ECONOMIC SECURITY AND INNOVATION IN CONDITIONS OF TRANSFORMATION

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The research is aimed at substantiating new approaches to the formation of the system of economic security and its components, in particular the financial component, in order to ensure the integrity of the system from the point of view of the possibility of effective functioning in new economic conditions, characterized by changes in the forms of interaction of industry with the banking system, the tax system; changes in the state policy, which complicate the mechanism of interaction with business structures. It is proved that the financial security of an enterprise is central to the system of economic security, which is explained by the following: the level of financial security of any enterprise determines its ability to provide other components of its economic security, and changes in any field of the enterprise are ultimately reflected in its financial security.

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INTRODUCTION

In the context of increasing geopolitical turbulence, technological change, and global uncertainty, the issues of economic security and innovation have acquired critical importance for national development strategies. Countries across the world are facing profound transformations — from fiscal instability and post-war recovery to accelerated digitalization and systemic socio-economic risks. In such conditions, the ability of national economies and business structures to adapt, stabilize, and innovate determines their long-term sustainability and competitiveness.

This collective monograph explores the dual dimensions of economic security and innovation through the lens of structural transformation, emphasizing both global challenges and national responses. The structure of the work is built around four core sections, each reflecting a significant thematic block of modern economic research.

The first section, Management of the National and Business Economies, examines managerial approaches in times of uncertainty. It includes an analysis of Georgia's foreign trade priorities, challenges, and future prospects, and a conceptual exploration of innovation and corporate responsibility as essential artifacts of a dynamic economic model. These topics underline the necessity of rethinking conventional approaches to entrepreneurship, trade integration, and sustainable economic management.

The second section, Transformation of Challenges and Threats to the Economic Security of the State, focuses on the impact of crises — particularly war and information turbulence — on public finance and the institutional stability of states. The studies in this section investigate the influence of martial law on fiscal control mechanisms, the role of international liquidity in maintaining financial sovereignty, and the behavioral-

economic vulnerabilities arising from information asymmetry and uncertainty.

In the third section, Investment and Innovation Security as a Factor of Economic Growth, emphasis is placed on the construction industry — a sector with strategic importance in post-crisis recovery. The chapter investigates investment risks, socio-economic effects, and opportunities for growth, highlighting the interdependence between sectoral investment and national resilience.

The final section, Tax Security in the Post-War Economic Recovery of Ukraine, addresses the institutional and fiscal mechanisms needed to rebuild national economies. Tax policy is explored as a tool for balancing social needs with economic stabilization, reinforcing financial sovereignty under conditions of recovery and external support.

The relevance of the monograph lies in its interdisciplinary perspective and application to contemporary economic realities. The authors aim not only to identify and assess existing challenges but also to propose practical recommendations for strengthening economic resilience, fostering innovation, and enhancing institutional security at both the macroeconomic and microeconomic levels.

This volume is intended for researchers, policy analysts, economists, and decision-makers engaged in post-crisis governance, economic reform, and innovation policy. Its insights contribute to the academic discourse and can serve as a knowledge base for practical economic strategy in times of transformation.

SECTION 1.
MANAGEMENT OF THE NATIONAL ECONOMY AND THE ECONOMY OF ENTERPRISES

1.1. CHALLENGES AND PROSPECTS OF GEORGIA'S FOREIGN TRADE

The study is devoted to the contemporary problems of Georgia's foreign trade relations and the directions of overcoming them. The paper presents a statistical analysis of quantitative data on Georgia's foreign trade. The dynamics of foreign trade in the recent period are discussed, the export-import balance is established, the change in the trade balance is estimated, the structure of foreign trade is identified both by regions and individual countries, as well as by types of exported and imported goods and economic activities. As a result of the study of the data and statistical analysis, certain regularities have been identified, based on which conclusions are drawn and proposals are developed.

The world economy is developing at a very rapid pace at the present stage. There are many factors affecting the development of the economy and they are different for different countries. However, what is common to all is that the globalization process is increasing the degree of mutual influence between countries day by day. The role of foreign trade in foreign economic relations has been further increased by world economic globalization. Nevertheless, the structure of foreign trade is different in developed and developing countries. The export-import balance of any country in itself shows the level of economic development, productivity, business development, investment attractiveness, total consumption, the degree of the country's import dependence, the structure of state revenues, etc.

Based on the above, the analysis and study of the structure and dynamics of Georgia's foreign trade statistical indicators is highly relevant at the current stage. Because we believe that this allows us to identify steps to be taken to further deepen Georgia's foreign trade relations, which will stimulate exports and regulate imports, which will ultimately contribute to improving the sharply negative foreign trade balance that currently exists.

The aim of the study is to assess the current challenges related to Georgia's foreign trade and to develop future measures based on their study and analysis. Based on the aim of the study, the following tasks were set: determining the role of Georgia's foreign trade in the country's economic development; statistical analysis of Georgia's foreign trade indicators and identification of current trends; statistical analysis of Georgia's foreign trade in a regional context; statistical analysis of Georgia's foreign trade by main economic activities; assessment of Georgia's foreign trade development prospects.

The study is mainly based on the statistical analysis of quantitative data on Georgia's foreign trade, which is taken from the database of the National Statistics Service of Georgia. The statistical analysis uses methods of data comparison, dynamics, structure and coordination. The formation of the theoretical framework of the study is related to the processing of the latest scientific sources on the issue. The patterns identified in the statistical analysis and the theoretical materials studied determine the main results of the study, conclusions and proposals made on their basis.

Foreign trade is one of the main driving forces of the country's economy. The structure of foreign trade itself shows the level of development of any country's economy and the scale of business development, productivity, consumption,

purchasing power and the country's import dependence. The dynamics of foreign trade development reflects the main directions of the country's foreign trade policy and the effectiveness of the implementation of customs policy. It is undeniable that the structure and dynamics of foreign trade indicators depend on the level of business development, investment activity and attractiveness, state policy in various directions and other factors.

The management of Georgia's open economy is significantly hampered by a chronic foreign trade deficit. Although new approaches to eliminating the chronic trade deficit have been developed worldwide, it is still considered a poorly studied area (Katamadze and Katamadze, 2022). Today, Georgia is in the sphere of interest of the world's largest countries, therefore, by rationally using its geographical location and natural resources, Georgia can expand trade and economic relations with various countries (Shengelia, 2020). The need to develop world trade relations is due to the fact that individual countries cannot produce goods and services that fully satisfy their needs (Abuselidze & Slobodianyk, 2021, 2020; Abuselidze & Mamaladze, 2020; Berishvili and Ghugunishvili, 2020).

The deepening and development of international trade plays a crucial role in Georgia's integration into the international economic and trade space. Trade and customs policy measures serve the issues of regulating and stimulating foreign trade relations (Meladze, 2025). Foreign trade relations have always been a defender of the country's economic interests, and at the modern stage the regulatory and stimulating role of the customs sphere in terms of the development and deepening of foreign trade and international economic relations has sharply increased (Meladze, 2023).

Trade relations between Georgia and the European Union are carried out on the basis of the Deep and Comprehensive Free Trade Area Agreement (DCFTA), which is part of the Association Agreement with the European Union and establishes trade and customs policy instruments (Abuselidze and Meladze, 2024). The DCFTA will have a positive impact on Georgia's foreign trade in the long term, although it will require significant resources in the short term due to the effects of legislative approximation (Abuselidze, 2019). The real sector of the economy in Georgia is underdeveloped, with the service sector and tourism considered the main priority for the country's development, which is why most of the products consumed by the population are imported (Meladze, 2021). Foreign trade relations between countries are influenced by both comparative advantages and a secure environment in various directions (Tabagari, 2023).

Below is "Table 1.1", which provides statistical data on Georgia's foreign trade in goods for 2014-2023. Along with export and import data, total trade turnover and annual foreign trade balance are presented.

According to the average data of the National Statistics office of Georgia for 2014-2023, shown in the table, the volume of imports exceeds the volume of exports by approximately three times. If we take into account that the declared exports also include re-exports, which does not at all indicate the development of entrepreneurship and business in the country, the ratio between them is much larger and almost doubles. Accordingly, it is natural and logical that Georgia's foreign trade balance is chronically negative. To illustrate this, Figure 1.1 is provided below.

Table 1.1 - Georgia's foreign trade in goods (million USD), 2014-2023 years

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Export	2861.0	2204.2	2117.1	2745.7	3379.7	3798.0	3340.7	4242,5	5582.4	6086.4
Import	8601.8	7300.2	7341.9	8057.2	9361.4	9518.3	8048.7	10098.6	13548.4	15603.6
Turnover	11462,9	9504.4	9459.0	10802.9	12741.1	13316.4	11389.4	14341.0	19130.8	21690.0
Balance	-5740.8	-5096.0	-5224.7	-5311.4	-5981.7	-5720.3	-4708.0	-5856.1	-7965.9	-9517.2

Source: *Compiled by the author, based on data from the National Statistics office of Georgia (2025)*

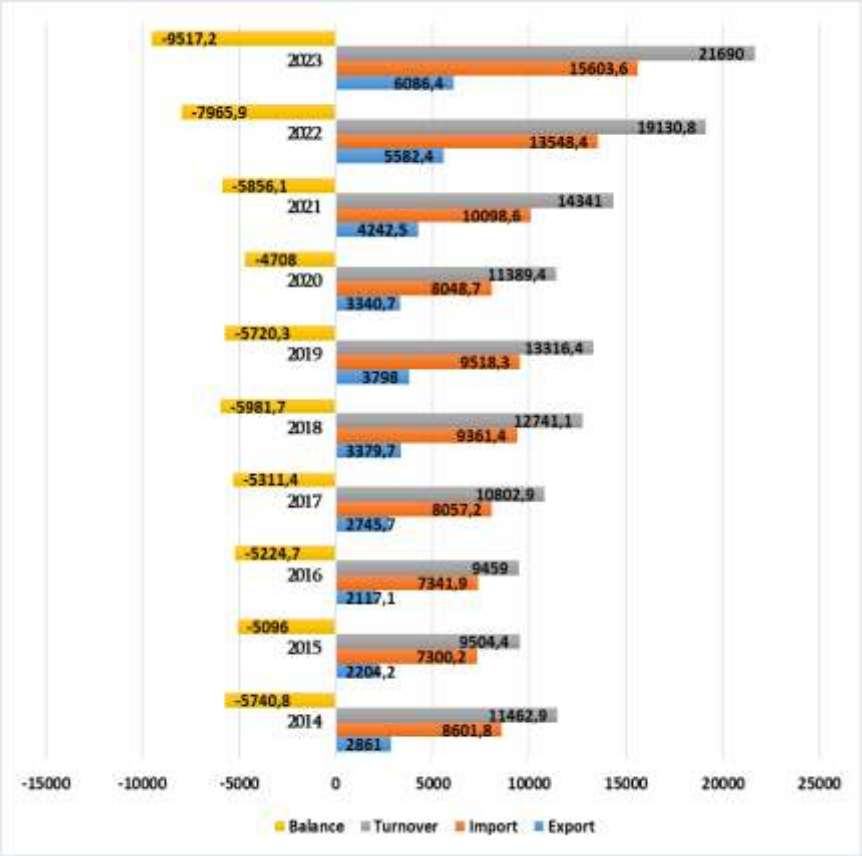


Fig. 1.1 - Georgia's foreign trade in goods (million USD), 2014-2023

Source: *Constructed by the author, based on data from the National Statistics Office of Georgia (2025)*

From Figure 1.1 it is clear that from 2014 to 2023, the total foreign trade turnover is characterized by an upward trend in most cases, and the absolute increase is equal to 10227.1 million. USD,

which is a relative growth rate of 189%. The growth trend is characterized by both the export and import data of goods, the growth rate for export of goods is 212%, and the growth rate for import of goods is 182%. It is noteworthy that the growth trend is also characterized by the negativity of the foreign trade balance. The annual growth rates of data on Georgia's foreign trade in percentages are reflected in Figure 1.2 below.

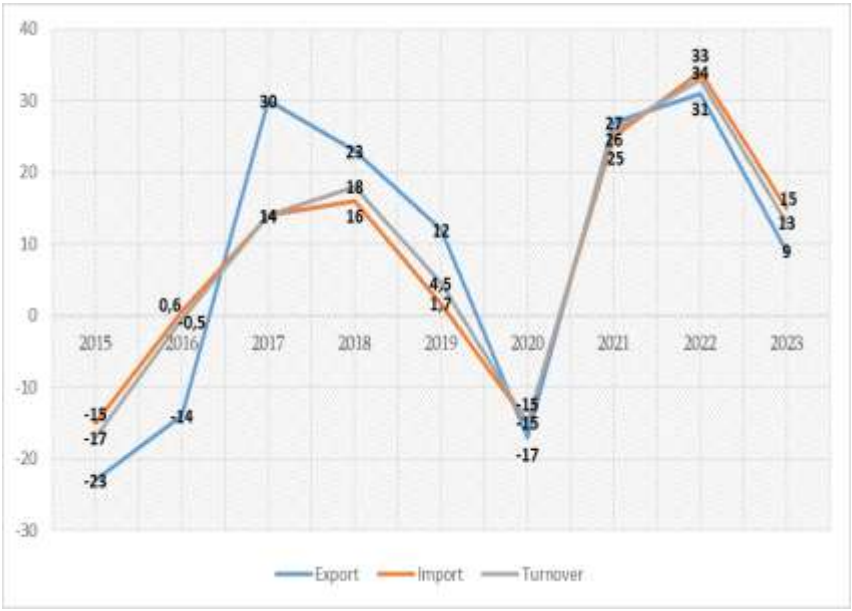


Fig. 1.2 - Growth rates of Georgia's foreign trade in goods (%), 2015-2023

Source: *Constructed by the author, based on data from the National Statistics Office of Georgia (2025)*

The annual change in Georgia's foreign trade balance in absolute terms is given in Figure 1.3.

