterprises of retail trade in Ukraine in 2012–2023

Source: author's analysis based on data (State Statistics Service of Ukraine, n. d.).

Table 7

Gross operating margin of different type enterprises of retail trade (G47) in Ukraine in 2012–2023, %

Year/indicator	Enterprises G47				All enterprises G47
	G47.1	G47.3	G47.7	others G47	
2012	8.9	2.5	3.8	10.2	6.5
2013	10.2	5.5	4.2	4.9	7.4
2014	7.8	16.0	13.3	11.7	11.3
2015	10.6	3.2	7.9	8.9	8.3
2016	5.7	9.4	12.5	10.3	8.4
2017	12.4	17.6	5.1	5.0	10.4
2018	7.4	19.6	10.6	8.4	9.9
2019	9.7	10.1	10.0	6.0	9.5
2020	7.0	9.1	13.1	8.8	9.0
2021	20.9	13.3	12.0	12.8	16.6
2022	8.3	18.4	13.3	16.8	12.0
2023	7.0	23.3	12.0	11.3	11.3
Average value	9.7	12.3	9.8	9.6	10.0
Standard deviation	3.8	6.5	3.5	3.3	2.5
Variation coefficient	39.7	52.5	35.6	34.2	25.3

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

The gross operating margin of different type enterprises of retail trade (study *Figure 9* and *Table 7*) demonstrates a significant variation during the study period with abrupt changes in different years for different groups of enterprises (there are no common features in the dynamics of values). Compared with enterprises of different sizes, the gross operating margin of different type enterprises of retail trade in *Figure 9* and *Table 7* visually looks more homogeneous.

The results of a pairwise comparison of data samples of gross operating margin using the Anderson homogeneity criterion according to formula (4) for enterprises of different types of retail trade are characterized in *Table 8*.

Table 8

Matrix of modified calculated values of Anderson's statistics based on the results of pairwise comparisons of gross operating margins of different type enterprises of retail trade (G47) in Ukraine for 2012–2023

Enterprises *G47*	Reference designation	enterprises G47			
		G47.1	G47.3	G47.7	others G47
Retail trade in non-specialized stores	G47.1	0			
Retail sale of fuel	G 47.3	0.266	0		
Retail sale of other goods in specialized stores	G 47.7	0.224	0.231	0	
Other retail trade	others G47	0.081	0.231	0.124	0

Source: Author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

All modified calculated values of Anderson statistics in *Table 8* do not exceed the critical value of 0.461 for the 5% significance level. Therefore, all 6 pairs of samples of gross operating margin values of enterprises of different types of retail trade can be considered homogeneous (the opposite has not been proven), which allows us to proceed to a more in-depth analysis of this indicator for retail trade in general, primarily focusing on identifying possible reasons for the inflated and unstable value of the gross operating margin of retail trade in Ukraine.

3. Gross trade margin and statistical assessment of factors that determine it

As mentioned above, these reasons are related to the mechanism of formation of trade margins, on which the volume of RTE output directly depends according to the 2008 SNA. Also, a certain role is played by the features of intermediate consumption of retail enterprises in Ukraine, which is characterized by the volume and composition of turnover costs.

The amounts of received trade margins are characterized by the structural statistics indicator of enterprises "gross margin on goods for resale". This indicator is not mentioned in the 2008 SNA (System of National Accounts 2008; 2009), but is provided for by the Regulation of the European

Parliament and of the Council on European business statistics and can also be called gross trade margin (Commission Implementing Regulation (EU), 2020, Annex IV, Section F, paragraph 21)[12].

In Ukraine, the gross margin on resale of goods (gross trade margin[13]) is published by the State Statistics Service together with the cost of goods and services purchased in the reporting year for resale (purchases of goods and services for resale) and income from the sale of fixed assets (sales of tangible investment goods). Data is available by type of economic activity of enterprises (RTE including) since 2012.

If the overstated volumes of RTE in Ukraine are primarily associated with overstated trade margins, then there should be a strong statistical relationship between the indicators of value added at production costs and gross trade margin, which is characterized by a pairwise correlation coefficient close to unity. In this case, the values of the indicators should be cleaned of the inflationary component, which distorts (in this case artificially inflates) the correlation.

As shown in *Table 9*, the statistical relationship between these indicators is quite significant.

Table 9

Gross trade margin and value added by production costs of retailers in Ukraine from 2012 to 2023

Year/Indicator	In actual prices, billion UAH		Consumer price index (base, up to 2021)	In comparative prices in 2021, UAH billion	
	gross trade margin	value added at production costs		gross trade margin	value added at production costs
2012	55.6	35.8	0.343	161.8	104.2
2013	58.7	42.4	0.342	171.3	123.8
2014	56.0	58.6	0.384	145.9	152.7
2015	60.0	55.9	0.571	105.0	97.9
2016	76.6	66.6	0.650	117.8	102.4
2017	94.1	91.3	0.744	126.5	122.8
2018	147.0	115.4	0.825	178.2	139.9
2019	168.1	133.2	0.890	188.8	149.7
2020	187.7	142.8	0.914	205.4	156.3
2021	290.3	256.9	1	290.3	256.9
2022	236.7	198.6	1.202	196.9	165.2
2023	238.2	257.4	1.357	175.5	189.7
Correlation coefficient	1	0.974	–	1	**0.878**

Source: Author's analysis based on data (State Statistics Service of Ukraine, n. d.).

[12] The EU regulation defines this indicator as follows: Corresponds to the return on the activity of purchase and resale without further processing. It is calculated from net turnover related to trading activities of purchase and resale without further processing, total purchases for resale and changes in stock of goods and services purchased for resale. Also called gross trading margin.

[13] The following is the indicator title.

The pairwise correlation coefficient between the gross trade margin and the added value at production costs was 0.878 (study *Table 9*). Its verification using the Student's t-test revealed that the coefficient is statistically significant, since the actual value of the t-test (5.805) exceeds the critical (2.228) for the significance level α=0.05 (a typical level for such economic studies).

The presence of such a fairly significant statistical relationship is an argument in favor of the statement that the main reason for the overestimated VA value at production costs and, accordingly, the gross operating RTE rate in Ukraine is the overestimated value of the gross trade margin.

It is not excluded that there are common factors influencing the added value at production costs and the gross trade RTE margin in Ukraine, which determine the identified significant statistical relationship. A priori, such common influencing factors may be turnover, distribution costs, number of stores, retail space and number of employees in full-time equivalent of the retail trade, as well as inflation, characterized by the consumer price index. The linear statistical relationship of these indicators with value added at production costs and gross trade margin is illustrated in *Table 10*.

From the data in *Table 10* it follows that a posteriori turnover is not a common factor of influence for the added value at production costs and gross trade margin of retail trade enterprises in Ukraine (the correlation coefficients for turnover are statistically insignificant), which casts doubt on the stereotypical ideas about the determining role of this indicator for retail trade and the national economy as a whole. Instead, indicators of production costs (which for trade enterprises actually reflect the costs of circulation), the number of retail stores and their area may be common factors of influence for the added value at production costs and gross trade margin, which follows from the values of the correlation coefficients given in *Table 10*. The closest statistical relationship was found between the gross trade margin and the trading area of retail trade stores. However, in order to formulate final conclusions regarding the factors influencing the absolute value added by production costs and the relative gross operating margin, additional in-depth research is necessary.

Regarding the dynamics of the gross operating RTE margin in Ukraine, it is possible to state the absence of any visually noticeable patterns (study *Figures 7–9*), in connection with which there are grounds to suggest that this indicator performed a random walk during the study period (like the random walk of the market share price). The argument in favor of this assumption is that the logarithmic growth rates of the gross operating margin have a distribution that resembles a normal one. However, a formal test of the statistical hypothesis of a normal distribution is impossible due to the small amount of data.

Table 10

Key indicator correlation matrix of retail trade enterprises in Ukraine from 2012 to 2023 (value indicators in comparative prices of 2021)

№	Indicator	Symbol	VA	GTM	PC	RSs	RSA	AN	GT	CPI
1	Value added at production costs	VA	1							
2	Gross trade margin	GTM	0.878 (5.805)	1						
3	production costs**	PC	0.736 (3.439)	0.834 (4.789)	1					
4	number of retail stores at the beginning of the year	RSs	0.881 (5.881)	0.812 (4.399)	0.740 (3.482)	1				
5	retail sales area at the beginning of the year	RSA	0.804 (4.280)	0.882 (5.931)	0.725 (3.330)	0.828 (4.665)	1			
6	average number of employees in full-time equivalent	AN	0.317 (1.058)	0.603 (2.389)	0.572 (2.203)	0.307 (1.020)	0.419 (1.460)	1		
7	turnover of goods***	GT	0.134 (0.426)	0.245 (0.800)	0.360 (1.220)	0.262 (0.860)	0.118 (0.376)	0.783 (3.978)	1	
8	consumer price index, annual chain average	CPI	–0.216 (0.701)	–0.439 (1.547)	–0.525 (1.950)	–0.235 (0.765)	–0.309 (1.028)	–0.729 (3.370)	–0.525 (1.952)	1

**In brackets under each pairwise correlation coefficient, the actual value of the Student's t-test is given to test statistical significance by comparing it with the critical value of 2.228 for the significance level α=0.05. Significant correlation coefficients are highlighted in bold.*

*** The State Statistics Service of Ukraine does not publish the indicator of turnover costs separately for trade enterprises, but instead publishes the indicator of production costs by type of economic activity of enterprises in the section "Economic Statistics" in the subsection "Enterprise Activities".*

**** The indicator "Retail turnover of retail trade enterprises (legal entities)" is used according to the State Statistics Service data on wholesale and retail turnover of wholesale and retail trade enterprises in the section "Economic Statistics" in the subsection "National Trade".*

Source: author's analysis based on data (State Statistics Service of Ukraine, n. d.).