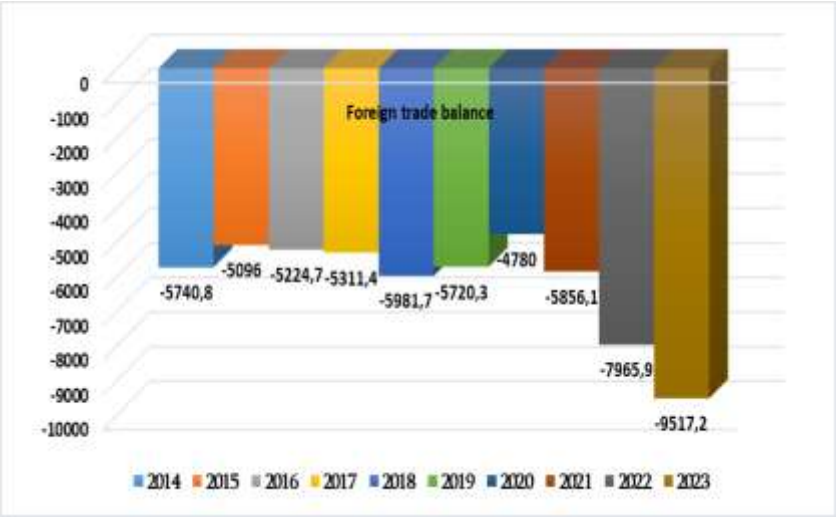


Fig. 1.3 - Change in Georgia's foreign trade balance in goods (million USD), 2015-2023

Source: *Constructed by the author, based on data from the National Statistics Office of Georgia (2025)*

Looking at Figure 1.3, it is clear that the negative foreign trade balance has been increasing particularly over the last three years, and overall, in 2023, compared to the base period, the negative trade balance has increased by 3776.4 million USD, which is a growth rate of approximately 166%.

For the analysis of foreign trade, it is important to study its structure by countries and regions, which allows for a certain idea of the country's trading partners and the current level of trade relations with them. Table 2 presents quantitative data by regions of Georgia's foreign trade partners.

Table 1.2 - Georgia's foreign trade in goods by region (million USD), 2014-2023

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	სამ.
Total exports, including:	**2861.0**	**2204.7**	**2112.9**	**2735.5**	**3379.7**	**3798.4**	**3344.5**	**4242.7**	**5583.4**	**6086.4**	**3635**
Asia	1452.6	1037.1	996.5	1275.2	1705.0	1900.2	1645.6	2142.7	3152.4	4204.8	1951
Europe	1095.2	932.2	951.8	1283.5	1455.7	1717.2	1542.2	1820.2	1922.8	1621.8	1434
America	286.9	217.5	134.1	143.2	198.6	165.7	114.9	249.4	442.4	180.4	213
Africa	25.4	16.7	29.6	32.6	19.2	14.0	35.3	28.2	64.4	77.9	34
Oceania	1.1	1.2	0.9	1.0	1.2	1.4	6.5	2.1	1.5	1.5	2
Total imports, including:	**8601.8**	**7300.3**	**7294.0**	**7939.2**	**9361.4**	**9519.5**	**8053.8**	**10099.8**	**13547.7**	**15603.6**	**9732**
Asia	4482.3	3586.2	3437.9	3839.2	4431.4	4410.6	3782.8	5006.4	6461.3	6914.6	4635
Europe	3603.9	3272.7	3442.7	3580.0	4160.0	3942.3	3347.5	4065.5	5618.3	6281.7	4131
America	450.5	381.2	387.1	481.7	704.2	1036.1	888.0	990.4	1402.4	2334.4	1254
Africa	60.7	56.0	22.2	35.2	47.1	51.5	19.5	33.9	61.1	68.1	46
Oceania	4.4	4.1	4.1	3.1	18.7	79.0	15.9	3.4	4.7	4.8	14

Source: *Compiled by the author, based on data from the National Statistics Office of Georgia (2025)*

According to data for 2014-2023, 48% of Georgia's foreign trade falls on the Asian region, followed by the European region with 41%, followed by America with 11%, Africa with 0.5% and Oceania with 0.1%. To illustrate the given structure of Georgia's foreign trade, Figure 1.6 is provided below. Figure 1.4 and Figure 1.5 respectively reflect the structure of Georgia's exports and imports by regions.

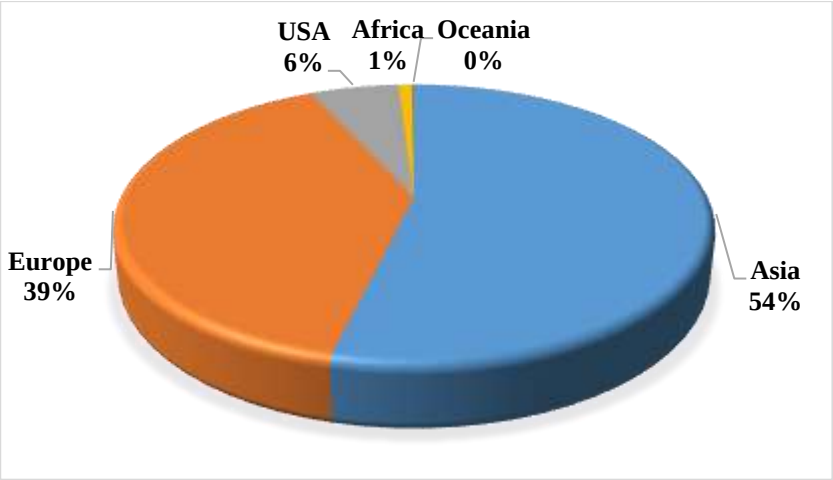


Fig.1.4. - Structure of Georgian exports by region, average for 2014-2023

Source: *Constructed by the author, based on data from the National Statistics Office of Georgia (2025)*

In the structure of Georgia's foreign trade exports, the Asian region ranks first with 54%, followed by Europe with 39%, followed by the Americas with 6%, the African region with 0.9%, and Oceania with 0.1%.

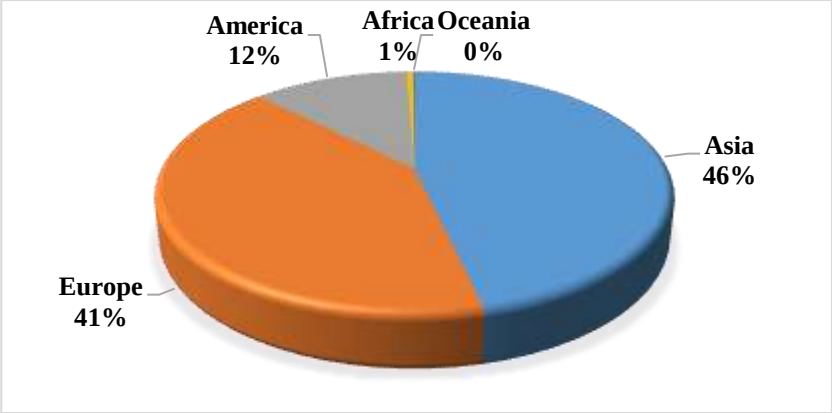


Fig.1.5 - Structure of Georgia's imports by region, average for 2014-2023

***Source**: Constructed by the author, based on data from the National Statistics Office of Georgia (2025).*

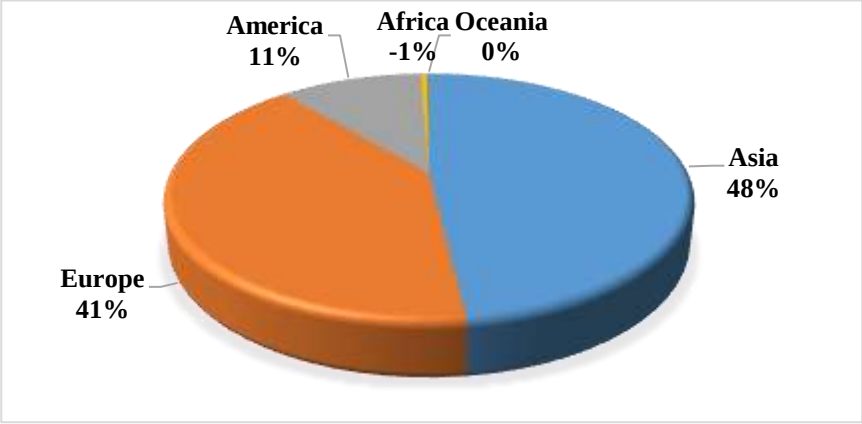


Fig.1.6 - Georgia's foreign trade turnover in goods, average for 2014-2023

***Source:** Constructed by the author, based on data from the National Statistics Office of Georgia (2025)*

In the structure of Georgia's foreign trade imports, the Asian region ranks first with 46%, followed by Europe with 41%, followed by the Americas with 12%, the African region with 0.5%, and Oceania with 0.1%.

In addition to regions, it is naturally interesting to see which countries Georgia has been exporting goods to and from which countries it has been importing goods. Therefore, the top ten largest exporting and importing countries according to data for 2022 and 2023 are given in Figure 1.7 and Figure 18, respectively.

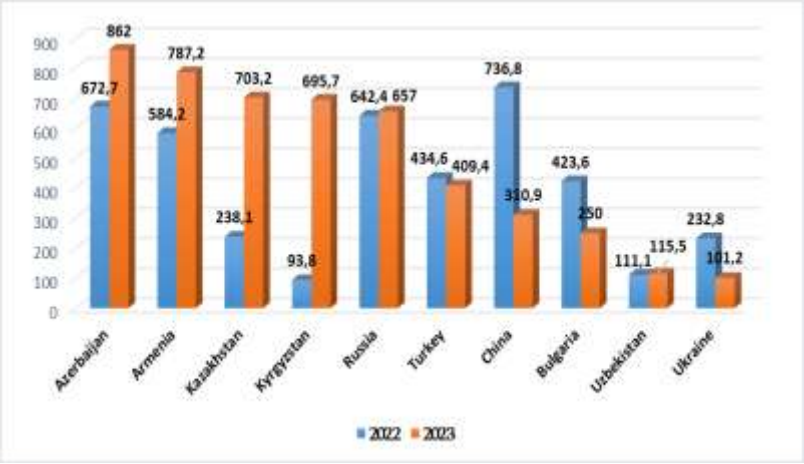


Fig. 1.7 - Georgia's top ten export countries in 2022-2023, million USD

Source: *Constructed by the author, based on data from the National Statistics Office of Georgia (2025)*

Figure 1.7 shows that Azerbaijan is in first place among the largest exporting countries, followed by Armenia, Kazakhstan, Kyrgyzstan, Russia, Turkey, etc. It is noteworthy that no EU country is in the top ten of the largest exporting countries, except for Bulgaria, which ranks eighth in the top ten.

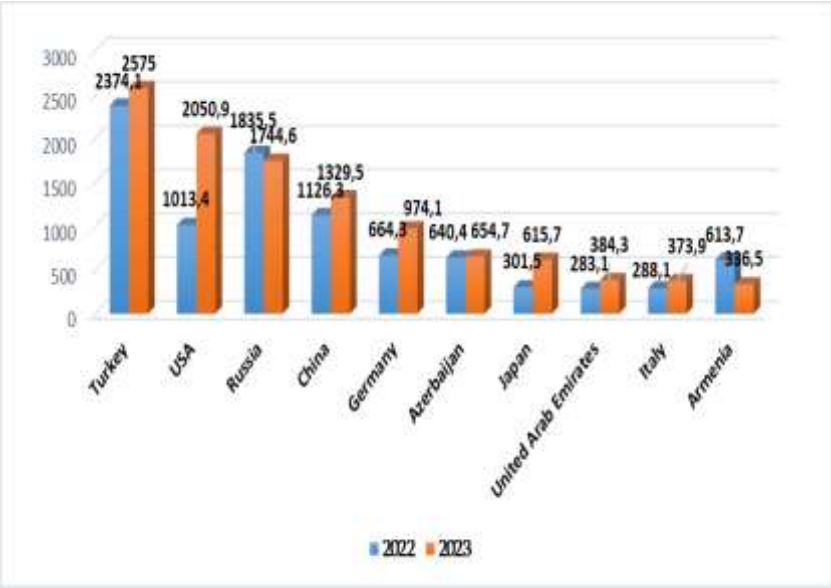


Fig. 1.8 - Georgia's ten largest import countries in 2022-2023, Million USD

Source: *Constructed by the author, based on data from the National Statistics Office of Georgia (2025).*

Figure 1.8 shows that Turkey is in first place among the largest importing countries, followed by the USA, Russia, China, Germany, Azerbaijan, etc. It is noteworthy that no EU country is in the top ten of the largest importing countries, except for Germany and Italy, which occupy fifth and ninth places in the top ten, respectively.

Based on the data presented above, the top ten of Georgia's largest trading partner countries for 2022 and 2023 have been determined, both absolute and relative indicators have been calculated and they are presented in the form of Table 1.3.

Table 1.3 - Georgia's largest trading partner countries (turnover, million USD). 2022-2023

2022				2023			
Country		Absolute rate	Relative rate %	Country		Absolute rate	Relative rate %
1	Turkey	2808.7	14.7%	1	Turkey	2984.5	13.8%
2	Russia	2477.9	13%	2	Russia	2401.7	11.1%
3	China	1863.1	9.7%	3	USA	2147.9	9.9%
4	Azerbaijan	1313.1	6.9%	4	China	1640.3	7.6%
5	USA	1278.5	6.7%	5	Azerbaijan	1516.7	7.0%
6	Armenia	1198.0	6.3%	6	Armenia	1123.7	5.2%
7	Germany	732.0	3.8%	7	Germany	1031.1	4.8%
8	Bulgaria	626.8	3.3%	8	Kazakhstan	736.1	3.4%
9	Ukraine	518.7	2.7%	9	Kyrgyzstan	700.5	3.2%
10	Italy	349.5	1.8%	10	Japan	624.5	2.9%

Source: *Compiled by the author, based on data from the National Statistics Office of Georgia (2025)*

Table 1.4 - Georgia's foreign trade turnover by economic activity (million USD), 2020-2023

Export of goods by economic activity					
		2020	**2021**	**2022**	**2023**
1	Food and Beverages	856.4	1030.2	1065.6	1242.0
2	Industrial Supplies	1578.9	2071.2	2552.2	1544.0
3	Fuels and Lubricants	16.5	36.3	150.7	164.8
4	Capital Goods	73.1	181.6	223.1	217.9
5	Transport Equipment	486.1	529.5	1029.5	2314.5
6	Consumer Goods	320.8	383.6	540.6	575.4
7	Other	8.9	10.0	20.5	27.7
Total		**3340.7**	**4242.4**	**5582.2**	**6086.3**
Import of goods by economic activity					
		2020	**2021**	**2022**	**2023**
1	Food and Beverages	972.7	1079.2	1534.0	1630.7
2	Industrial Supplies	2479.6	3150.2	3858.8	3476.1
3	Fuels and Lubricants	919.8	1286.3	1935.2	1683.3
4	Capital Goods	1085.0	1404.7	1793.2	2064.6
5	Transport Equipment	1185.2	1411.8	2284.3	4075.6
6	Consumer Goods	1377.6	1719.3	2116.7	2606.0
7	Other	28.8	47.0	26.1	67.3
Total		**8048.7**	**10098.5**	**13548.3**	**15603.6**

Source: *Compiled by the author, based on data from the National Statistics Office of Georgia (2025)*

Among the largest trading partners, Turkey is in first place, Russia is in second place, followed by the USA, China, Azerbaijan, Armenia, Germany, Kazakhstan, Bulgaria, Kyrgyzstan, Japan and Italy.

Georgia's import and export data differ significantly depending on economic activities and types of goods. Data on this are provided in Table 1.4.

Table 1.4 shows that according to the data for 2020-2023, in the case of exporting goods, industrial supplies occupy the first place, followed by food products and beverages (mainly at the expense of beverages), then transport equipment (at the expense of re-exports) and consumer goods. The share of other types of goods is insignificant. In the case of importing goods, industrial supplies occupy the first position, second is consumer goods, then transport equipment, capital goods, food products and beverages, fuel and lubricants.

In the global space, today Georgia is a state that depends on the import of goods, therefore, the needs of the population and society are met mainly at the expense of goods imported from foreign countries. The foreign trade balance is negative and its negativity is characterized by an annual growth trend. The positive side of the above circumstances is its fiscal effect, which the country receives in the form of customs duties with the funds entered into the state budget. However, such fiscal effects are short-term and have a negative impact on the future economic growth and development of the country. Analysis of the structure and dynamics of foreign trade indicators shows that the level of productivity in the country is quite low. The types of goods and their quantities, which occupy a large share in the total volume of goods exported from Georgia, indicate a low level of business development. Manufacturing industries cannot ensure an increase

in the share of exports in foreign trade and a decrease in the negative trade balance.

Based on the above, we have developed the following proposals:

1. Promoting business development through the use of financial and tax mechanisms;
2. Stimulating the export of goods by reducing political and economic restrictions;
3. State support for the export of goods by deepening economic relations with trading countries;
4. Using tax incentives in the production of goods intended for export;
5. Restricting the import of goods using tariff and non-tariff instruments, within the framework of international legal norms;
6. Developing a mechanism for state monitoring of the selling prices of imported goods;
7. Establishing a method for quality control and standardization of imported goods.

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1.2. INNOVATION IN THE ECONOMY AND RESPONSIBILITY – ARTEFACTS AND PERSPECTIVIES

The issues addressed by economic responsibility have a high importance and priority. Among the leading prerequisites for this are globalization, the development of knowledge, information, cultural dialogue, the growth of the importance of social factors in management, etc. The accumulation of a critical mass of research on innovation and management is conditioned by technological reasons, which also correspond to the management methods, mechanisms and models, so necessary for achieving the desired parameters in the development of organizations, economies and societies. For these reasons, the report examines the relevance of a modern concept called "innovations in economics and responsibility".

Current issues regarding its definition are raised, examples of the application of this management technology are presented, and claims regarding aspects of its application are proven.

Economic responsibility has attacted significant interest and importance. The globalization, the role of knowledge, information, cultural dialogue as well as the uprising importance of social factors in govemance are among the leading factors. The accumulation of critical mass research on the role of economic factors in govemance determine the technological reasons corresponding to management methods, mechanisms and models so necessary to achieve the desired parameters in the development of organizations, economies and innovation responsibility.

For this reason, the paper presrnts the relevance of a modern governance concept called "innovation and responsibility". Current issues regarding its definition are

presented, guidelines for the application of this Organizational and logistics business is a prerequisite for effective e enterprise menegement technology are presented, as well as statements about the aspects of its application are proved.

The concept of corporate economic responsibility it is a multifaceted and its roots dated from the industriel revolution in such a way that many social problems appeared as a consequence from the industrialization such as high level of eriminality and abusive labour. In this regard, the questions about well being of workers and economic communities appeared on the front *(Srivastava & Sahay, 2017).* It is also considered that CSR has a Roman origin, expressed in in orphanages, asylums, hospitals and homes for the poor and the elderly *(Chaffe, 2017).* In the Middle Ages, CSR was implemented by many charitable institutions such as in religious ones. Later it was introduced into municipality as well as educational institutions by the English Law *(Talenti, 2022).*

Issues related to economic, innovation responsibility are of utmost importance and priority amohg modern organizations. The reasons analyzed in a narrower research aspect are of a innovation economic and technological nature. Economic preconditions emphasize the changes in peoples lives as a result of the formation and realization of economic and innovation needs of people in the organization and beyond. The accumulation of a critical mass of research on the role of innovation economic factors in management detetmines the technological reasons, corresponding to the management methods, mechanisms and models, so necessary to achieve the desired parameters in the development of organizations, economies and societies.

The origin of the CSR can be traced in the religios context as the Christian religious philosophy began changing

its attitude to more abiding economic contexts as povety and female and child labour were rampant across most parts of Europe, including England in Eighteenth and Nineteenth century *(Mauricio, Lara, & Bryhidur, 2019).* Thus the philosophy of Victorians tumed its focus on the economic well being and needs of the working people by giving them welfare schemes in US and Europe *(Mauricio et al, 2019).* Diferent Christian associations were founded in the middle of 18 century such as the Young Mens Christian Association (YMCA) (1844) in order to see how values and morals of Christians are applicable in the business environment *(Mauricio et al., 2019).*

Innovation and Economic responsibility values are generally shared ideas about the goals of economic activities. They function in the form of an ideal, the basic principles of thinking and are ideal criteria assessing economic events, phenomena and processes.

Innovation and Economic responsibility values have advantages over such concepts as wealth, money and income-generating means, and the relatively more abstract categories such as capitalism, socialism, individualism, economic liberty, equality, etc. Any society and any social group have their own hierarchy of values. For some population groups, wealth is the highest value, for others it is a pure conscience. In some societies, private property is regarded as a condition for the realization of economic and responsibility, and in others as a innovation evil that generates economic inequality and conflicts.

The origin of the term “economic responsibility” is not unambiguously defined. On the one hand, the economic responsibility of business has its prototype, namely the examples of prominent “economic enlightened leaders” of the nineteenth and twentieth centuries. The initiative, from another

research perspective dates from the mid-1960s to the time of the American corporate scandals and directly to the Watergate case in the early 1970s *(Loew, D., 2004, p.23).*

There is no universal definion of the term of CSR. It is controversial from where the concept origins. Some authors consider that it has a legal origin related to following the rules and laws. Other considered CSR as a charity of the business *(Khan et al., 2022).* This view is also held by Brandao et al. (2022), who argue that while it is paramount for businesses to act within the provided legal, following legal regulations alone is not enough if CSR was to be used as a tool for success.

The current debate on the subject originates in the United states, where it began with the publication of an article by Nobel Laureate M. Friedman in 1970. In it, he clearly denies the idea that any company should deal with things that do not relate to the essence of its main mission, namely, to increase the value of shares or profits (Friedman, M., 1970, p. 34). D. Lad shares a similar opinion. In a study from the same year, he noted that it is inappropriate to raise moral expectations of business. These expectations, according to the author, are "…outside the corporate culture and are even missing in the organizational vocabulary" (Ladd, 1970, p.490). Although Friedman and Lad have substantial reasons for their views from the standpoint of their time, in more recent discussions almost no one disputes the fact that economic responsibility is a topical and important topic, not "delusion", "socialism" or Actions of socialist enterprises" *(Narlev, 2018, p.65; Koleva, 2005, p.450).*

The relevance of the concept in our time is displayed in Table 4.1. As stated there, economic responsibility is a particularly popular topic. According to a content analysis from 2021, for example, in company press release and other documents, the word "responsibility" is found a considerable

number of times, as well as the word "profit". This fact confirms the existing difference in the understanding and content of the concept of "corporate economic responsibility", from the time of the concept to the present day. In recent decades, there has been a significant change in all industries. More and more companies are integrating technologies in order to optimize their work processes. This is often a reason to enhance efficiency but also leads to increased fear on the part of employees. Innovation in economic is one of the oldest industries in the world, which is highly dependent on the emotional connection between guests and hosts. With the advancement of technology and the provision of faster and better service, the focus is shifting from humans to technological innovations. Therefore, more research is beginning to be done on the research.

Nowadays, CSR includes diverse and interrelated issues, both strategic and operational, including: environmental protection, sustainable development, sustainable growth, economic indicators of the organization, sponsorship and donations, quality control, protection of the working environment, health, safety of people, stakeholders, etc. perspectives. As a result, the concept of CSR CO has various interpretations by different people, as it is clear in the table below.

An empirical study conducted in the United states in 2017 arms to define what is meant by the term corporate economic responsibility by "unbiased respondents"- randomly selected citizens *(Mazurkewich, 2016, p.3*). Comparing the results of the last two years, it turnts out that the number of those who cannot give an opinion on the issue is halved. 23% of respondent believe that the responsibility of the company should mean responsibility to the local community, 27%-

responsibility to the employees of a company, 12%- responsibility to the environment, 16%- offering quality products from the organization, 3%- charity and 16% do not have a ready answer.

Another survey within the EU shows that 42% of the surveyed managers of 142 multinational companies determine that taking CSR is of great importance in making strategic and operational business decisions *(Roy., 2016, 40-41*). Another 42% believe that CSR is an important factor, but it is only one of many others that have a role to play in management decisions. Only two percent of respondents found that CSR is an insignificant indicator for the company.

In a study of the Black Sea municipalities in 2021 with a focus group of the residents of Odesa, in answer to the question: "Are you familiar with the concept of corporate economic responsibility and is it important to you?, it was found that, not a small percentage-27% of the respondents admit that they are not aware of what CSR is and how the concept is related to environmental protection. However, 80% of the respondents in the survey believe that CO is of great importance for society and economic development.

In study dedicated to the economic and charitable events of business in Ukrainian, covering 50 organizations, we proved that the main form of manifestation of economic responsibility of companies is giving. According to the results, 60% of the business in our country is engaged in charity in one way or another. Most often, donor companies state that their main reason for making donations is their philanthropic mood and moral choice -65%. In second place in the "Ukraine" motives for donation follows the opportunity to improve the image of the organization in society -335. According to our research, *the*

prevailing opinion in Ukrainian is that donation brings both benefits and problems. The most frequently mentioned problems are that the donor activity leads to an increasein tax audits, or new "applicants", while companies do not report an increase in customers or other benefits from the improved public image. Respondents are of the opinion that our country lacks economic mechanisms to push companies to charity, and "activity bonuses" are mainly related to approval by customers and especially by employees. *(Narleva,2011. p.90).*

In recent decades, the concept of economic responsibility has developed both in theory and in application, both in quantitative and substantive terms. As a result, it is established that profit, both in the past and today, is a basic quality of enterprises. However, modern research and analysis assume that according to a number of circumstances – deterioration of the planet, loss of species and populations, increasing economic inequality, etc. – the achievement of profit should be in harmony with corporate responsibility, environmental and economic utility of organizations. In support of this, a study by T. Gorney proves that the expansion in the field of CO leads to a change in the views of researchers, practitioners, politicians in different parts of the world.

As it is clear from the table above CSR includes different perspective. On business side, to engage the business Burns, 2011). Before pandemic situation, CSR was considered mainly in terms of taking care about climate changes and global warning and looking for sustainability in the business (burns, 2021). The covid situation has made a turn in the way CSR has been approached as businesses start to think more about the ways to provide support to their staff by offering them remote work opportunities *(Burns, 2021).*

The business today is focused on providing value not only for its customers, but also well being of the local community, the shareholders and whole society. The modern concept of "giving back" to the community is no longer interpted in terns of charity actions on behalf of the companies. The concept of CSR nowadays is directed nowadays is directed towards establishing an organizational system in which businesses do their best to live by and thus form a positive brand image *(Leavy, 2016).*

The analysis of the last two definitions shows to whom the CO is due. The answer, following the example of the classical economy, determines the exceptional importance of shareholders. According to the modern concept of stakeholders, however, companies are committed to all parties that are affected by the existence and functioning of the company in one way or another as it is shown on figure 1.9.