4. Causes of instability of value-added indicators in the retail trade of Ukraine and their differences with the EU countries

The reasons for the instability of the indicators of value added at production costs and gross operating margin of retail trade in Ukraine, as well as their overestimated level compared to EU countries, can be explained by the influence of a number of factors.

Military actions and their associated consequences. Loss of retail facilities, damage to infrastructure, disruptions in supply chains, high logistics costs, and shortages of goods have significantly affected the retail sector, where many business entities are forced to reduce staff or change business models to adapt. As a result, there has been a noticeable increase in prices for consumer goods, which has created additional pressure on the indicators of value added and gross operating margin.

Macroeconomic instability. Political crises, military actions, and economic turbulences significantly affect the activities of retail trade. The unpredictability of the economic environment complicates planning, contributes to increased costs, and negatively affects the stability of the indicators of value added and gross operating margin.

Rising energy prices, transportation, and the purchase of imported goods in Ukraine had a significant impact on the final cost of goods in 2022–2024. The main reasons were the increase in the cost of energy resources, food raw materials, logistics disruptions due to the war, and exchange rate fluctuations. The cost of energy resources reached record levels in the EU, which also affected overall inflation in Ukraine. Prices for imported goods increased due to the devaluation of the hryvnia, additional transportation costs, and difficulties in ensuring stable supplies during the war period.

Exchange rate fluctuations directly affect the prices of imported goods, which is due to the peg of their value to a foreign currency. In 2022–2024, Ukraine experienced significant dependence on imported products, especially electronics, medicines, and food. Forecasts for 2025 predict that import dependence will remain high, and exchange rate policy will be a significant factor in pricing, especially for goods imported from the EU and Asia. According to expert estimates, any significant depreciation of the hryvnia exchange rate could lead to a new jump in prices.

In 2025, inflation in Ukraine continues to be high, which worsens the purchasing power of the population. According to forecasts of the Kyiv School of Economics (Interfax, 2025, January 17), the average annual inflation in 2025 will be 12.1%. The main reasons for this are a significant increase in the price of electricity, increased logistics costs and low harvests in the previous year due to drought. The National Bank of Ukraine predicts that inflationary pressure will gradually decrease in the second half of 2025 due to an improvement in the energy situation and stabilization of food prices (National Bank of Ukraine, 2024, December 12).

These factors indicate that macroeconomic instability continues to affect the final cost of goods, which primarily creates additional challenges for retail enterprises.

Structural imbalances in the consumer market. The dominance of large retail chains in the consumer market creates conditions for overpricing due to limited competition. In contrast, small and medium-sized businesses do not have such resources, which forces them to operate with lower margins or leave the market altogether, reducing its overall efficiency.

In 2023, the share of large retail chains in the Ukrainian retail market was about 50–60% of the total turnover (Sharipov, 2024, June 12). These indicators demonstrate the dominance of the largest retailers in the food and non-food trade segment, which provides a significant part of the total market turnover. The ATB, Fozzy Group, METRO and Varus chains continued to increase their presence, which contributed to market concentration. For example, ATB recorded a record revenue of UAH 181 billion in 2023, significantly ahead of its competitors.

Imperfect regulatory framework. Legal uncertainty and lack of adaptation to European standards lead to unequal business conditions. The lack of effective regulatory mechanisms contributes to manipulation of costs and pricing, distorting real indicators of added value.

Thus, a significant impact on price increases in chain retail is the practice of imposing on suppliers, through the terms of contracts, costs that are not related to the content and subject of the contracts, in particular logistics and warehousing services; marketing services; return of unsold products; payment for entering retail chains, if this happens for the first time; payment for the number of units of products sold; payment for the number of stores in which the products will be sold; payment for promotions held by the chain; annual unconditional bonuses, etc. The above actions of retail chains lead to overpricing of goods by suppliers, which causes an increase in the retail price of goods for the end consumer, and in the case of the sale of socially significant goods, this situation negatively affects the socially unprotected segments of the population, who are essentially the main buyers of socially significant goods. This can be helped by making amendments to the existing legislation on protection against unfair competition or adopting a special regulatory act that could regulate the issue of protection against unfair trade practices.

The spread of the shadow economy. A significant share of the economy operating outside the official accounting system includes opaque tax avoidance schemes. This distorts official statistics, creating the appearance of high added value.

It should be noted that the level of the shadow economy in Ukraine according to the method of "population expenditure - retail turnover" in 2021 was 22% (Ministry of Economy of Ukraine, 2022, October). In 2023, retail turnover reached UAH 1.8 trillion, increasing from UAH 1.4 trillion in 2021 by 30.5% in nominal terms and by 15.4% taking into account inflation. At the same time, the real growth (minus inflation) of population incomes in 2023 in the official segment was 3.5%. Given that the dynamics of transfers from abroad did not increase during the specified period, it can be assumed purely theoretically that legalization through trade reduced the shadow sector by more than 10% (Kushch, 2024, August 26).

Different levels of labor productivity. In the EU, the intensive use of technology, automation and innovative approaches allow for higher productivity at lower costs. In 2023, gross value added per employee in the retail sector in the EU averaged 45–55 thousand euros (Eurostat, 2024,

March 15), while in Ukraine this figure remained significantly lower, partly due to the lower capital intensity of processes and the low level of automation.

Features of consumer demand. The retail market in Ukraine, compared to the EU countries, is characterized by a significant share of basic goods, which affects the limited diversification of the assortment. Due to the lower level of income among the population, the demand for premium products is significantly lower than in the EU countries. In the European Union countries, in particular in Western Europe, the premium segment is actively developing, which allows maintaining a high level of added value and expanding the assortment aimed at different categories of consumers (Wynne-Jones, 2024, February). In the EU, premium segments are an important driver of retail growth, ensuring revenue stability even in difficult economic conditions. In Ukraine, however, rising logistics costs and infrastructure destruction during the war exacerbate the challenges of market diversification. This market structure is limited, causing fluctuations in value added and gross operating margin depending on changes in demand.

The combination of these factors creates a difficult environment for the stable functioning of retail trade in Ukraine. To reduce the instability of value-added indicators and harmonize them with European standards, structural reforms are needed aimed at stimulating competition, combating the shadow economy, improving the regulatory framework, and introducing modern technologies.

Conclusions

Retail trade enterprises play one of the decisive roles in the GDP formation in Ukraine, but they are significantly inferior to wholesale trade enterprises in terms of the share in the total volume of added value at the production costs of all enterprises of the national economy. In Ukraine, after 2017, the indicators of added value at the production costs of trade enterprises began to grow exponentially, significantly exceeding the indicators of the processing industry. In recent years, during the large-scale military invasion, it was trade that began to create the greatest added value among all industries, which necessitates a critical rethinking of Ukraine's status as an industrially developed country (at least in the traditional sense of this concept) and a corresponding adjustment of state economic policy. The role correlation of retail trade and trade in general with the role of industry in the RTE formation in Ukraine is exaggerated and can be considered evidence of the absence (or failure to implement) of a state policy of increasing the country's defense capabilities in the conditions of the war that began in 2014. This refutes hypotheses 1 and 2 formulated in the introductory part of this article.

The revealed significant excess of the gross operating margin indicator values of trade enterprises compared to industrial enterprises in Ukraine is an anomalous phenomenon given the economic nature of added value. Although

the gross operating margin values for retail and wholesale enterprises demonstrate statistical heterogeneity (therefore, formally they should not be considered generalized), they are overestimated for both types of trade (especially for wholesale in recent years). This refutes hypothesis 3 put forward in the introductory part of this article.

The research results revealed that turnover is not a common factor influencing the value added at production costs and gross trade margin of retail trade enterprises in Ukraine, which refutes hypothesis 4 formulated in the introductory part of this article about the determining role of this indicator for retail trade and the national economy as a whole.

The indicators of value added (volume of value added at production costs and gross operating margin) of the RTE throughout the entire research period are characterized not only by inflated values, but also by instability. This is inherent both for retail trade in general and for its individual varieties (types of economic activity that belong to retail trade according to the NACE) as well as enterprises of various sizes (large, medium and small) within retail trade. The largest share in the total value added by production costs of non-specialized goods during the study period was created by retail trade enterprises in non-specialized stores (code 47.1 according to the NACE), and the largest average value of the gross operating margin was demonstrated by fuel retail enterprises (code 47.3).

Despite the presence of noticeable differences for individual RTE types in Ukraine, the values of the gross operating rate indicators for these types turned out to be statistically homogeneous, which makes it possible to analyze the overall gross operating rate and, accordingly, to identify in the process of further research common patterns of the formation of added value at the costs of RTE production.

Taking into account the results obtained, it can be argued that the indicators of added value at the costs of production and gross operating RTE rate in Ukraine are characterized by instability and an overestimated level due to the following reasons: military actions and their associated consequences; macro-economic instability; structural imbalances of the consumer market; imperfect regulatory framework; the spread of the shadow economy; different levels of labor productivity; features of consumer demand.

We predict prospects for further research in determining the impact of consumer demand parameters, as well as in assessing the impact of digital technologies, automation and online trading on the indicators of gross operating margin and added value in retail trade, which will allow us to identify potential areas of modernization of the industry. An important area of further research is also the adjustment of economic policy by developing recommendations for state regulation in the sphere of trade and industry to ensure balanced economic development and strengthen the country’s defense capabilities.

REFERENCE/СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ

Bagatska, K. (2024). Financial support for infrastructure projects in territorial communities. *Scientia fructuosa*, *3*(2024), 88–104. https://journals.knute.edu.ua/scientia-fructuosa/article/view/2088/1896	Багацька, К. (2024). Фінансове забезпечення інфраструктурних проєктів у територіальних громадах. *Scientia fructuosa*, *3*(2024), 88–104. https://journals.knute.edu.ua/scientia-fructuosa/article/view/2088/1896
Bezverkhyi, K. (2024). Implementation of European Sustainable Development Reporting Standards. *Foreign trade: economics, finance, law*, *2*(2024), 134–150. https://doi.org/10.31617/3.2024(133)08	Безверхий, К. (2024). Імплементація європейських стандартів звітності про сталий розвиток. *Зовнішня торгівля: економіка, фінанси, право, 2*(2024), 134–150. https://doi.org/10.31617/3.2024(133)08
Bondar, R. (2021, December 16). In Ukraine, business pretends that ESG changes will not affect it. This is an illusion and we need to prepare now. How. *Forbes Ukraine*. https://forbes.ua/company/v-ukraine-biznes-delaet-vid-chto-esg-izmeneniya-ego-ne-kosnutsya-eto-illyuziya-i-gotovitsya-nuzhno-uzhe-kak-16122021-2951	Бондар, Р. (2021, 16 грудня). В Україні бізнес удає, що ESG-зміни його не торкнуться. Це ілюзія і готуватись треба вже. Як. *Forbes Ukraine*. https://forbes.ua/company/v-ukraine-biznes-delaet-vid-chto-esg-izmeneniya-ego-ne-kosnutsya-eto-illyuziya-i-gotovitsya-nuzhno-uzhe-kak-16122021-2951
CFA Institute. (2024, March 4). *What is ESG investing*? https://www.cfainstitute.org/insights/articles/what-is-esg-investing	
Dyba, M., & Gernego, I. (2022). ESG project financing: foreign practices and development opportunities in Ukraine. *Finance of Ukraine,* (2), 45–57. https://doi.org/10.33763/finukr2022.02.045	
Eccles, R. G., & Klimenko, S. (2019, May–June). The Investor Revolution. Shareholders are getting serious about sustainability. *Harvard Business Review*. https://hbr.org/2019/05/the-investor-revolution	
Hanechko, I. (2023). Real estate development: European trends. *Foreign trade: economics, finance, law*, *5*(2023), 97–112. https://journals.knute.edu.ua/foreign-trade/article/view/1921/1789	Ганечко, І. (2023). Девелопмент нерухомості: європейські тренди. *Зовнішня торгівля: економіка, фінанси, право, 5*(2023), 97–112. https://journals.knute.edu.ua/foreign-trade/article/view/1921/1789
Harvard Law School Forum on Corporate Governance. (2022, *June 17). ESG Global Study 2022*. https://corpgov.law.harvard.edu/2022/06/17/esg-global-study-2022	
Harvard Law School Forum on Corporate Governance. (2024, *June 25). ESG Engagements in 2024*. https://corpgov.law.harvard.edu/2024/06/25/esg-engagements-in-2024/	
Kramer, M., & Pfitzer. M. (2022). The Essential Link Between ESG Targets and Financial Performance. *Harvard Business Review*. https://hbr.org/2022/09/the-essential-link-between-esg-targets-financial-performance	
Kyiv School of Economics. (2024). *Report on direct infrastructure damage from destruction as a result of russia's military aggression against Ukraine as of early 2024*. https://kse.ua/wp-content/uploads/2024/04/01.01.24_Damages_Report.pdf	Київська Школа Економіки. (2024). *Звіт про прямі збитки інфраструктури від руйнувань внаслідок військової агресії росії проти України станом на початок 2024 року*. https://kse.ua/wp-content/uploads/2024/04/01.01.24_Damages_Report.pdf
Law of Ukraine "*On state support for investment projects with significant investments in Ukraine*" № 1116-IX. (2024, December 11). https://zakon.rada.gov.ua/laws/show/1116-20#Text//zakon.rada.gov.ua/laws/show/2404-17#Text	Закон України "*Про державну підтримку інвестиційних проектів із значними інвестиціями в Україні*" № 1116-IX. (2024, 11 грудня). https://zakon.rada.gov.ua/laws/show/1116-20#Text//zakon.rada.gov.ua/laws/show/2404-17#Text
Livoshko, T. (2022). Monitoring according to ESG principles and its impact on the competitiveness of business entities. *Bulletin of Khmelnytskyi National University. Economic Sciences*, *5*(1), 158–164. https://doi.org/10.31891/2307-5740-2022-310-5(1)-26	Лівошко, Т. (2022). Моніторинг за ESG-принци-пами та його вплив на конкурентоспроможність суб'єктів господарювання. *Вісник Хмельницького національного університету. Економічні науки, 5*(1), 158–164. https://doi.org/10.31891/2307-5740-2022-310-5(1)-26
Matos, P. (2020). ESG principles and responsible institutional investing in the world: *A critical review of research.* Lviv Polytechnic Publishing House, 88. https://ua.cfaukraine.org/wp-content/uploads/2020/12/P.Matos_ESG-PRYNTSYPY_ebook.pdf	Матос, П. (2020). ESG-принципи та відповідальне інституційне інвестування у світі: *Критичний огляд досліджень*. Видавництво Львівської політехніки, 88. https://ua.cfaukraine.org/wp-content/uploads/2020/12/P.Matos_ESG-PRYNTSYPY_ebook.pdf

Metzler, Anja. (2024, June 10). *The Future of Project Financing in Real Estate: Embracing Sustainability for Competitive Advantage. Sustainable Capital Group*. https://sustainablecapitalgroup.com/blog/the-future-of-project-financing-embracing-sustainability-for-competitive-advantage/	
Ministry of Economy of Ukraine. (2024, July 11). *Investment activity in Ukraine for the 1st quarter of 2024*. https://me.gov.ua/Documents/Detail?lang=-uk-UA&id=9cb46b66-6285-4f7f-a08e-f450f32f0-cb2&title=InvestitsiinaDiialnistVUkraini Za1-Kvartal2024-Roku	Міністерство економіки України. (2024, 11 липня). *Інвестиційна діяльність в Україні за 1 квартал 2024 року*. https://me.gov.ua/Documents/Detail?lang=uk-UA&id=9cb46b66-6285-4f7f-a08e-f450f32f0-cb2&title=InvestitsiinaDiialnistVUkrainiZa1-Kvartal2024-Roku
Ministry of Finance of Ukraine. (2025, January 1). *Foreign Direct Investment (FDI) in Ukraine*. https://index.minfin.com.ua/ua/economy/fdi/	Міністерство фінансів України. (2025, 1 січня). *Прямі іноземні інвестиції (ПІІ) в Україну*. https://index.minfin.com.ua/ua/economy/fdi/
Naumenkova, S., Mishchenko, S., & Tishchenko, Ye. (2024). Project financing in the context of the implementation of the "UKRAINE FACILITY PLAN". *Economic Space*, (191), 142–153. https://doi.org/10.32782/2224-6282/191-24	Науменкова, С., Міщенко, С., & Тіщенко, Є. (2024). Проєктне фінансування в умовах реалізації "UKRAINE FACILITY PLAN". *Економічний простір*, (191), 142–153. https://doi.org/10.32782/ 2224-6282/191-24
Pshenichna, M. (2022). The impact of the full-scale russian-Ukrainian war on the practice of implementing ESG approaches by domestic enterprises. *Economy and Society*, (46). https://doi.org/10.32782/2524-0072/2022-46-64	Пшенична, М. (2022). Вплив повномасштабної російсько-української війни на практику імплементації ESG-підходів вітчизняними підприємствами. *Економіка та суспільство,* (46). https://doi.org/10.32782/2524-0072/2022-46-64
PWC. (2022, October 10). *Press Release*. https://www.pwc.com/gx/en/news-room/press-releases/2022/awm-revolution-2022-report.html	
Shubaly, O. (2023). Analysis of the behavior of European investors during the war in Ukraine. *Economic Forum*, *1*(4), 50–55. https://doi.org/10.36910/6775-2308-8559-2023-4-6	Шубалий, О. (2023). Аналіз поведінки європейських інвесторів під час війни в Україні. *Економічний форум, 1*(4), 50–55. https://doi.org/10.36910/6775-2308-8559-2023-4-6
Statista. (2024, July 24). *Leading economies for foreign direct investment inflows in 2023, by country*. https://www.statista.com/statistics/964016/leading-economies-fdi-inflows-country/	
Statista. (2024, October 15). *Leading countries by Environmental, Social, and Governance (ESG) ranking worldwide in 2024, by overall ESG score*. https://www.statista.com/statistics/1498397/leading-countries-by-esg-ranking-worldwide	
STATISTICS TIMES. (2024, October). *Projected GDP per capita Ranking*. https://statisticstimes.com/economy/projected-world-gdp-capita-ranking.php	
World Bank Group. (n. d.). Ukraine – Third Rapid Damage and Needs Assessment (RDNA3): February 2022 – December 2023. https://surl.li/oxkitl	