The concept of CSR has many applications and can be viewed from various perspectives as it became clear already. It concerns all the stakeholders, the environment, the local community, the staff of the company that decides to apply it. Staff as one of the targer to which CSR is focused is not studied much in terms how it is affected by current CSR initiatives that company undertakes. In this regard the researchers Hassanie, Karandas, & Emeagwali (2021) studiedhow CSR programs affect on healthcare workers in Lebanon. In the study took part 54 of the targeted 133 Healthcare Workers. The focus of the study was the link between how employees perceive CSR and how it impacts on their identification to the company, extra role performing, employee attachment, and employee organization. Results confirmed that a positive link exists between employee perceptions on CSR and their organizational identification and

attachment (Hassanie et al.,2021). To sum up, the study showed that staff working in companies that recognize them through CSR initiatives are prone to and would like to be identified with the organization than those whose organizations do not engage them through CSRs.

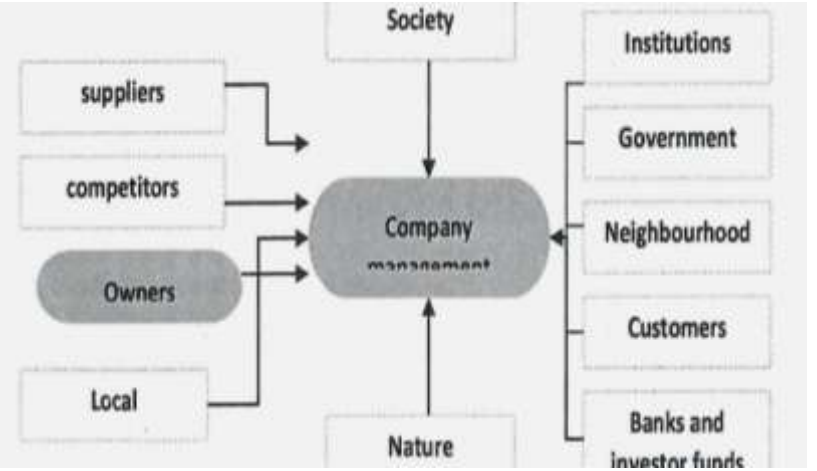


Fig. 1.9 - The stakeholders of the company economic responsibility

The study above showed that identification with companies have a positive affect on employees as identified with the organization are more prone to having a positive relationship with their employers (Hassanie et al., 2021).

A study conducted in 2018 revealed that according to 69% of the surveyed employees, economic responsibility is the optimum way of working in the IT industry. Innovative respondents think that they are more afficient when working from home. Work-life balance is better as there is no longer a need to spend time to completing a task instead of engaging in small talks with colleagues or having frequent coffee breaks.

On the downside, the number of misunderstandings between the supervisor and the employees is higher. Overall, communication with colleagues and managers is distorted and insufficient. In addition, many of the respondents specify a decreased level of performance after starting working from home. The majority admits that, economic responsibility it re

Currently, local banks in the South- East European countries are hardly making the first steps in their activities to impart a sense of their existence as financial agents; namely, to provide services and direction of financial flows, and investment rick management. Therefore the financial environment in the region will continue to be restless, quite unpredictable and conservative at least in the coming few years. This condition will be alleviated, however, by the presence of branches or subsidiaries of Western banks, which import to the region the experience and financial innovation expertise. Although their relative share in the banking sector is still small, it is growing fast and gives rise to the hope that the innovation financial systems of the Balkan countries in transition will be able to take on their share in the servicing and implementation of innovation economic projects.

The innovation economic the overall market economy transition in the South- East European countries was happening under conditions of rather low support from an unconvinced public, and the economic recession in the region was accompanied by problems with the state power. The states in the region failed to impose an institutional framework conducive to productive economic behavior and punitive to opportunism. This is due to the fact that the transition found the Balkan states unprepared to replace central planning with competitive markets. In result, the opponents of ma. They made use of the aggravation of the macroeconomic indicators, continuous impoverishment and the resultant public feelings, in

order to impede the market development and avoid the necessity to abide by market rules of behaviour. As of the present moment, the spring of 1998, none of the Balkan economies in transition can be said to have completed structural reform or to be a market leader and leader of private initiative in economic life.

This problem has two basic dimensions. On the one hand, the monopolistic structures from the time of central planning have been preserved to a significant extent, and on top of that, monopolies held by criminal organisations have joined them. On the other hand, the characteristics of the law enforcement process in the South-East European countries indicate a very low level of compliance with the law and with market rules, which means a lack of control over the business behavior of economic entities and that they may, unpunished, misuse their monopolistic position and behave, as well as predictability in the region.

Such non- compliance with laws and market rules, however, brings firth very serious political consequences, because it creates in some keenly- interested social entities the organized incentive to oppose any attempts to improve law enforcement, which is one of the most essential elements of the structural reform. This interest is usually counteractive to the establishment of market rules, in both corrupting the executive power and the court authorities and by placing the entities own political representatives in legislative power. This development is combined with the instability of the overall political systems of the Balkan states and their lack of experience in conducting democratic elections and the peaceful yielding of power from one political force to another. As a result of the above, and due the lack of lasting democratic traditions in South- Eastern Europe before the beginning of the transition, the civil societies in the region have not elaborated mechanisms for control over

their politicians when they are supposed to keep their pre-election promises. This leads to the possibility that in case of conflict between public and private interest, private interest would prevail, because of their better organization, co-ordination and ability to influence the authorities.

These features of the political systems of the South- East European countries in transition mean that the behavior of governors in the region cannot be confidently predicted, as it is very difficult to decide by which factors it is determined and at what moment. Some of the countries in the region, e.g. Bulgaria and Romania, could be said to be undergoing a certain process of setting up their political developments along a course yielding to analysis, but such conclusion cannot be made for the region as a whole (1, 28-1.1,30).

Who designs economic innovation projects in South-Eastern Europe? Is cooperation on their implementation possible among the Balkan countries? The aim of this books is to present a detailed and up- to- date information on the regional economic innovation projects in South- Eastern Europe, to make a comprehensive analysis on the problems which arise for their implementation, and to formulate recommendations for encouraging cooperation among the countries in the region. The public policy approach used in the book unites technological, economic and political aspects in the analysis of the technical innovation in the fields of energy, transport and telecommunications. What is the macro-economic impact of the innovation development of the region? The book makes an attempt to outline the macro-economic framework of Europe as a region, characterized by the key role of its innovation for international cooperation in the transit of energy resources, trade exchange and communications between Europe and central Asia. By force of various economic and political factors, the countries from this part of the Old

Continent have a less developed innovation. In the context of the processes of global cooperation, Europe emerges as an important communication corridor connecting the East and the West. (1)

The macroeconomic background of Europe is not quite favourable for the implementation of economic projects. In the years since the start of the transition, most of these countries have registered a significant decline in their economic innovation activities. The reduction in their Gross Domestic Product (GDPs), in combination with the not-quite- favourable starting position of the regions countries, resulted in a significant reduction in per-capita income and reduced the possibility for reform- supporting statesmen to come to power and successfully apply their programs. The economic innovation difficulties and the lack of foundation- laying structural economic innovation reforms with long- term goals almost suffocated the investment process, which led to the decapitalisation of production and lower productivity of all factors, particularly of labour factors. This placed additional pressure on earnings.

These unfavourable economic processes caused two serious problems: a high rate of unemployment, though hidden to a certain extent, and high inflation. Unemployment itself is not a surprising event for economies in transition; however, it turns into a serious problem when combined with a lack of economic innovation reforms, delayed privatization of economic enterprises and obligations, and immature political systems. The main symptom indicating the existence of all these problems in European countries is the high rate of inflation. One of the reasons for inflation is the lack of competitive markets, due to the relative weakness and insignificant volume of the private sector. The high inflation rate is also indicative of the existence of soft budget

restrictions and the inability of the politicians who take decisions on economic innovation management to stand firm against demands for higher income and correction indexes, which are not supported by higher productivity. This combination of unemployment and inflation lowered the decision- making horizon of the politicians, and significantly decreased their incentive to conduct long- term structural economic reforms. This led to the chronic fiscal and monetary difficulties of the budgets, and to the creation of conditions for organized economic innovation crime, which made the most of the soft budget restrictions, of the unclear ownership of assets and an additional decrease in political support for structural reform (1-2).

Established in 1981, the U.S. Trade and Development agency is a small, independent federal agency fo economic responsibility which is market-driven, results-oriented, risk-taking, creative, and responsive. TDA works closely with: host- country governments, ministries, agencies, and companies; the U.S. and Foreign Commercial Service of the Commerce Department; the U. S. State Department and Embassies; and international and U.S. financing institutions and investors. TDA also maintains revolving trust funds at international financing institutions such as The World Bank, the International finance Corporation, and the European Bank for Reconstruction and Development. These funds can be used to support projects financed by these institutions, as long as the activities meet TDAs innovation project criteria.

TDA seeks to build mutually beneficial commercial partnerships worldwide. The agency assists in the planning stage of major infrastructure and industrial innovation project in middle-income and developing countries. It encourages the involvement of U.S. companies in planning innovation project that enhance innovation economic development by foreign

entities. Through the funding of feasibility studies, trade missions, specialized training grants, business conferences, and various forms of technical assistance, the Agency encourages American businesses to become involed in infrastructure and innovation industrial projects in emerging markets.

Innovation projects economic responsibility to TDA in various ways. Four major sources include the host-countrys public and private sector organizations, the U.S. Embassy, Department of Commerce,s Foreign and Commercial Service, and companies (engineering companies, innovation project developers, equipment suppliers, and consultants). There are several criteria that must be met in order for a innovation project to be selected for TDA support. First, the proposed innovation project must be a development priority of the host country and have the endorsement of the U.S. Embassy. The innovation project should Second, the innovation project must represent an attractive opportunity for U.S. companies to become involved as investors, partners or suppliers. This causes TDA to focus, with its limited resources, on large infrastructure and industrial innovation projects. Third, the proposed innovation project should be financialy feasible. Financing for the innovation project should be likely and the planned procurement process must be open. Lastly, TDA supports open, fair international competition.

The importance of a transcontinental East-West Transportation Corridor across the South Balkans, connecting the Black Sea to the Adriatic Sea, has long been recognized as an important undertaking for integrating the innovation economies of the Souch Balkan region with the rest Europe, the Middle East, the Caucasus, and Central Asia. Since the breakup of the Soviet Union and the transition of central and East European nations towards market- oriented economies, this corridor has been recognized by the European Union and

others as an effective vehicle for achieving innovation economic integration within the South Balkan East-West Corridor becomes even more significant because of the developing Caspian and Central Asian economies and their resources.

The Conference Declaration emphasized the need for free and fair competition; the development of sustainable mobility while respecting environmental protection; compatibility of institutional, regulatory and administrative frameworks to ensure a coherent transport system across Europe, facilitation of transit at border points; coordination of the planning and financing of European Networks and transport infrastructure to ensure interoperability and interconnection; and geographically-balanced development between central and peripheral regions. The importance of this East-West Corridor has been reiterated and confirmed in subsequent conferences and bilateral meetings, notably and recently, at the Black Sea Conference in Kiev in May 1997, and at the Meetings of the Ministers of Economic for the Development of the Corridor No 8 – Asia Transcontinental Link, held at the Bulgarian Port of Burgas on 1-3 September 1997.

Economic responsibility recognizing the strategic, innovation economic, and social significance of the South Balkan East- West corridor during the recent Balkan conflict and ensuing blockade of Yugoslavia, President Clinton in 1995 announced the South Balkan Development Initiative (SBDI) – which the United States Government began implementing the following year. The initiatives design reflected a desire to alleviate the effects of sanctions against the former Yugoslavia on the three South Balkan countries by developing alternate shipping and commercial transportation routes along their common East-West Corridor.

The SBDI is a four-year, 30 million USD programme designed to assist the Governments of Bulgaria, Macedonia, and Albania develop and integrate their transportation infrastructure along this corridor, which from east to west includes the Bulgarian Black Sea ports of Varna and Burgas, runs though Sofia and into Macedonia, through Skopje and Struga and into Albania, through Tirana and terminating in the Albanian Adriatic sea ports of Durres and Vlore. Funding for the Initiative was provided by the U.S.Department of State under the Support for East European Democracy (SEED) Act.

In addition to upgrading this transportation corridor to increase trade and stimulate economic development, the SBDI encourages a regional approach to transport planning, uses the concrete experience of regional cooperation and economic integration, and seeks to use regional synergies to leverage scarce public and private capital. (1.7).

The transport sector is of special importance for the economy of each country. Usually the transport expenses amount to 12-15% of the gross domestic product (including the added value expenses and the expenses on vehicle and car use).

The transition to market economy requires each country to focus its efforts towards the creation and innovation management of competitive markets with minimum restrictions, while defending the public interest and giving companies the possibility to work efficiently. The task of the South-East European governments is to define transport policy and stimulate the development of a market environment which will allow consumers to make their choices freely and for private investors and companies to make profits at the same time by meeting the growing requirements.

According to the European Commission the investment needs for implementing the united network of European transport corridors are estimated at over 30 thousand millions

ECU. The estimate leads to the conclusion that neither the interested governments nor the European Commission are able to finance the transport infrastructure system without the help of private international capital.