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INTERNET MARKETING AND DIGITAL STRATEGIES IN RETAIL

The rapid digitalization of the global economy and current social and economic challenges have affected the digital marketing strategies of retailers. The research reveals the peculiarities of using Internet marketing tools to implement digital marketing strategies by Ukrainian retailers in the conditions caused by the war. Based on the hypothesis that the integration of various digital channels and tools increases the effectiveness of marketing strategies, a survey of 12 retailers has been conducted. The results showed that retailers focus on synchronizing content across platforms, personalizing customer experience, and actively using social media. Considering the problem of limited resources and difficulties in coordinating channels, the expediency of implementing digital marketing strategies through the use of Internet marketing tools to improve brand awareness, increase loyalty and create customer experience has been established. The role of digital inclusion in market expansion and social justice is emphasized. The recommendations and conclusions presented are important for the use of Internet marketing tools by Ukrainian retailers and the effective implementation of digital marketing strategies.

Keywords: marketing, digital technologies, internet tools, integrated internet marketing, personalization, digital inclusion, social networks.

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ІНТЕРНЕТ-МАРКЕТИНГ ТА ЦИФРОВІ СТРАТЕГІЇ У РИТЕЙЛІ

Швидка цифровізація глобальної економіки та сучасні соціально-економічні виклики вплинули на цифрові маркетингові стратегії підприємств роздрібної торгівлі. У дослідженні розкрито особливості застосування інструментів інтернет-маркетингу для реалізації цифрових маркетингових стратегій українськими ритейлерами в умовах, спричинених війною. На основі гіпотези, що інтеграція різних цифрових каналів та інструментів підвищує ефективність маркетингових стратегій, проведено анкетування представників 12 підприємств роздрібної торгівлі. Отримані результати дозволили констатувати, що ритейлери зосереджуються на синхронізації контенту між платформами, персоналізацією досвіду клієнта та активному використанні соціальних мереж. З огляду на проблему обмежених ресурсів і труднощів координації каналів, встановлено доцільність впровадження цифрових маркетингових стратегій шляхом використання інструментів інтернет-маркетингу для покращення впізнаваності бренду, підвищення лояльності та формування клієнтського досвіду. Підкреслено роль цифрової інклюзії у напряму розширення ринку та зміцнення суспільної справедливості. Представлені рекомендації та висновки є важливими для використання українськими ритейлерами інструментів інтернет-маркетингу та ефективної реалізації цифрових маркетингових стратегій.

Ключові слова: маркетинг, *digital*-технології, інтернет-інструменти, інтегрований інтернет-маркетинг, персоналізація, цифрова інклюзія, соціальні мережі.

JEL Classification: M31, M37, L81, O33.

Introduction

The relevance of studying the use of Internet marketing by domestic retail trade enterprises (RTE) to implement digital strategies is due to a number of objective factors. The most prominent among them are the acceleration of the digitalization of the economy, changing consumer preferences, the need to increase the effectiveness of marketing strategies, and the growth and deepening of competition. In addition to the above factors, domestic retailers face a number of social and economic challenges posed to business by the full-scale war in Ukraine, in particular: a decrease in the solvency of demand; consumption in conditions of uncertainty; a decline in sales volumes and their dependence on public sentiment, and economic instability. Under such conditions, the effective use of Internet marketing to achieve strategic goals by retail enterprises becomes particularly important. Given that the arsenal of Internet marketing tools is constantly evolving and developing (Lau, 2023; Goray, 2025), it is worth focusing on its optimal and comprehensive use.

Analysis of recent scientific research indicates the relevance of the issues of Internet marketing and its role in strategic marketing planning. Thus, in the work of Oklander et al. (2024) the role of marketing in the survival and growth strategies of small and medium-sized businesses in Ukraine is considered. The authors found that adaptability to rapidly changing conditions and flexible use of technological tools are key factors of success. Korostova (2022) draws attention to the need to review traditional marketing approaches in the light of changed consumer behavior. Yalovega (2023) in her study of marketing communications during the war emphasizes the importance of social responsibility and emotional interaction with customers. However, the issues of systemic integration of Internet marketing channels and tools, adaptation to the needs of people with disabilities, and optimization of budgets during resource constraints remain unresolved. Scientists Yankovets and Nikolaev (2024) highlight the use of social networks as progressive tools for achieving marketing goals of retail enterprises, focusing on the effectiveness of digital advertising.

In the work of Krysovatyy et al. (2023) the aspects of digital inclusion and its marketing consequences are analyzed, the need for a comprehensive study of specific factors affecting the effectiveness of Internet marketing specifically for Ukrainian enterprises is indicated. In the monograph "Digital Inclusion and Accessibility", the scientist Davydenko (2023) emphasizes the importance of the accessibility of digital services for all categories of the population, which has a direct impact on the marketing strategies of retail enterprises. However, the practical aspects of implementing such approaches in the Ukrainian context require additional research.

The aim of the article is to substantiate the directions of Internet marketing tools usage by Ukrainian retail enterprises for the effective implementation of digital marketing strategies.

During this research, a hypothesis was formed that the integration of various channels and Internet marketing tools, taking into account the specific features of the Ukrainian market, can significantly increase the effectiveness of marketing strategies of retail enterprises. The methodology of the article is based on a comprehensive approach, which includes the analysis of secondary data, questionnaires of representatives of leading retail enterprises, and empirical research of their experience.

The research is based on scientific works and expert articles on the modern use of marketing Internet tools, statistical data, results of business surveys and primary information obtained in the process of questioning marketing experts of 12 well-known Ukrainian retail chains. Quantitative and qualitative methods of data analysis and synthesis, logical generalization of the obtained results of marketing Internet tools have been used in studying of this research. Statistical methods and methods of graphic representation were applied, which clearly demonstrate the experience results of using marketing Internet tools by domestic retailers.

The relevance of the research is determined not only by theoretical aspects, but also by the practical needs of enterprises, in particular, a specific algorithm for testing the hypothesis has been developed, which includes:

- analysis of current trends in domestic Internet marketing;
- determination of specific conditions for the functioning of Ukrainian retail in wartime and related changes in digital marketing strategies of retail enterprises;
- practical study of using Internet marketing tools by domestic retailers.

The research limitation is related to the selection of only some of retail trade representatives and focused on the most active market participants.

The main part of the article has two sections. The first reveals the features of Internet marketing tools use in wartime, in particular the influence of social and economic factors on marketing strategies. The second section substantiates the results of the empirical study, namely the analysis of questionnaire data and conclusions obtained after the survey of marketing experts from leading Ukrainian retailers.

1. Online retail marketing in times of war: trends and factors of influence

The current Ukrainian realities have led to the emergence of new trends in the use of online marketing tools, which are a response to the demands and challenges of both the market and society as a whole. The complex of social and economic business conditions requires solving the issue of optimizing and increasing the efficiency of spending on Internet marketing. This is due to the constant challenges of the external environment of retail operations. Thus, according to the materials of the state of business needs in wartime conditions (Diya. Business, ed.), the UBI (Ukrainian

Business Index)[1] business activity index as of January 2024 was 37.3 out of 100 possible. The index increased slightly compared to previous data (36.3), but remained below the local maximum recorded in August 2023 (38.2). The value of the index indicates the weakening of the business from the uncertainty and stagnation of the market situation, while the number of orders from customers, as well as the volume of production, remain unchanged. According to a survey of SME entrepreneurs, which became the basis for determining the level of business activity in 2023–2024, the unpredictability of the situation in Ukraine is the biggest obstacle to business recovery – 58.3% of respondents. In second place are unpredictable actions of the state – (50.7%). The top 3 factors also include the lack of a sufficient number of solvent customers – 49.4%.

Trubey et al. (2023) note the functioning peculiarities of Ukrainian retail in wartime. Scientists emphasize that domestic retail enterprises had to partially abandon standard approaches to managing current activities, but rely on situational or scenario approaches, the principles of rapid response, flexibility, adaptability, maneuverability, critical thinking and creativity.

Particular attention should be paid to the changing social conditions in which Ukrainian society operates (security risks, social insecurity, change of permanent residence, job loss, mobilization, etc., which largely determine consumer behavior and priorities). In particular, researchers consider necessary changes in the marketing strategies of retail enterprises and in the use of Internet marketing tools focused on social features and requests. The systematization of existing opinions on this issue and examples of successful response of marketing activities of individual retailers are given in *Table 1*.

Table 1

Factors influencing the use of online marketing tools
by trade enterprises during the war

Factor	Response	Examples
Benefit and contribution to victory	Proving the benefits of their activities to society. Supporting military units or those affected by hostilities, participating in socially significant initiatives and projects that can help create the necessary perception of business and product/goods by consumers in wartime. Communicating the facts of assistance to the country – "specific cases, specific projects, specific things – the position of the business". A new ecosystem of mutual assistance	ATB retail stores The total amount of charitable assistance for two years of war for the Armed Forces of Ukraine, volunteer formations, medical institutions, rescuers, volunteer organizations, affected civilians, etc. exceeded UAH 1.5 billion and continues to grow
Emotional context	Create messages that evoke calm, hope, and support. Communications should be aimed at uniting the community	Storytelling, live broadcasts, humor, interviews, reels, etc. Balancing the emotional sensitivity of the consumer and the need for positive emotions and neutral attributes of peaceful life. Emphasis on native, Ukrainian

[1] UBI shows business activity, its ability to increase turnover and create jobs.

End of Table 1

Factor	Response	Examples
Cooperation and social responsibility (collaboration)	Collaboration with other businesses, governments, and community organizations. A business can use its resources and expertise to help solve problems and promote recovery	The Epicenter retail chain on the United24 platform, within the framework of the charitable initiative "We Save Lives", together with partners, suppliers and buyers, from September 2022 to February 2024 purchased and transferred 76 cars for the needs of disaster medicine and military medics for the amount of over 203 million UAH. In 2024, Epicenter transferred a batch of 500 generators to the Armed Forces of Ukraine, as well as 1,000 units of hand tools for a total amount of almost 11 million UAH. The NOVUS supermarket chain, together with its Lithuanian Food for Ukraine foundation, provides assistance to socially vulnerable Ukrainians who are particularly hard-pressed by the consequences of russia's full-scale invasion. Thus, from February 2022 to the end of 2023, the chain and the Food for Ukraine charity foundation transferred about 1,760 tons of food products for the amount of over 84 million UAH
Security and Protection	Marketing strategy and marketing actions should not put employees and customers at risk.	Advertising messages and communications should emphasize the safety measures the company takes, as well as opportunities for safe interactions with the brand.
Marketing Communications	The changing media landscape and communication channels require a review of marketing communications and the involvement of new communication channels. Respond quickly to new circumstances	Relevance of communications to the target audience, accuracy of use of communication channels, rational messages (quality, taste, efficiency, etc.). Personalized communication. Anti-trend is parasitizing on the topic of war
Flexibility and Innovation	A company must be flexible, adapt quickly, seek new opportunities and innovations in order to survive and adapt in the market	Content related to artificial intelligence, GPT chats. AI tools only as supporting material – to simplify work, save time and budget. Development of the metaverse and virtual bloggers/heroes. Using advanced 3D graphics

Source: compiled by the author from (Dinanta, b.d.; Cases.Media, 2022, November 24; Korostova, 2022; Yaloveha, 2023; Oklander, 2024; Yermakova & Symonenko, 2024, March 14; Pro-Consulting, 2024, May 8; VRK, 2023).

In terms of the above factors that determine marketing communications and the corresponding digital marketing strategies, there will be an extremely positive impact on the development of a trade enterprise in the post-war period. An effective marketing strategy in wartime can help the enterprise recover, attract new customers, strengthen trust and support, contribute to improving the reputation, attract new buyers and partners, and form public loyalty to the brand. This helps trade enterprises adapt to changes in consumer habits and market conditions, and identify and use new opportunities.

Another modern trend in marketing communications on the Internet is personalization, in particular the creation of personalized messages and offers, which increases the relevance and attractiveness of the brand for different audience segments. Among the significant number of modern

personalization trends (such as artificial intelligence-based personalization; personalization of the customer journey and creation of individual experiences, image recognition during purchases using a smartphone, multi-channel personalization and, finally, personalized loyalty programs), it is worth highlighting a special and relevant trend today, related to taking into account the inclusive needs of buyers. This is most relevant in the current Ukrainian realities.

Separately, it should be mentioned digital inclusion, which opens access to the services of retail enterprises to people with special needs, including people with disabilities. Therefore, digital inclusion is becoming increasingly important in modern marketing. It involves ensuring equal access to digital technologies and services for all population groups, as well as people with disabilities, the elderly and representatives of different social categories. Digital inclusion not only contributes to the creation of equal opportunities for everyone, but is also an important step towards reducing the digital divide between different social groups. Digital inclusion requires investments in the latest technologies, software, equipment and infrastructure, as well as changes in approaches to communication and interaction with different audiences in terms of their needs and characteristics. However, these costs will allow enterprises to increase productivity, efficiency and competetiveness. In the long term, digital inclusion can become a key factor for business growth, because attracting more consumers will allow you to expand markets and improve the social reputation of the brand. Elements of digital inclusion in the online marketing activities of a modern retail enterprise are presented in *Table 2*.

Table 2

Key elements of digital inclusion in online marketing communications for retail businesses

Element of digital inclusion	Application characteristics
Ensuring accessibility of content	Adapting websites and mobile applications for people with visual or hearing impairments, using simple and understandable texts, and providing alternative content formats, including subtitles
Use of more inclusive language	Carefully and inclusively designed messages that are clear and non-offensive
Personalization of the value proposition	Using data to create personalized offers that take into account the needs and preferences of different consumer groups
Social responsibility	An inclusive approach to marketing demonstrates a company's social responsibility, which can increase its reputation and trust among consumers
Technological innovations	Using new technologies, such as artificial intelligence and machine learning, to create more inclusive marketing campaigns

Source: compiled by (Davydenko, 2023; Vorona, 2024; Trubey & Lukhanina, 2023).

It should be noted that digital inclusion is an important element of modern integrated Internet marketing, which allows enterprises to create more accessible, personalized and effective marketing communications. Thanks to digital inclusion, enterprises can attract new market segments that were previously inaccessible. This not only opens up new opportunities for business growth and development, but also helps to build a more just and equal society.

Therefore, in modern conditions of conducting a trading business, the use of Internet marketing tools should be aimed not only at increasing sales volumes and achieving a positive financial result, but also at meeting the needs of the market in times of crisis (supporting social stability) and forming a positive and socially responsible brand image. At the same time, the focus on flexibility, personalization and innovation remains important aspects of forming a marketing strategy.

2. The empirical study results of Internet marketing tools usage in domestic retail

In order to study in more detail, the practical application of Internet marketing tools and the development of appropriate digital marketing strategies, a special survey of representatives of domestic trade enterprises was conducted. Its purpose was to identify the most acceptable Internet marketing tools for Ukrainian retailers, as well as to establish the advantages of using them for the implementation of digital marketing strategies. The survey results allow us to confirm or refute the conclusions drawn from the analysis in the previous section, and also provide valuable information for developing practical recommendations for increasing the effectiveness of Internet marketing in the retail sector in Ukraine.

Regarding the sample for conducting the study, the emphasis was placed on retail trade enterprises, which, unlike wholesale sector enterprises, implement a more active communication policy on the Internet. All surveyed enterprises operate in the format of a network of physical stores, practicing omnichannel sales of goods in the consumer market.

Given that one of the determining factors in conducting qualitative social and economic research is the formation of a set of observations, that is, a sample set that will determine the characteristics of the general population (Klebanova et al., 2024), a certain list of enterprises was selected for the research. This is a kind of model (projection) of the entire general population of retail enterprises operating in a network format. Such a sample, in terms of the main qualitative characteristics under study and control features, repeats the structure of the general population. All enterprises represent different areas of retail trade, and surveys of their marketing specialists allowed us to obtain data on the use of digital marketing tools in different market segments, since each area has its own specific features and challenges in the context of Internet marketing. The choice of these RTEs made it possible to provide a comprehensive approach to the study, taking into account their different experience and the degree of integration of digital technologies into marketing strategies. Each of the selected enterprises actively implements innovative approaches to improve business efficiency and meet consumer needs, which makes them valuable participants in the study. It is important to note that these RTEs have a significant impact on the development of their market segments, which provides an opportunity to understand general trends and identify successful practices that can be applied by other retailers *(Table 3*).