From the very beginning of the continental infrastructure development, the private sector has actively followed the process and declared its interest in participating in it. In reality, however, it faces serious problems. While in the sphere of energy and telecommunications private financing is relatively unproblematic, in the transport sector the difficulties are considerable.

The reason is the specific characteristics of transport infrastructure. There are indirect positive and negative effects which cannot be calculated as income or expenses by the private investors, in so far as they are not connected with direct cash inflows or payments. These are the effects on the environment, the effects from economic growth and facilitation of business, transport provision for the territories, etc. (249-251).

Investments in economice block capital for a long period due to the amortization periods. The research and design phases are also extensive. Procedures for approval are complicated, and the same goes for construction. For all these reasons the realization of a positive cash flow in many cases is possible only in the long run, after the investment process is over and the installations are ready for use.

In the light of the Luxembourg Resolution for expanding the European Union to the East, the European Commission (EC), the European Investment Bank (EIB), the European Bank for Reconstruction and Development (EBRD) and the World Bank (WB) are combining efforts to assist the Central and East European coutries (CEE) in their preparation for accession the EU. For the period 1998-1999 the international

financial institutions will provide financing for the countries applying for EU membership in the amount of 3,5 thousand millions ECU for projects in the field of transport, environment and energy.

The are two main priorities for the South-East European countries which are involved in the PHARE programme.

The first priority of establishing institutions aims at assisting the applicant countries in improving the structures and developing the human resources and management skills necessary for the fulfilment of tasks concerning legislative compliance and practical implementation of the new acts. The aim is to develop a democratic civic society able to meet the Copenhagen criteria. About 30% of the PHARE resources will be spent on these tasks.

This is the program and responsibility in the economy and investments. Investments in economic block capital for a long period due to the amortization periods. The research and design phases are also extensive. Procedures for approval are complicated, and the same goes for construction. For all these reasons the realization of a positive cash flow in many cases is possible only in the long run, after the investment process is over and the economic are ready for use.

In summary, the topic of social responsibility has a long historical heritage in addition to its current presence. The study of historical concepts, as well as the development of more modern concepts of economic responsibility allows us to trace both the genesis and evolution of the idea, to “illuminate” additional topics and perspectives. Innovation economic responsibility as a current management concept provides new opportunities for debate on “open issues” related to todays innovation economic responsible organizations and the “ethical” innovations actions and attitudes of people in the organization. The topic is topical and a number of questions

await answers in the future, such as: is it ethical to use economic responsibility as a strategy and tactics in solving all economic problemsproblems; is there a better alternative in the face of state institutions; whether the economic institutions do not abdicate through the concept in solving economic problems.

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1.3. THE IMPACT OF PAYMENT CARD IMPLEMENTATION ON THE DEVELOPMENT OF CASHLESS TRANSACTIONS AND THE EFFICIENCY OF NATIONAL AND ENTERPRISE-LEVEL ECONOMIC MANAGEMENT

In the context of digital transformation of the economy and globalization of financial markets, the implementation of payment cards has become one of the key instruments for modernizing Ukraine's payment infrastructure. The transition to cashless transactions not only simplifies financial operations for the population and businesses but also ensures the transparency of cash flows, promotes the shadow economy's reduction, and strengthens the country's financial security. [1, 6, 12-16]

For enterprises, the expansion of card payments creates opportunities to reduce operational costs, accelerate financial flows, and improve resource management efficiency. At the macroeconomic level, this supports the stability of the national economy, enhances the tax base, and creates the prerequisites for investment and innovative development of the financial sector.

This issue is particularly relevant in the context of Ukraine's post-war recovery, as the state must ensure the transparency of financial flows, increase confidence in the banking system, and integrate modern financial instruments in line with international standards. Therefore, examining the impact of payment card implementation on the development of cashless transactions and the efficiency of economic management is essential for shaping strategies for economic growth and financial resilience of the state. [3, 4, 6, 10]

In today's world, developments in financial technology and digital infrastructure are driving transformation in

traditional banking services and increasing the role of electronic payment methods. Payment cards have become one of the most widespread and universal instruments of non-cash payments, gradually replacing cash and contributing to more efficient money circulation. Their widespread use is changing the structure of banking services consumption, transforming financial relationships between banks, consumers, and trading companies, and is an integral part of the functioning of payment systems on both the national and global scale. [24, 30, 44]

The study on how payment cards operate is relevant because they are means more than just a way to pay for stuff. They act as a component of the modern financial ecosystem, provide access to various banking products, promote financial inclusion, and contribute to the development of the cashless economy. Furthermore, in the period of increasing digitalisation and dynamic changes in consumer behaviour, payment cards are one of the main drivers of innovation in the banking sector, as well as an indicator of the public confidence level in the financial system. [4, 8, 22, 29]

In Ukraine, active introduction of payment cards and development of relevant infrastructure began in the 2000s and has since shown stable positive dynamics. The National Bank of Ukraine and leading banking institutions are making significant efforts to modernise the payment infrastructure, to introduce the latest technologies, and to ensure reliable and secure transactions. This issue has become particularly relevant in the context of martial law, when the uninterrupted functioning of financial services has become critical for maintaining economic stability and meeting the needs of the population.

Despite positive trends, the domestic payment card market faces many challenges. These include low levels of

financial literacy among the population, distrust of cashless payments in certain social groups, insufficient coverage by the acquiring infrastructure in remote regions, and cybersecurity threats. These factors necessitate the in-depth analysis of theoretical and practical aspects of payment card operations, their classification, the structure of payment systems, and formation of strategic directions to improve banking operations.

The theoretical value of the study lies in systematisation of scientific approaches to understanding the essence of a payment card as an economic, legal and technological phenomenon. In scientific literature, the term “payment card” is considered from various perspectives as a means of identification, a financial instrument, an information carrier, or an element of a payment system. At the same time, there is a common recognition of its role in implementation of non-cash payments and optimisation of cash flows. [14, 15, 22]

It is also important to consider the bilateral nature of the payment card market, which simultaneously serves consumers (cardholders) and commercial and service enterprises (card acceptors), forming a complex system of interactions.

From the practical point of view, the study focuses on examining the structure of payment systems, which include issuing banks, acquirers, processing centres, interbank settlement systems, as well as technical and information infrastructure. Particular attention is paid to settlement mechanisms, classification of payment systems according to the hierarchical structure, transaction types, service providers, and the degree of state regulation. The study also analyses trends in development of contactless technologies, Internet and mobile banking, and the impact of global trends on the domestic banking system.

The purpose of this work is to conduct the comprehensive analysis of theoretical foundations of payment card operations, determine their classification and the structure of the main elements of payment systems, and to assess current trends and prospects to improve banking operations using payment cards in Ukraine. The scientific novelty lies in the comprehensive approach to the analysis of payment cards as a multifunctional financial instrument that simultaneously serves as a means of payment, an element of the payment system, and a component of the banking strategy in the digitalisation environment. Practical recommendations provided can be used by banking institutions to optimise payment card operations, to increase consumer confidence, and to improve service quality.

The topic of the payment card functioning is extremely relevant in both scientific and practical contexts. Given global trends, technological challenges, and socio-economic changes, the analysis of theoretical foundations, classification, structure of payment systems, and prospects for development of banking operations is of particular importance to ensure stable and competitive domestic financial sector.

There is no single approach to define the concept of a "payment card" in domestic economic literature. Instead, various terms are used, like "plastic card market", "payment card market", "card market", "card payment market", "bank payment card market", "card product market", "card payment market", and "card payment instrument market".

This concept is also used by the National Bank of Ukraine, which publishes market development statistics on its official website. However, these authors use these terms only in their research, without providing a clear definition of their meaning. In addition, there is an ongoing linguistic debate regarding the use of the term "karta" or "kartka". In most

domestic Ukrainian-language sources, the term “kartka” (card) is predominantly used.

Since our study focuses on economic aspects of the issue, we will not consider linguistic debates and will continue to use the term “card”. So let's try to understand the essence of these concepts. In our opinion, the term “plastic card market” does not reflect the essence of the payment process, since plastic cards can be used as discount cards, access cards, control cards, etc.

The use of the term “card product market” is incorrect, since card products are a type of card with specific technological characteristics (e.g., virtual card, interest card, or card with an original name, such as “VAU”). The term “card payment market” is also somewhat limited, as it covers only a specific segment of the payment services market.

The term “card payment instrument market” emphasises the fact that cards are payment instruments rather than their specific characteristics, and can be used to refer to a separate segment of the “payment instrument market” that covers payment documents and electronic payment instruments. Therefore, in our opinion, the most correct term to use is “payment card market”.

Some scholars (V.I. Kharchenko, R.O. Kapralov [47], R.O. Hartinger [9], A.O. Stepanyk [44]) use the term “bank card market” and actually equate it with the “payment card market”.

Bublyk E.O. emphasises that this is a financial document issued by a commercial bank (or other financial institution) for non-cash payments for purchased goods and services in the form of a plastic magnetic card [2].

In his research, Z.M. Vasylchenko analyzes plastic cards as documents that serve as instruments enabling cashless purchases through electronic payment terminals. According to Vasylchenko, these cards play a crucial role in modern payment systems by

facilitating electronic transactions that eliminate the need for physical cash, thereby increasing convenience and efficiency for consumers and merchants alike [5].

Complementing this view, Mochernyi S.V. provides a detailed description of plastic cards as documents stored on an electronic medium, specifically in the form of a plastic card issued by credit organizations. Mochernyi emphasizes that such cards allow the cardholder to obtain goods and services without the use of cash, including the possibility of withdrawing cash through banking institutions. Furthermore, these cards serve as a verification tool for suppliers of goods and services, confirming that payments are made directly from the cardholder's bank accounts. This confirmation function helps to enhance trust and security in commercial transactions, reducing risks associated with cash handling and improving the efficiency of payment processes [31].

Together, these scholarly perspectives highlight the dual nature of plastic cards as both a technological and financial instrument. They not only act as a means of payment but also provide an electronic guarantee of funds, underpinning the modern cashless economy. The analysis underlines the importance of plastic cards in facilitating secure, convenient, and efficient financial transactions in contemporary banking and retail environments.

Hartinger R.O. notes that only banks are permitted by law to issue payment cards in the country. He believes that the payment card market should be viewed broadly as a set of economic relationships where demand and supply for payment services, including buying and selling processes, take the form of money transfers or transactions.

In general, we support the author's approach, but, given global practice, payment cards can also be issued by non-bank institutions. For example, there are "travel and entertainment cards" (T&E) issued by the companies, including American Express and Diners Club. Therefore, in our opinion, the term "bank card market" is central to this market.

Cards issued by the non-bank financial company American Express (AmEx) are also available in Ukraine, but for the reasons mentioned above, they are issued by banks for transactions with this company.

Currently, the only bank that purchases these cards in Ukraine is “Ukrgasbank” AB. Diner's Club cards have not gained popularity in Ukraine.

The analysis of definitions of the essence of a payment card by various authors allows us to consider this concept in the following categories: plastic card, instrument, and document. However, despite the variety of definitions of the term “payment card”, some of them do not differ significantly from each other [9, p. 79].

Therefore, a payment card is a means of identification that allows the holder to carry out transactions with their account. The main function of a payment card is to identify the person using it as a participant in the payment system.

A payment card is a standard-sized plastic card made of a special, stain-resistant material. The card features the logos of the issuing bank and the payment system that services it, as well as the cardholder's name, card number, and expiry date. Additionally, a photo of the owner and his signature can be placed on the card.

Like any other market, the payment card market has its own specific characteristics. According to S.S. Berdysheva, its main feature is its bilateral nature. There are two distinct groups of payment service consumers in this market: cardholders and commercial and service companies that accept these cards for payment. She argues that this is a characteristic feature of the two-party market, where both groups of users interact and create network effects. In other words, these two groups not only influence each other but also shape the development of the market as a whole.

Payment cards are one of the most popular payment methods in the world. Their development since the nineteenth century has been driven by several objective evolutionary factors:

1) it is much more convenient to carry a card than large amounts of cash.

2) development of the banking system contributed to the spread of non-cash payments;

3) European and North American countries interested in controlling financial transactions supported the development of card payment systems.

In recent years, there has been a significant shift in the payment card market in Ukraine. In 1994-1995, a small group of banks began to actively study card technologies, introduce simple card designs, and issue the first cards of international payment systems.

The breakthrough came in early 1996, when a group of Ukrainian banks received the status of the "major participant" in the VISA International payment system. The main economic prerequisites for the introduction of cards in Ukraine were as follows (Fig. 1.10).

At the same time, the largest Ukrainian banks began issuing local payment cards for intra-bank (single-issuer) payment systems [10]. By examining the evolution of bank cards, we can see how the attitude of banks towards card programmes have changed as this segment of the financial industry has developed. Initially, payment cards were used to confirm the solvency of buyers at retail outlets. Over time, they have become an effective instrument to attract new customers to banks. At the next stage of the card product development, credit mechanisms were introduced, leading to the emergence of intermediary organisations that facilitated settlements.

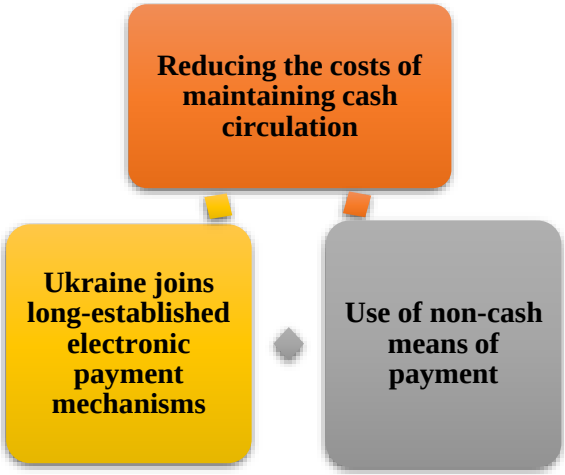


Fig. 1.10 - Main economic prerequisites for the introduction of cards in Ukraine [10]

With the development of card systems, several types of payment cards have appeared, which differ in purpose, functions, and technical characteristics. These include credit cards, overdraft cards, debit cards, and electronic wallet cards.