Table 3

The sample population characteristics of trade enterprises by segments

Trade segments	Practices
Sports goods	"Fitman", "DECATHLON UKRAINE" Actively implementing modern Internet marketing strategies. SEO optimization, content marketing and social networks
Goods for children	"Antoshka" retail chain. Internet marketing to increase brand awareness and attract customers through social networks. Online promotions and special offers on Internet platforms.
Fashion and clothing (Fashion Retail)	LPP UA trading company, which manages such brands as "Reserved", "Cropp", "House", "Mohito" and "Sinsay". Uses integrated Internet marketing communications to strengthen the positions of brands in the market
Department stores (family shopping stores)	"Territory of minimum prices". Uses the entire set of Internet marketing tools, constantly adapting them to the current situation
Food supermarket chains	LLC "OMEGA" (chain of stores "VARUS"), LLC "Novus Ukraine" chain of stores "NOVUS"), LLC "Eko" (chain of supermarkets "EKO Market"), LLC "Silpo" (chain of supermarkets "Silpo"). Actively uses Internet marketing to promote promotional offers, manage online sales and increase customer loyalty through loyalty programs and digital communications
Construction goods and household goods (DIY segment)	"Epicenter K". Actively uses various Internet marketing tools to achieve business goals

Source: materials of a questionnaire survey and data from the official websites of the relevant retail enterprises.

The survey results helped to understand how different market segments are adapting their marketing strategies to the digital economy, as well as to identify effective tools and approaches that contribute to successful business. The list of responding companies is given in *Table 4*.

Table 4

Retail enterprises – survey respondents

The enterprise trades	Year of foundation/ entry into the Ukrainian market	Number of stores	Survey respondents		
			Instagram	TikTok	Facebook
Epicenter K	2003	64	170 000	75 000	726 000
DECATHLON UKRAINE	2012	4	2 100	2 856	9 100
Private enterprise "Redhead Family" ("Antoshka")	1997	45	22 000	20 2000	38 000
Territory of minimum prices	2010	16	13 8000	1 784	86 000
LPP UA	2002	57	More than 1 million in total		
LLC ECO, (ECO MARKET)	2002	150	8 000	231 200	53 000
Novus Ukraine LLC	2008	46	25 4000	–	39 000
LLC "OMEGA" (VARUS)	2003	95	3 000	2 862	27 000
LLC "Silpo"	1998	305	188 000	244 700	404 000

Source: data from official websites and social media pages of retailers, January 2025.

In the research special attention to the integration of traditional and digital communication channels is paid, which is an important element of modern marketing strategies. The survey participants are marketing experts from these enterprises, who represent various retail sectors, which made it possible to obtain a wide range of data on the use of Internet marketing in various market segments. Thanks to the professional experience of the participants, the collected data made it possible to identify not only the current state of the use of digital technologies, but also to determine the prospects for the development of marketing strategies for the coming years. The survey results became the basis for the formation of recommendations that can be used by enterprises to increase the effectiveness of their marketing campaigns, optimize Internet marketing costs, as well as to improve interaction with customers through digital channels. Thus, the study contributes to a deeper understanding of the role and importance of Internet marketing in the development of modern retail in Ukraine.

The key results of the study are consolidated and presented in *Figures 1–5*. Thus, *Figure 1* presents data on the most important factors that, according to retail marketers, influence brand awareness and reputation. Respondents were asked to select several factors as key. In particular, product quality and customer service remain the most influential factors for brand awareness and reputation. This emphasizes the importance of fundamental aspects of business in forming long-term relationships with customers.

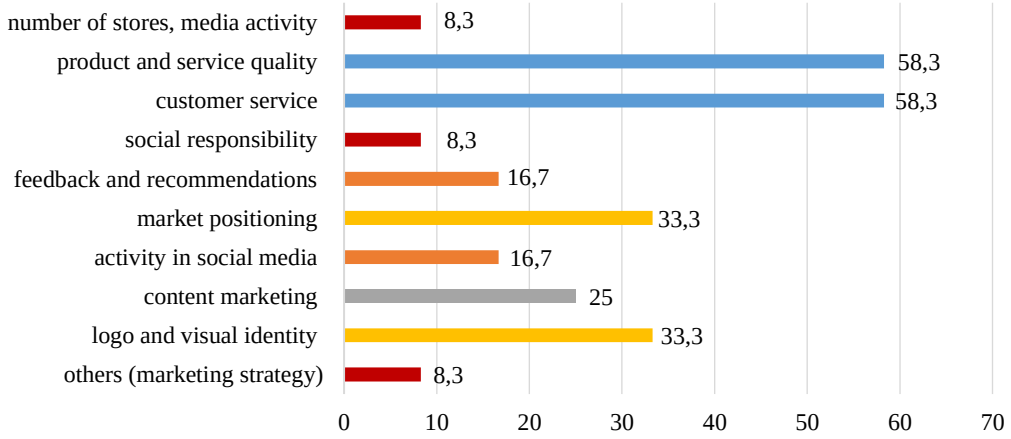

Figure 1. Distribution of respondents' answers about the most important factors influencing brand awareness and reputation in retail, %

Source: survey results of marketers from 12 retail chains.

Modern consumers increasingly value high quality and durability of products, choosing those that best meet their expectations. This is due to wide access to information, which allows them to choose the best options among numerous offers. In addition, high-quality service is becoming crucial in creating a positive customer experience, which in turn affects loyalty and the spread of positive reviews. These aspects not only improve the overall

perception of the brand, but also contribute to its successful competition in the market, where quality and service act as the main differentiators.

The results analysis of the survey on the priorities of marketing activities of retail enterprises (*Figure 2*) reveals the distribution of emphasis between different digital marketing tools.

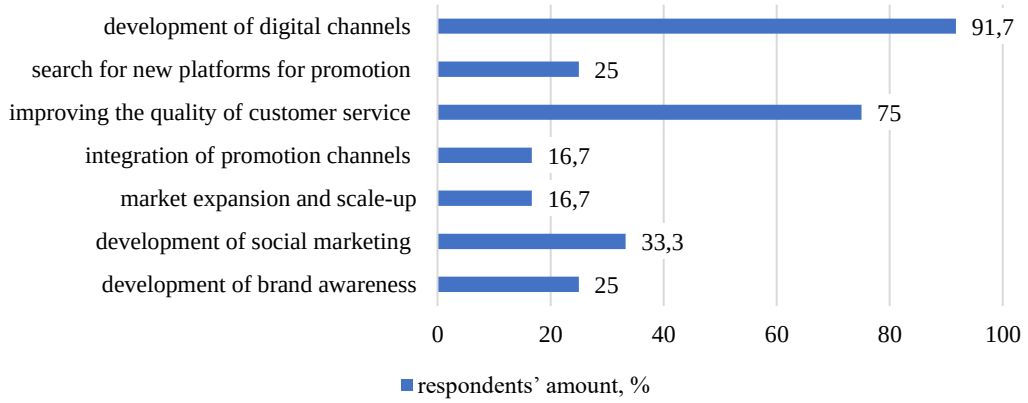

Figure 2. Distribution of respondents' answers regarding the main priorities of marketing activities in retail

Source: Results of the survey of marketers of 12 retail chains.

Retailers pay the most attention to the development of digital channels. Thus, 11 of the surveyed companies chose this priority as one of the most important in their marketing activities. This reflects an understanding of the importance of a digital presence in the modern business environment. At the same time, the active search for new platforms for promotion indicates the readiness of enterprises to experiment and adapt their marketing strategies. A significant emphasis on improving the quality of customer service indicates a growing awareness of the importance of a customer-oriented approach. The lower popularity of such areas as the integration of promotion channels, market expansion and scaling may indicate that most companies are focused on optimizing existing processes, rather than on active expansion. It is important to note that the development of social marketing and increasing brand awareness occupy lower positions in the priorities, which may indicate a lack of confidence in the potential of these tools or a more pragmatic approach to marketing in conditions of economic uncertainty. It was found that Ukrainian businesses are adapting to the demands of the digital economy, focusing on developing an online presence and improving customer engagement, but still have room for improving integrated marketing strategies and more active use of social media.

Figure 3 presents the results of responses to marketers' questions on the use of Internet marketing tools, which demonstrates the priorities and strategies of domestic retail businesses in the digital space.

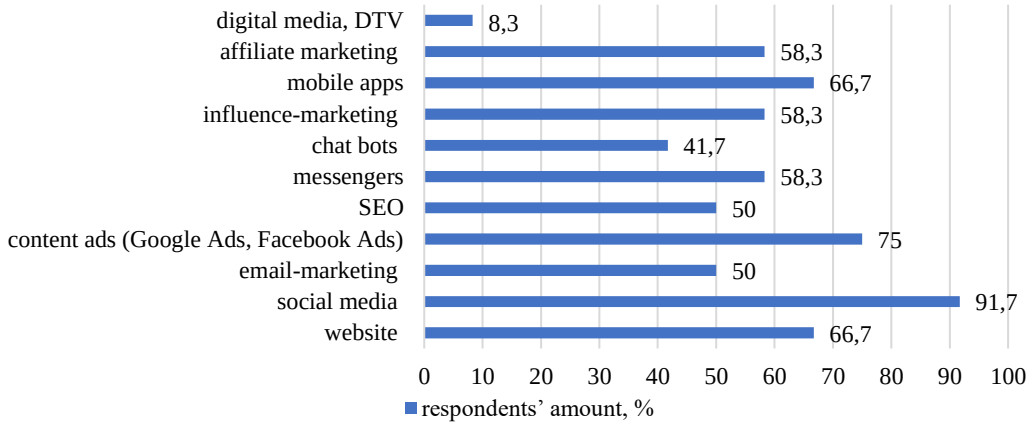

Figure 3. Distribution of respondents' answers regarding the most popular online marketing tools

Source: survey results of marketers of 12 retail chains.