The first type of cards provide for the opening of a credit line at a bank, allowing the holder to use the credit when purchasing goods or obtaining cash loans. The second type of cards is designed for withdrawing cash from ATMs or for purchases via electronic terminals, with funds being debited from the cardholder's bank account. The third type of cards is designed for using cash, which is deposited onto the card itself when paying for goods or services.

Instead of signing the bill, the cardholder enters a secret combination of numbers on the keypad, which, if entered correctly, confirms the withdrawal of funds from his bank account [25]. Now let's take a closer look at the types of cards (Fig. 1.11).

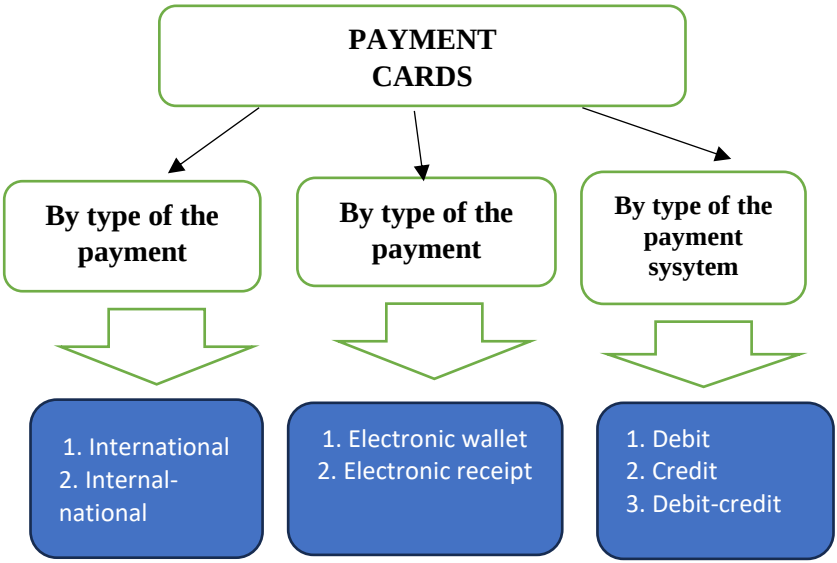


Fig. 1.11 - Classification of payment cards [12]

Depending on the conditions under which payment transactions are carried out using a payment card, debit, credit, and combined settlement schemes may be applied.

The debit scheme means that the user makes payments using the card within the balance limits available on their account. The debit card is quite convenient and easy to use: it can be quickly issued, there are practically no restrictions on withdrawing cash from your current account, and you can also deposit cash into your account. The credit scheme allows users to make payments using a card with funds provided by the bank in the form of the loan or the credit line [12].

It is a universal payment instrument that allows the cardholder making payments for goods and services, as well as receiving funds issued by the bank [33].

Hartinger R.O. identifies five main characteristics of the payment card market [9, pp. 80-81]:

1. *Integrity*. The payment card market is not a random set of elements. It includes only those components that meet certain requirements and criteria. In particular, a distinctive feature of the use of financial resources in the bank payment card market is that, first, they operate exclusively in the non-cash form, and second, they circulate only within the limits and in accordance with the rules of the specific bank payment system.

2. *Versatility.* The existence of various mutually liquid payment instruments (i.e., those that allow relatively free conversion between each other) is represented in the form of different types of payment cards. Payment cards are a universal instrument for making payments without any advantages or restrictions for each type.

3. *Stability*. This manifests itself in resilience to political and economic upheavals, as well as in the terms of certain payment instruments. Unlike cash, transactions with payment cards (receipt, transfer, export, etc.) are not regulated by law, so any changes do not affect the financial situation of the cardholder. This is confirmed by the fact that in the event of temporary financial difficulties at individual banks, customers can withdraw cash from ATMs of other institutions (if these transactions are not blocked).

However, speaking about domestic practice, it should be noted that the National Bank of Ukraine usually imposes restrictions on cash withdrawals in the event of liquidity problems. Similar restrictions may also apply to issuing banks, which makes this market characteristic somewhat controversial.

4. *Interconnection of the payment system security (as a whole).* Payment systems have established basic requirements

for payment card transactions, ensuring necessary security level. Secure transactions using payment cards is a universal concept for all payment systems. In other words, low security levels for payment system of the cards can undermine confidence not only in that system, but also in the payment card market as a whole.

5. *Operational efficiency.* This feature of the bank card market best illustrates its role in the socio-economic development of the state. Its effectiveness is determined by the speed and cost-effectiveness of payment transactions carried out by economic entities using payment cards. The more the market develops, the higher quality services the card users can receive, which contributes to the overall well-being of the country, and the money is used for the benefit of all market participants.

Some payment systems can only issue certain types of cards. For example, American Express and Diners Club only offer credit cards, while lesser-known systems (especially those that operate in only one country) usually do not risk issuing credit cards and limit themselves to debit cards. Global leaders, including VISA and MasterCard/Europay issue and service both credit and debit cards.

When using a debit-credit scheme, it is important to have the payment card with you, as well as the card stored at the bank branch.

There are three payment systems operating in Ukraine that provide plastic cards and ATMs [21]:

1. The international payment system VISA International Service Association (USA) with processing centres in the USA, Europe, and other regions.[32].

2. International payment system MasterCard International (USA) + Europay International (EU) with processing centres in the USA and Europe.

3. National NSMEP payment system (Ukraine) with a processing centre in Ukraine.

National NSMEP payment system (Ukraine) with a processing centre in Ukraine. The National Bank has also introduced the All-Ukrainian TOPAS system - an authorisation and transaction centre for VISA International, MasterCard, and Cirrus/Maestro cards.

All types of VISA cards are convenient to use, meet necessary security requirements and provide individuals with access to various additional services, which helps corporate clients improving the efficiency of financial management of their companies.

Therefore, a payment card is a payment instrument in the form of a plastic card issued by a banking institution. It allows you to make cashless payments for goods and services, transfer funds from bank accounts, make deposits and withdraw cash from ATMs. Therefore, it is reasonable to consider payment cards as one of the most modern instruments to improve banking services.

Both international and domestic payment systems operate in Ukraine. Domestic payment systems, in turn, can be either banking or non-banking ones [8].

In most countries, the payment system consists of several independent systems, each of which meets the requirements of the specific payment system. These systems are classified according to various characteristics and parameters.

Interbank settlement systems are designed to execute payments between banking institutions arising from their customers' transactions or the fulfilment of obligations of one banking institution to another. The necessary step in this process is the transfer of the document between the payer's bank and the recipient's bank via electronic interbank settlement systems.

Depending on the nature of the relationship between participants in the payment process, there are three main methods of money transfer, namely:

1) Accounts with the intermediary bank acting as a settlement agent.

2) Specialised settlement networks and institutions.

3) Bilateral correspondent relations.

Intrabank payment systems are created to ensure optimal conditions for payment transactions between institutions within the same group. They consist of a set of rules, software and technical solutions, organisational measures and security measures that the bank uses to execute money transfers within the institution. In addition, these payment systems are used to interact with other payment systems, enabling interbank transfers between bank branches.

At the same time, settlements are made through a system of correspondent accounts at the central institution, which performs functions of the bank, as well as between banks of the corresponding structure. The internal bank payment system operates in accordance with the bank's internal documents [7].

Client-banking systems are used by banking institutions to provide payment services to customers based on modern technologies. Today, home banking services (Home Bank) are becoming increasingly popular. This type of banking service includes providing customers with financial information, as well as the ability to perform various banking operations on their own initiative and receive relevant information.

The purpose of the mass payment system is to make money transfers for transactions carried out by legal entities and individuals using payment instruments. Payments by individuals for goods and services can be made both in cash and using non-cash payment instruments.

Centralised and decentralised systems are distinguished by hierarchy or degree of subordination. Centralised systems are characterised by the fact that each group of lower-level participants interacts with a higher-level participant who reports to a single centre. Decentralised systems, in turn, allow individual relationships to be formed between participants without dependence on others. An example of the centralised system is the settlement system of the National Bank of Ukraine.

Decentralised systems include interbank clearing systems, interbank settlement systems that use direct correspondent relationships between credit institutions, and other interbank settlement systems [11, p. 138].

According to the admission criteria, it is possible to distinguish between systems with identical requirements and access for all participants, and payment systems with established restrictions (e.g., based on equity capital or the total amount of payments made by a specific participant).

For example, in the accounting centres of the NBU, accounts are opened on equal terms for all credit organisations. Only large and stable credit institutions may participate in non-state clearing centres.

Based on the criterion of reserving funds, a distinction is made between payment transactions that are perfoemed only after participants have deposited funds into relevant accounts in advance, and transactions that are executed without prior deposit.

In the NBU settlement system, transactions are conducted exclusively using funds held in the correspondent account of the credit institution. In turn, interbank settlement systems based on clearing are characterised by the possibility of having a zero balance at the start of operations.

Based on the receiving the final payment, there are gross settlement systems (gross) and net settlement systems (net). Payment systems in which interbank payments are settled by sequential transactions for each individual transaction, which are added up one after another, are called gross settlement systems. These include direct settlements between credit institutions and settlements between NBU institutions [11, p. 138].

The following systems are distinguished by the amounts and timing of payments:

1) systems in which payments are made on equal terms, regardless of the amount and maturity date;

2) systems for transferring both small and large amounts of money, as well as for urgent payments.

Based on the criterion of credit availability, there are systems that automatically suspend settlement operations in the event of the temporary shortage of funds in participants' accounts, and systems that allow participants to obtain credit in the event of a short-term shortage of funds (usually in the form of an overdraft).

The terms and conditions for granting potential loans for settlements are set out in corresponding agreements between participants in the payment system. Based on the payment mechanism, payment systems are divided into those that use a batch method and those that use an interactive method.

Using the batch processing method, several transfer orders are sent and processed simultaneously, and only the final result of several transactions is reflected in customer accounts at the end of the period. With interactive processing, access to the customer's account is provided each time a payment is made, simultaneously with the bank transfer. In this case, information on the payment transaction is transmitted continuously, and interactive systems operate in real time.

A team of scientists consisting of O.D. Vovchak, H.E. Shparhalo, and T.Ya. Andreikiv have identified the following key elements in the Ukrainian payment system:

1. object of calculations (purpose of payment);
2. principles of organising cashless payments;
3. place of settlement (domestic and international settlements);
4. parties to settlement relations;
5. payment time (early, urgent, deferred payment);
6. form of settlement established by law;
7. money transfer communication systems;
8. presence of intermediaries in settlements;
9. availability of payment guarantee;
10. payment priority;
11. regulatory framework;
12. risks in calculations;
13. amount of payments;
14. technological infrastructure, which includes telecommunications equipment, data processing equipment, operational organisation, etc.;
15. information protection, which includes regulatory, software, technical, administrative, and organisational measures;
16. accountancy and technological model that includes mechanisms for transferring funds, payment instruments, and principles of accountancy and reporting [8, p. 45].

The analysis of specialised works [8, 13, etc.] allows us to conclude that the following elements are necessary for effective and full-fledged functioning of payment systems:

1. accounting and technological model, which is the main mechanism for transactions when making payments. It is based on the principles of accounting and reporting and includes payment instruments and money transfer mechanisms.

2. regulatory framework governing payment relations is designed to create favourable conditions for effective functioning of the payment system;

3. information protection, which covers a range of software, hardware, administrative, organisational, and regulatory measures;

4. technological infrastructure, which is the basis for the viability of the payment system, including software and technical means for processing and transmitting data, as well as service personnel.

According to the definition of the payment system, its main functional elements are as follows: participants in the payment system, relations between them, and the payment organisation.

The payment organisation is a legal entity that sets the rules for how the payment system works, does other stuff related to keeping it going, and is responsible under the law and the contract [7].

A participant in the payment system is a legal entity that provides users with this set of services related to the transfer of funds using the system, based on an agreement with the payment organisation. In accordance with current legislation, this person has the right to provide these services [7]. The following main groups of participants in the payment system are distinguished (Fig. 1.12).

Users of payment services that are not banks and act as payment recipients include:

1. companies that provide services and manufacture goods;

2. private individuals;

3. public institutions;

4. specialised financial companies operating in capital, money, or commodity markets (brokers and dealers).

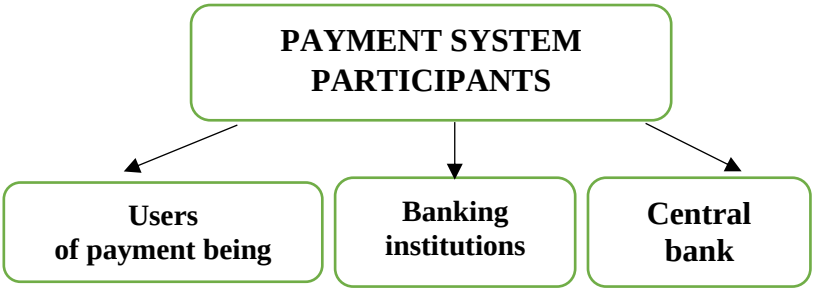


Fig. 1.12 - Participants in payment systems [12]

Depending on the role of the payment in the process, banking institutions are divided into:

1. payer's bank;
2. recipient's bank;
3. issuing bank;
4. acquiring bank.