Therefore, social media marketing occupies a prominent place. This emphasizes the effectiveness of social networks in personalized communication with customers. Corporate websites and mobile applications are also important, demonstrating their key role in building an online presence and interacting with the audience. Contextual advertising and SEO remain significant components of strategies, reflecting the ongoing need to optimize brand visibility in search engines. Affiliate and influencer marketing, although not leading, are noticeably popular, indicating a growing recognition of the value of collaborations. The use of messengers and chatbots indicates a trend towards automation and instant communication with customers. The average popularity of mobile applications reflects their gradual increase in importance in marketing strategies. The lower priority of Digital Media and DTV may indicate that most businesses are focused on more traditional digital channels. According to the results of the analysis, this picture demonstrates the diversity of approaches in digital marketing, where companies strive to balance between proven methods and innovative tools to achieve maximum efficiency of their marketing efforts.

The features of using social networks for online marketing and identifying communication trends inherent in domestic retail are presented in *Figure 4*.

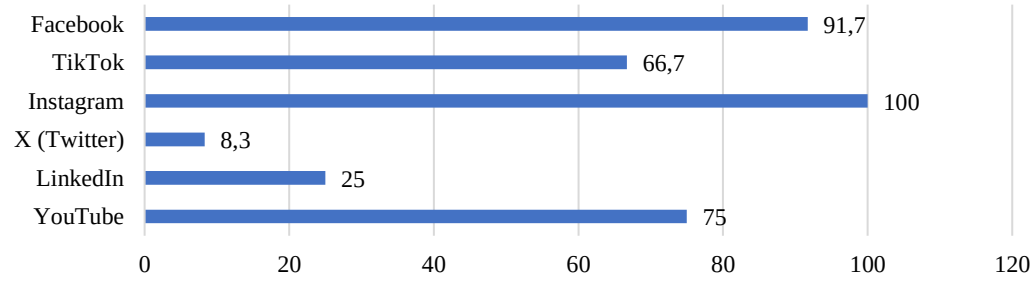

Figure 4. Distribution of respondents' answers about the use of social media for online marketing in retail, %

Source: survey results of marketers from 12 retail chains.

Instagram emerged as the most popular platform (100% of responses), indicating its key role in visual marketing and audience engagement. Facebook ranks second in popularity, confirming its strong position as a universal tool for business communications. YouTube also shows high attrition, indicating the growing importance of video content in marketing strategies. TikTok, despite its relative novelty, has already gained significant popularity, reflecting the trend towards short-form video content and attracting a younger audience. LinkedIn has a smaller but noticeable presence, indicating its specific role in B2B marketing and professional communications. It is interesting to note the lack of use of X (formerly Twitter), which may indicate its lower relevance for Ukrainian businesses or the specificity of the respondent sample.

The presented analysis demonstrates the diversity of approaches to social media marketing, where retail businesses actively use different platforms to reach their target audiences, giving preference to visual and video formats. This highlights the importance of an adaptive and multi-platform strategy in modern digital marketing.

The study assessed the importance of integrating online marketing channels and tools for a retail company's strategy. In particular, a clear trend was identified in terms of their perceived importance. During the survey, 8 out of 12 surveyed companies rated online marketing integration channels as "important". This represents 66.7% of the total number of responses, indicating a high assessment of the role of these channels in the marketing strategies of companies. The remaining respondents consider these channels to be "very important" (4 responses, or 33.3%). At the same time, none of the respondents chose the options "insignificant impact", "not important", or "difficult to answer", indicating a general recognition of the critical importance of integrating various online marketing channels and tools in the business strategies of modern retail companies. This may indicate a greater understanding of the need for a comprehensive approach to digital marketing and its key role in achieving business goals.

The survey identified key challenges that retail companies face when implementing integrated online marketing. The most significant problems were the complexity of channel coordination and the lack of material and financial resources. Among the answers, you can also see such reasons as: difficulty in management and coordination, lack of knowledge, limited time, high level of professional fatigue and burnout of marketers. This indicates the difficulties that arise when coordinating different marketing tools into a single system.

Figure 5 presents new online marketing tools that are planned for implementation in retail chains.

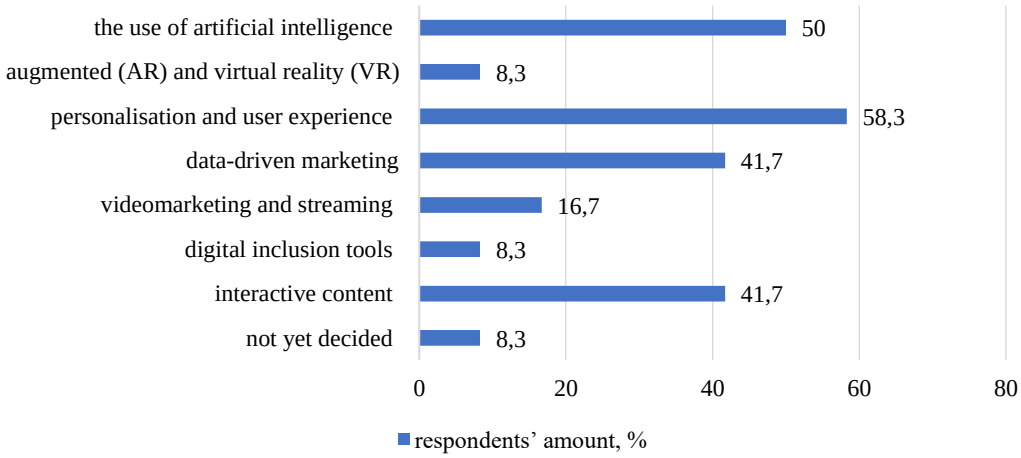

Figure 5. Distribution of respondents' answers about the introduction of new Internet marketing tools

Source: survey results of marketers of 12 retail chains.

The analysis results confirm that RTEs are actively interested in and implementing new online marketing tools with a particular emphasis on personalization, interactivity and the use of data. This reflects a general trend towards a deeper understanding of customer needs and the creation of more effective marketing strategies.

Conclusions

The specifics of the war were reflected in the digital marketing strategies of retail enterprises and the use of relevant online marketing tools. It is relevant for retail enterprises to establish communication with consumers by focusing on security, social responsibility, patriotism, and charitable initiatives. This forms new approaches to the use of online marketing tools by retail enterprises and the implementation of digital marketing strategies in a differentiated marketing paradigm, where purely commercial goals are determined by creating a balance between profitability and social vision.

In this aspect, digital inclusion takes on a special role in expanding the customer audience in retail and forming a long-term customer experience. However, the practical implementation of such initiatives remains fragmented, which determines the need to develop effective standards and state support. Therefore, further research will be aimed at developing mechanisms for inclusive marketing adapted to the needs of vulnerable groups, in particular internally displaced persons.

The survey results of marketing experts of well-known Ukrainian retailers have been proved that in times of war it is worth actively integrating Internet marketing tools into marketing strategies, adapting to social and economic challenges. It is advisable to focus on the use of social networks (Instagram, Facebook, TikTok) and personalized communication with

consumers. This will emphasize the desire of the retail business to maximize interaction with the audience in conditions of limited resources, which proves the effectiveness of the methodology on the importance of multi-channel and emotional connection with customers during crises. It is also noteworthy that all, without exception, participants in the survey emphasize the important role of integrating various digital channels and Internet marketing tools to increase the effectiveness of marketing strategies of retail enterprises. This confirms the hypothesis put forward at the beginning of the research that an integrated approach to Internet marketing is capable of having a more significant effect on the formation of consumer loyalty to the brand. On the other hand, the data also reveals coordination problems between different channels, especially in decentralized management environments. Despite understanding the importance of integrated strategies, many retailers focus on individual tools (e.g. SEO or contextual advertising), which can limit synergies. This highlights the need to develop a systematic approach to developing marketing strategies.

Thus, the further use of Internet marketing tools by retail enterprises and the implementation of appropriate digital marketing strategies signify-cantly expands the pool of opportunities for creating customer experience by intensifying the use of artificial intelligence, augmented (AR) and virtual reality (VR), and the formation of interactive content.

Further research can be aimed at developing methodological princip-les for forming an integrated Internet marketing strategy for retail enterprises in order to increase the efficiency of administration.