The payer's bank receives instructions from its customer to execute a payment (credit or debit). It is obliged to verify the client's authority, correctness of accounting records, and to perform transactions on the client's account.

The transfer of obligations and accounts receivable may be carried out either by physical transfer of payment orders or by means of electronic telecommunications systems. In any case, measures must be taken to prevent unauthorised data modification. The bank that organises this payment system has to set up an archive system for recording all transactions related to checking money transfers to accounts [8].

The recipient's bank is obliged to execute the transaction on the recipient's accounts. It can take on the responsibility of informing the customer about the status of the payment by telephone, letter or regular bank statement. The role of the beneficiary bank may be performed by the branch of the

banking institution where the beneficiary has an account, as well as any other branch of that bank or the central institution.

An issuing bank is a bank that participates in the payment system and issues electronic payment instruments [7].

The main functions of the issuing bank include:

1. issuing a payment card and transferring it to the client;
2. creditworthiness analysis if the payment card belongs to a credit class;
3. authorisation (the process of obtaining permission to perform transactions with a card);
4. exchange of information and receipt of commissions;
5. billing (preparing and sending account statements indicating the due date and amount to the cardholder);
6. working with customers (reviewing complaints, answering questions);
7. accounting for transactions made on card accounts;
8. ensuring the necessary security and combating fraud (blocking accounts, reporting on counterfeit and stolen cards);
9. marketing;
10. monitoring (tracking transactions carried out using special payment instruments).

An acquiring bank is an authorised banking institution that is a member of the payment system and performs initial transaction processing, taking on all payment card operations for merchants in its area of activity. The main functions include:

1. transferring funds to the settlement accounts of sellers of goods and services, accepting, sorting, and sending receipts, as well as distributing stop lists;
2. accounting of settlements with enterprises;
3. analysis of traders' creditworthiness;
4. monitoring;
5. checking sellers for fraud;

6. analysis of traders' applications for joining the billing system;

7. marketing and support for merchants when purchasing equipment for payment cards [14].

Central banks play a key role in interbank settlements by intermediating money transfers between banking institutions that use credit resources to transfer funds from one account to another. The mechanisms used to transfer funds between business entities in the course of fulfilling payment obligations also include specialized institutions that provide payment services.

They include:

1. clearing centers;
2. settlement agents;
3. settlement banks.

A clearing house is a legal entity that establishes clearing requirements as a result of the clearing procedure and provides information services [7].

The main task of a settlement agent is to execute interbank transfers through the correspondent accounts of banking institutions involved in settlements. To ensure settlements, agents also have the right to form an insurance fund at the expense of participating banks in accordance with the terms of the agreements and national regulations [8].

The central bank plays a comprehensive and key role in the functioning of the payment system, performing five main functions, which are presented in Table 1.10.

First, the central bank acts as a participant in the payment system, making payments on behalf of its clients, which may include government agencies or other central banks.

Second, it is an active user of the payment system, conducting its own payment transactions, including money market operations aimed at implementing monetary policy,

transactions with government securities, short-term and long-term lending, official foreign exchange market transactions, as well as its own payments such as payroll and bill settlements.

Table 1.10 - The place of the central bank in the payment system

Functions of the central bank in the payment system
1) A participant of the payment system that makes payments on behalf of its clients (e.g., government agencies or other central banks);
2) A user of the payment systemt hat performs its own payment transactions, including money market transactions to implement monetary policy, transactions with government securities, short-term and long-term lending, official foreign exchange market transactions, as well as its own payments (salaries, bills), etc;
3) A provider of the payment service that can make payments through correspondent accounts of commercial banks and can provide (independently or in cooperation with commercial banks or other organizations) communication networks, equipment, software, and maintenance for payment systems;
4) is a "public interest advocate" that regulates, supervises, administers, and arbitrates payment systems, plans their further development, promotes fair competition, and participates in the development and approval of technical standards;
5) A guarantor of the final settlement, in which the central bank's funds can be used to fulfill payment obligations of commercial banks. However, this function should be used with caution to avoid possible abuse.

Source: [12]

Third, the central bank serves as a provider of payment services by making payments through correspondent accounts of commercial banks and by ensuring (either independently or in cooperation with commercial banks or other organizations) the operation of communication networks, technical equipment, software, and maintenance for payment systems.

The fourth function of the central bank is that of a "public interest advocate," which involves regulating, supervising, administering, and arbitrating payment systems,

planning their further development, promoting fair competition, and participating in the development and approval of technical standards. Finally, the fifth function is to act as a guarantor of the final settlement, whereby the central bank's funds can be used to fulfill the payment obligations of commercial banks. However, this function requires cautious application to prevent potential abuse.

Thus, the central bank acts not only as a participant in the payment system but also as its regulator, technical operator, and reliability guarantor, ensuring the stability and efficiency of the entire payment infrastructure of the country.

A settlement bank is a banking institution authorized by the payment organization of the relevant payment system that opens accounts for system participants and directly participates in settlements between them [7].

Relations between participants and organizations within the payment system are inherently intermediary in nature. These entities act as specialized agents responsible for executing various payment operations on behalf of individuals and businesses. Their functions include processing payment transactions, replenishing accounts, facilitating transfers between different accounts, and ensuring the smooth flow of funds within the financial ecosystem. By serving as intermediaries, they help to bridge the gap between payers and recipients, providing reliability, security, and efficiency to the payment process.

Another fundamental component of the payment system is the payment instrument. A payment instrument can be defined as a formal payment document that contains a clear directive or order from the payer to a banking institution, instructing it to transfer a specified sum of money from the payer's account to the account of the intended recipient. This

document forms the legal and operational basis for initiating and completing payment transactions [7].

In this context, D.O. Hetmantsev provides a comprehensive definition of payment instruments, describing them as means or tools of a specific form, which may exist on paper, electronic, or other data carriers. The use of these instruments triggers the transfer of funds from the payer's account, thereby enabling cashless settlements. These payment instruments can take various forms, including checks, payment orders, electronic cards, or digital payment tokens, each adapted to different transaction environments and technologies [13].

Together, these definitions and explanations underscore the critical role of payment instruments and intermediaries within the broader payment system. They facilitate the secure and efficient transfer of funds, underpinning modern financial transactions and contributing to the overall stability and development of the economy. The intermediary nature of participants ensures trust and reduces transaction risks, while diverse payment instruments provide flexibility and convenience for both payers and recipients.

Thus, payment systems can be classified according to various criteria, such as the types of transactions, the form of payment, and the participants in the process. The main elements of payment systems are as follows: settlement accounts, payment instruments, technological infrastructure, and system rules. The main participants of payment systems include issuing banks, processing centers, merchants, users (individuals or legal entities), and regulatory authorities that provide supervision and control. This interaction system allows for fast, secure, and convenient payments, ensuring the stability and efficiency of financial transactions.

Conclusion. The study of the impact of payment card implementation on the development of cashless transactions and the efficiency of managing the national economy and enterprise-level operations demonstrates that this process is strategically important for Ukraine's financial stability and economic growth. The widespread use of payment card instruments has become one of the key drivers of digital transformation in the financial sector, forming a modern payment infrastructure that meets international standards and enhances the country's financial security.

The introduction of payment cards promotes the development of a cashless economy, reduces reliance on cash transactions, and lowers the level of shadow financial operations. This creates the conditions for strengthening tax discipline, increasing budget revenues, and improving the transparency of economic processes. For the state, such transformation enables greater control over financial flows, reduces risks related to corruption schemes and the financing of illegal activities, and enhances economic security in the face of global challenges and domestic threats.

For enterprises, card technologies streamline financial operations, reduce cash-handling costs, and accelerate capital turnover. The automation and digitalization of payments positively affect the efficiency of financial resource management, increase business competitiveness, and facilitate integration into the modern financial environment. Furthermore, the implementation of innovative payment instruments supports the development of new financial services, expands opportunities for e-commerce, and stimulates investments in financial infrastructure.

This process is particularly relevant in the post-war period, as Ukraine must not only restore its economy but also create the conditions for sustainable development and

integration into global financial markets. Given the need to strengthen the tax base and rebuild trust in the banking system, the growth of cashless transactions based on payment card usage serves as one of the key tools for economic stabilization and modernization of financial infrastructure.

Therefore, the implementation of payment cards should be viewed not only as a technological innovation in the financial sector but also as a critical component of the state's economic policy aimed at ensuring financial transparency, increasing economic security, and fostering investment and innovative development. In the future, the further expansion of cashless transaction networks, the introduction of advanced technologies such as mobile and biometric payments, and the promotion of financial literacy among the population will contribute to strengthening the country's financial system, improving the efficiency of managing the national economy and enterprise-level operations.

In view of the above, the development of payment card infrastructure and the promotion of cashless transactions should be considered priority areas of Ukraine's economic policy. Their implementation will create the foundations for a more resilient, competitive, and innovative economy that aligns with current global trends and ensures sustainable socio-economic development of the state.

In 2025, the introduction and widespread use of payment cards firmly established itself as one of the key drivers of Ukraine's transition to a predominantly cashless economy: the share of cashless card transactions remained very high, indicating a stable shift in consumer behavior toward electronic payments. Quantitatively, this was reflected in continued growth in the number of cards and transactions the total number of issued cards kept increasing (137.4 million as of early 2025), while the number of active cards and the volume

of cashless transactions showed notable growth dynamics in the first quarter of 2025.

The expansion of the acceptance network (POS terminals, online payments) and greater accessibility of card instruments contributed to increased transparency of cash flows, reduced the share of shadow transactions, and improved tax administration, thereby strengthening macroeconomic management.

At the enterprise level, cards and electronic payment services improved the speed of settlements, reduced cash handling and collection costs, and expanded opportunities for automating accounting and cashier operations, thus enhancing the efficiency of business financial management. At the same time, 2025 also revealed systemic risks: heavy dependence on international payment schemes and digital infrastructure increases vulnerability to external risks (geopolitical factors, cyber threats, communication disruptions), making the issue of reserve payment infrastructure and strategic autonomy a priority for both regulators and businesses.

Regulatory policy and banking initiatives in 2025 were aimed at balancing innovation development (mobile wallets, contactless payments, online ecosystems) with improving the resilience and cybersecurity of payment infrastructure, which is a necessary condition for long-term strengthening of management efficiency at all levels.

Thus, the impact of payment card implementation in 2025 was generally positive: card infrastructure stimulated accelerated digitalization of the economy, improved transparency and efficiency at the national and enterprise levels, but the ultimate benefits will depend on the ability of the state and businesses to minimize the operational and strategic risks of electronic payments.

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SECTION 2. TRANSFORMATION OF CHALLENGES AND THREATS TO THE ECONOMIC SECURITY OF THE STATE

2.1. IMPACT OF MARTIAL LAW ON PUBLIC FINANCES AND CONTROL PROCESSES

In the context of the multifaceted socio-economic and political challenges facing Ukraine in the period of transformation, the role of state financial control is growing as one of the key mechanisms for ensuring the stability and transparency of the public finance system. Increased external pressure on the budget system, limited financial resources, and the need to implement large-scale reforms require the state to introduce effective tools to control the use of budget funds and other aspects of the financial activities of public authorities.

Public financial control plays a crucial role in ensuring that public funds are spent in a targeted and efficient manner, in preventing and detecting financial irregularities, in preventing the misuse or inefficient use of funds, and in reducing the risk of corruption in public administration. In this context, financial control is seen not only as a technical function of audit reports, but also as a strategic management tool that contributes to the integrity and public accountability of public authorities.[1].

At the same time, in the process of reforming the public administration system, the modernisation of the organisational, legal and procedural framework for financial control is of particular importance. Despite the existence of the current

[1] Давиденко Н.М., Ключка О.В., Ключка С.С. Державний фінансовий контроль у системі економічної безпеки держави. Державний фінансовий контроль у системі забезпечення економічної безпеки держави: монографія. К.: 2019. 202 с.

legislative framework that formally regulates the powers of control bodies, the system of state financial control in Ukraine is characterised by a number of significant shortcomings. In particular, there is a fragmentation and duplication of control functions between different bodies, a lack of a coordinated approach to planning and implementing control measures, which leads to an overload of control subjects and a loss of integrity in assessing results.

Of particular concern is the insufficient implementation of a risk-based approach to the organisation of control activities. Ignoring the principles of prioritising control over the most vulnerable areas of budgetary expenditure significantly reduces the effectiveness of the audit and the impact of control measures on ensuring financial discipline. In addition, the absence of an adequate mechanism for monitoring the implementation of recommendations based on the results of control activities limits the possibility of implementing systemic changes and correcting identified shortcomings.

Improving the effectiveness of state financial control in Ukraine therefore requires a comprehensive approach, including improving the regulatory framework, digitalising control processes, developing analytical tools based on big data, and strengthening the institutional capacity of control bodies. In the long term, this will help to create a modern system of state financial control capable of responding promptly to risks, increasing confidence in management decisions and promoting the efficient use of budgetary resources in the public interest.

Control is an important part of a democratic state and a key element in the management decision-making process. It makes it possible to identify shortcomings in the work of budgetary institutions, organisations and enterprises and to determine the causes of these shortcomings. Effective control

improves discipline in governing bodies, which makes it possible to objectively assess the level of efficiency and responsibility of employees. In a market economy in Ukraine, state financial control over the formation and use of budgetary resources is of particular importance [2].