REFERENCE/СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ

Cases.Media. (2022, November 24). Marketing in wartime: How has consumer behavior changed during the war? Is a brand needed during wartime? How should the approach to marketing change? *Havas Village Ukraine research*. https://cases.media/article/marketing-voyennogo-chasu-doslidzhennya-havas-village-ukraine	Cases.Media. (2022, 24 листопада). Маркетинг воєнного часу: як змінилася поведінка споживачів під час війни? Чи потрібний бренд у воєнний час? Як має змінитися підхід до маркетингу? *Дослідження Havas Village Ukraine*. https://cases.media/article/marketing-voyennogo-chasu-doslidzhennya-havas-village-ukraine
Davydenko, H. (2023). *Digital inclusion and accessibility: Social digitalization*. Vinnytsia: TVORY. https://vsei.vn.ua/images/Doc/Nauka/Inclusivna_osvita/cifrova-inklyuziya-ta-dostupnist-socialna-didzhitalizaciya.pdf	Давиденко, Г. (2023). *Цифрова інклюзія та доступність: соціальна діджиталізація*. Вінниця: ТВОРИ. https://vsei.vn.ua/images/Doc/Nauka/Inclusivna_osvita/cifrova-inklyuziya-ta-dostupnist-socialna-didzhitalizaciya.pdf
Dinanta. (n. d.). Marketing strategy during war and martial law. https://dinanta.com/blog/marketing-during-war	*Dinanta*. (б. д.). Маркетингова стратегія під час війни та воєнного стану. https://dinanta.com/blog/marketing-during-war
Diya. Business. (n. d.). Study of the state and needs of business in wartime: survey results in December 2023 – January 2024. https://business.diia.gov.ua/cases/novini/doslidzenna-stanu-ta-potreb-biznesu-v-umovah-vijni-rezultati-opituvanna-v-grudni-2023-sicni-2024-roku	Дія. Бізнес. (б. д.). *Дослідження стану та потреб бізнесу в умовах війни*: результати опитування в грудні 2023 – січні 2024 року. https://business.diia.gov.ua/cases/novini/doslidzenna-stanu-ta-potreb-biznesu-v-umovah-vijni-rezultati-opituvanna-v-grudni-2023-sicni-2024-roku

Goray, S. (2025). The history and evolution of digital marketing over the years. *WAC*. URL: https://webandcrafts.com/blog/history-of-digital-marketing	
Iankovets, T. & Nikolaev, D. (2024). Digital advertising Meta Ads in social networks. *Scientia fructuosa*. 5(157), 76–88. https://doi.org/10.31617/1.2024(157)06	Янковець, Т. & Ніколаєв, Д. (2024). Цифрова реклама Meta Ads у соціальних мережах. *Scientia fructuosa*. *5*(157), 76–88. https://doi.org/10.31617/1.2024(157)06
Klebanova, T. S., Hurianova, L. S., Chahovets, L. O., Panasenko, O. V., Serhiienko, O. A., & Yatsenko, R. M. (2024). *Business analytics of multidimensional processes*. Kharkiv National University of Economics. http://ebooks.git-elt.hneu.edu.ua/babap/about.html	Клебанова, Т. С., Гур'янова, Л. С., Чаговець, Л. О., Панасенко, О. В., Сергієнко, О. А., & Яценко, Р. М. (2024). *Бізнес-аналітика багатовимірних процесів*. Харківський національний економічний університет імені Семена Кузнеця. http://ebooks.git-elt.hneu.edu.ua/babap/about.html
Korostova, I. O. (2022). The state and prospects of marketing during the war. *Digital Economy and Economic Security, 1*(1), 66–73. http://dees.iei.od.ua/index.php/journal/article/view/66/63	Коростова, І. О. (2022). Стан та перспективи маркетингу під час війни. *Цифрова економіка та економічна безпека, 1*(1), 66–73. http://dees.iei.od.ua/index.php/journal/article/view/66/63
Krysovatyy, A., Desyatnyuk, O., & Ptashchenko, O. (2023). Digital inclusion: Financial and marketing aspects. *The Journal of Strategic Economic Studies, 3*(14), 93–102. https://econ-vistnyk.knutd.edu.ua/wp-content/uploads/sites/17/2023/08/3-2023-10.pdf	Krysovatyy, A., Desyatnyuk, O., & Ptashchenko, O. (2023). Digital inclusion: Financial and marketing aspects. *Журнал стратегічних економічних досліджень, 3*(14), 93–102. https://econ-vistnyk.knutd.edu.ua/wp-content/uploads/sites/17/2023/08/3-2023-10.pdf
Lau, J. (2023). 35 best digital marketing tools. *Zapier*. URL: https://zapier.com/blog/best-digital-marketing-tools/	
Oklander, M., Yashkina, O., Zlatova, I., Cicekli, I., & Letunovska, N. (2024). Digital Marketing in the Survival and Growth Strategies of Small and Medium-Sized Businesses During the War in Ukraine. *Marketing and Management of Innovations, 15*(1), 15–28. https://doi.org/10.21272/mmi.2024.1-02	
Pro-Consulting. (2024, May 8). Modern challenges of retail, how to adapt to new realities. https://pro-consulting.ua/ua/pressroom/sovremennye-vyzovy-ritejla-kak-adaptirovatsya-k-novym-realiyam-obzor-pro-consulting-dlya-trademaster	Pro-Consulting. (2024, 8 травня). *Сучасні виклики ритейлу, як адаптуватися до нових реалій*. https://pro-consulting.ua/ua/pressroom/sovremennye-vyzovy-ritejla-kak-adaptirovatsya-k-novym-realiyam-obzor-pro-consulting-dlya-trademaster
Trubey, O., & Lukhanina, K. (2024). Digital inclusion in integrated internet marketing, XXXII. *International scientific and practical conference "Global Trends and Direction of Scientific Research Development" Hamburg, Germany. International Scientific Unity*, 127–129. https://isu-conference.com/wp-content/uploads/2024/07/Global_trends_and_direction_of_scientific_research_development_July_31_August_2_2024_Hamburg_Germany.pdf	Трубей, О., & Луханіна, К. (2024). Цифрова інклюзія в інтегрованому інтернет-маркетингу, *XXXII. International scientific and practical conference "Global Trends and Direction of Scientific Research Development" Hamburg, Germany. International Scientific Unity*, 127–129. https://isu-conference.com/wp-content/uploads/2024/07/Global_trends_and_direction_of_scientific_research_development_July_31_August_2_2024_Hamburg_Germany.pdf
Trubey, O., Ganechko, I., & Afanasiev, K. (2023). Retail in wartime: restoration of business activity. *Scientia fructuosa*. 5(151), 89–106. https://doi.org/10.31617/1.2023(151)06	Трубей, О., Ганечко, І., & Афанасьєв, К. (2023). Ритейл в умовах війни: відновлення ділової активності. *Scientia fructuosa*. *5*(151), 89–106. https://doi.org/10.31617/1.2023(151)06
Vorona, O. (2024). What is digital inclusion and why is it so important? Ukrainian Pravda. https://www.pravda.com.ua/columns/2024/05/9/7454979/index.amp	Ворона, О. (2024). Що таке цифрова інклюзія та чому вона надважлива. *Українська правда.* https://www.pravda.com.ua/columns/2024/05/9/7454979/index.amp
VRK. (2023). Trends 2023 in marketing communications management. https://vrk.org.ua/images/Research_by_Factum_Group_and_VRK.pdf	VRK. (2023). Тенденції 2023 в управлінні маркетинговими комунікаціями. https://vrk.org.ua/images/Research_by_Factum_Group_and_VRK.pdf

Yaloveha, N. I. (2023). Marketing communications in wartime: Challenges and ways to promote products. *Scientific Notes of Lviv University of Business and Law. Economic Series. Legal Series*, *37*, 373–379. https://nzlubp.org.ua/index.php/journal/article/view/824	Яловега, Н. І. (2023). Маркетингові комунікації в умовах війни: виклики й шляхи просування товарів. *Наукові записки Львівського університету бізнесу та права. Економічна серія. Юридична серія, 37*, 373–379. https://nzlubp.org.ua/index.php/journal/article/view/824
Yermakova, Ya., & Symonenko, K. (2024, March 14). Humanitarian and military aid from Ukrainian retail during two years of full-scale war. Association of Retailers of Ukraine. https://rau.ua/novyni/micne-pleche-pidtrimki-dopomogi/	Єрмакова, Я., & Симоненко, К. (2024, 14 березня). Гуманітарна й військова допомога від українського ритейлу за два роки повномасштабної війни. *Асоціація ритейлерів України*. https://rau.ua/novyni/micne-pleche-pidtrimki-dopomogi/
Zablotska, Yu. (2024). Personalized marketing: Top 5 trends and examples. *Apix-Drive*. https://apix-drive.com/ua/blog/marketing/sho-take-personalizovanij-marketing-top-5-trendiv-ta-prikladiv	Заблоцька, Ю. (2024). Персоналізований маркетинг: топ 5 трендів та прикладів. *Apix-Drive*. https://apix-drive.com/ua/blog/marketing/sho-take-personalizovanij-marketing-top-5-trendiv-ta-prikladiv

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