In accordance with the Resolution of the Cabinet of Ministers of Ukraine dated 07.05.2022 No. 561 "Some issues of state financial control under martial law"[3], Article 121 of the Law of Ukraine "On the Legal Regime of Martial Law"[4], Articles 2 and 5 of the Law of Ukraine "On the Basic Principles of State Financial Control in Ukraine"[5], as well as the Decree of the President of Ukraine of February 24, 2022, No. 64 "On the introduction of martial law in Ukraine"[6], the government has implemented measures to ensure proper control over the use of state resources during martial law.

In particular, the law stipulates that the State Audit Office and its territorial subdivisions shall exercise their powers during martial law and within one month of its termination or revocation, taking into account the following features[7]:

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[2] Скрипник Г.О., Черненко В.В. Державний фінансовий контроль України в умовах воєнного стану. Економіка та суспільство. 2024. № 70. URL: https://economyandsociety.in.ua/index.php/journal/article/view/5397

[3] Кабінет Міністрів України. Постанова від 07.05.2022р №561 "Деякі питання здійснення державного фінансового контролю в умовах воєнного стану". *Офіційний вебпортал парламенту України*. URL: https://zakon.rada.gov.ua/laws/show/561-2022-п#Text

[4] Закон України "Про правовий режим воєнного стану". *Офіційний вебпортал парламенту України*. URL: https://zakon.rada.gov.ua/laws/show/389-19#n255

[5] Закон України "Про основні засади здійснення державного фінансового контролю в Україні". *Офіційний вебпортал парламенту України*. URL: https://zakon.rada.gov.ua/laws/show/2939-12#Text

[6] Указ президента україни №64/2022. *«Про введення воєнного стану в Україні»*. URL: https://www.president.gov.ua/documents/642022-41397

[7] Звіти. *Рахункова палата*. URL: https://rp.gov.ua/FinControl/FinReports/

- control methods of the state financial audit are adapted to the conditions of wartime;

- the procedure for conducting control measures (inspections, audits, procurement control) is regulated, except for cases when they are impossible due to martial law;

- during the audit, it is allowed to use both paper and electronic means for working with documents, making comparisons, collecting information and processing documents.

Table 2.1 shows the main quantitative indicators of the functioning of the State Audit Service of Ukraine for the period of 2021-2023.

The data presented make it possible to analyse the scope of audits, public procurement controls and objects of control covered, as well as the violations detected in the use of public funds. In addition, the table illustrates the results of financial violations, the amount of funds recovered, the number of cases referred to law enforcement agencies, the number of criminal cases initiated, administrative decisions, fines imposed, and the number of officials brought to justice. These data make it possible to trace the dynamics of changes in the area of state financial control and the effectiveness of control measures over a three-year period.

An analysis of the above data shows a certain decrease in the total number of control actions over the period. This is probably due to the transition to a more risk-based audit model, which involves concentrating efforts on items with the highest potential for financial irregularity. On the other hand, there has been an increase in the number of cases of illegal expenditure, breaches of financial and budgetary discipline and resource shortages, which point to deeper systemic problems in the management of public finances.

Table 2.1 - Performance results of the State Audit Service of Ukraine in 2021-2023

Indicators	2021	2022	2023	Deviation of 2023 to 2021 (+,-)
Number of revisions	1000	446	713	-287
Number of procurement inspections	528	587	395	-133
Number of inspected objects	1500	912	1000	-500
Total amount of detected financial violations, UAH billion.	15	100	211	-196
Amount of illegal expenses and shortages, UAH billion.	9	39	77	68
Amount of financial resources shortfall, UAH billion.	6	61	134	128
Financial violations recovered, UAH billion.	78	3	6	-71
Materials transferred to law enforcement agencies	921	707	504	-417
Pre-trial investigation launched	401	265	126	-275
Number of management decisions	801	504	386	-415
Brought to administrative responsibility, persons	1900	940	721	-1179
Amount of administrative fines imposed, UAH billion.	3	1	1	-2

**compiled by the authors on the basis of [8]*

In the period of 2021-2023, 2159 audits and 1510 inspections of public procurement procedures were carried out.

[8] Статистичні звіти. *Державна аудиторська служба України*. URL: https://dasu.gov.ua/ua/plugins/userPages/53

The audit control covered more than 2.5 million business entities, budgetary institutions and organizations, which demonstrates the wide coverage of the objects of state financial control. As a result of these measures, financial irregularities were detected, which resulted in material losses totaling more than UAH 325.5 billion, which indicates a significant scale of inefficient or illegal use of public resources[9].

Particularly worrying is the amount of illegal, untargeted and underfunded expenditure found in 2,720 organisations. The total amount of such violations exceeded UAH 124.7 billion, of which UAH 13.9 billion concerned budget funds. A separate category is made up of educational institutions, where a deficit of financial resources of about UAH 200.8 billion was recorded, of which UAH 45.4 billion was never received by the budgets of these institutions, indicating serious violations in the system of financing education.

At the same time, the increase in the actual compensation of losses related to the detected violations is a positive development. Over the past three years, the State Audit Service has recovered more than UAH 85 billion, including almost UAH 996.7 million detected in previous periods. This shows that the efficiency of not only detecting but also responding to financial offences has increased.

In order to ensure that the perpetrators are brought to justice and to intensify the law enforcement function of financial control, 2,132 audit and inspection materials were submitted to the competent authorities, which resulted in 792 pre-trial investigations. This demonstrates the close inter-institutional cooperation between the State Audit Service and law enforcement agencies.

[9] Піхоцька М. Р. Стан та перспективи розвитку державного фінансового контролю в умовах воєнного стану. *Електронний журнал «Ефективна економіка»*. 2024. №9. URL: https://www.nayka.com.ua/index.php/ee/article/view/4684/47233

In addition, as a result of the identified violations, 1691 administrative decisions were issued against managers of various levels, and 3561 officials were brought to administrative responsibility. The total amount of fines imposed in 2021-2023 amounted to more than UAH 4.6 million, which is an important indicator of the increasing impact of administrative response tools.

The above indicators demonstrate not only the scope of the State Audit Office of Ukraine, but also the importance of further improving approaches to public financial control. Implementation of modern analytical technologies, expansion of the preventive audit function and intensification of inter-agency coordination should be the priority areas for improving the efficiency of the public financial control system in Ukraine.

Table 2.2 presents the key performance indicators of the Ukrainian audit services in 2021-2023, including the number of public procurement audits, financial audits, violations detected and prevention measures. This data reflects the dynamics of changes in the field of control, in particular the scale of inspections, the number of prevented financial violations and the transfer of materials to law enforcement agencies[10].

An analysis of statistics shows that between January 2021 and December 2023, the State Audit Service conducted approximately 34.6 thousand audits. As a result, financial violations were prevented, including the cancellation of tenders worth almost UAH 25 billion and the termination of contracts worth about UAH 22.3 billion.

During this period, 555 state financial audits were conducted, of which 114 related to the implementation of budget programmes and 353 to the activities of business

[10] Статистичні звіти. *Державна аудиторська служба України*. URL: https://dasu.gov.ua/ua/plugins/userPages/53

entities. In total, state financial control bodies managed resources worth more than UAH 1,138 billion

Table 2.2 - Activities of the State Audit Service of Ukraine in 2021-2023: results of monitoring, audits and detected violations

Indicators	2021	2022	2023	Deviation of 2023 to 2021 (+,-)
Number of procurement monitoring, thousand.	11	12	12	+1
Violations prevented, UAH billion.	10	8	7	+3
Contracts terminated, UAH billion.	3	7	12	+9
Financial audits were conducted:	191	159	205	+14
-Audits of local budgets	53	14	47	-6
-Audits of budget programs	32	20	36	+4
-Audits of business entities	106	125	122	+16
Resources covered by audits, UAH billion.	470	214	454	-16
Inefficient actions identified, UAH billion.	93	57	79	-14
Identified potential risks, UAH billion.	24	21	47	+23
Violations detected, UAH billion.	3	2	1	-2
Prevented losses, UAH billion.	2	3	11	+9
Compensated losses, UAH billion.	3	1	4	+1
Provided suggestions	2000	1600	2100	+100
Proposals implemented	1000	940	1200	+200
Audit reports submitted to law enforcement agencies	67	65	123	+56
Pre-trial investigations have been launched	20	12	20	-
Management decisions were made	416	200	358	+58

**compiled by the authors on the basis of [11]*

[11] Статистичні звіти. *Державна аудиторська служба України*. URL: https://dasu.gov.ua/ua/plugins/userPages/53

. The audits revealed numerous cases of inefficient management and risky activities that resulted in financial losses, lost profits and unnecessary expenses amounting to more than UAH 228.6 billion. In addition, it was found that certain management decisions could cause further losses of over UAH 92.1 billion.

The regulatory authorities responded promptly to the auditors' recommendations, which helped prevent financial and material losses of about UAH 15.1 billion and compensate for losses of more than UAH 7.87 billion. The audits resulted in more than 5.8 thousand recommendations, of which approximately 3.14 thousand were implemented.

During the timeframe under review, the State Audit Service referred 255 audits to law enforcement agencies, which resulted in 52 preliminary investigations. In addition, based on the findings of financial audits, the leaders of central and local authorities, enterprises, institutions and organizations made 974 management decisions[12].

The use of theoretical approaches to assess the effectiveness of public financial control will increase the level of accountability for its results, as well as the efficiency of the work of state audit bodies and other control mechanisms responsible for overseeing the use of budgetary resources[13].

The Law of Ukraine "On the Accounting Chamber" No. 576-VIII of 2 July 2015 defines the legal framework for the organisation and functioning of the Accounting Chamber as a body authorised to carry out external state financial control (audit). The Law establishes the mechanism for exercising the

[12] Скрипник Г.О., Черненко В.В. Державний фінансовий контроль України в умовах воєнного стану. Економіка та суспільство. 2024. № 70. URL: https://economyandsociety.in.ua/index.php/journal/article/view/5397

[13] Ягоденко І. В., Гордей О. Д. Державний фінансовий контроль в Україні: стан і напрями вдосконалення. 2021. №10. с.336-340. URL: http://nbuv.gov.ua/UJRN/binf_2021_10_46

powers vested in the Accounting Chamber by the Constitution of Ukraine, in particular Article 98, according to which this body controls the receipt and use of funds for the state budget of Ukraine[14].

The Accounting Chamber performs its control functions through a set of control measures that include financial audit, efficiency audit (i.e. audit of effectiveness, economy and productivity of public resources), analytical research, examination of draft legislative acts in the field of budget policy, as well as other forms of control provided for by the current legislation.

Financial audit, as a component of external control, is aimed at verifying the reliability of financial statements and compliance with the law in the course of budget operations. Performance audit, in turn, focuses on assessing the achievement of the objectives of government programs, the optimal allocation of budget resources and the compliance of results with the set objectives. This type of audit is especially relevant in conditions of limited financial resources and the need to ensure a high level of responsibility for management decisions[15].

In addition, an important form of control activity of the Accounting Chamber is analytical and expert activity, which involves the preparation of independent conclusions and recommendations for improving the mechanisms of public finance management. These functions allow the Accounting Chamber to act not only as a control body, but also as an

[14] Закон України "Про Рахункову палату". Офіційний вебпортал парламенту України. URL: https://zakon.rada.gov.ua/laws/show/576-19#Text

[15] Колпакова А. Державний фінансовий контроль на сучасному етапі: огляд концептуальних засад. *International Science Journal*. 2023. №1. с.9-18. URL: https://isg-journal.com/isjmef/article/view/263

institution that plays a strategic role in shaping fiscal policy and increasing its transparency and efficiency.

The legal and regulatory framework of the Accounting Chamber creates the basis for an effective system of external financial control aimed at improving the quality of public finance management, strengthening financial discipline and ensuring democratic control over the activities of public authorities in the budget process.

Table 2.3 shows the main performance indicators of the Accounting Chamber of Ukraine for 2021-2023. This data includes the amount of audited amounts, the number of audited entities, cases of inefficient management and use of resources, violations of public financial planning, shortcomings in revenue management, additional revenue reserves of the state budget, and the total number of detected violations. The analysis also includes post-audit and pre-audit measures. This table shows the variation in key aspects of accounting efficiency over the three years.

According to Table 2.3, in 2023, the amount of money increased to UAH 771.1 billion, which is UAH 178.7 billion more than in 2021. This means that they are taking measures to make sure everything is safe and checking more places. However, the number of sites inspected decreased by 91 compared to 2021, which may be due to changes in how we inspect or our focus on larger companies.

In 2023, it was UAH 60.8 billion, which is 119.1 billion less than in 2021. This may mean that people are getting better at managing their money and taking steps to avoid financial problems. Unfortunately, the number of violations of budget legislation in 2023 amounted to UAH 14.9 billion, which is significantly higher than in 2022 (UAH 4.5 billion), but significantly lower than in 2021 (UAH 38 billion).

Table 2.3 - Performance of the Accounting Chamber of Ukraine in 2021-2023*

Indicators	2021	2022	2023	Deviation of 2023 to 2021 (+,-)
The amount of funds audited, UAH billion.	592	351	771	+179
Number of inspected objects	490	355	399	-91
Total amount of detected violations, UAH billion.	180	59	61	-119
Violations of budget legislation, UAH billion.	38	5	15	-23
Inefficient management and use of resources, UAH billion.	28	7	19	-9
Violations committed in the planning of public finances, UAH billion.	84	1	8	-76
Violations and shortcomings in the administration of the state budget revenues, UAH billion.	9	46	19	-10
Additional state budget revenue reserves, UAH billion.	22	33	76	+54
Post-audit activities	538	422	633	+95
Number of pre-trial investigations	27	12	9	-18

**compiled by the authors on the basis of [16]*

In 2023, the amount of money wasted due to poor management and use of resources increased to UAH 18.9

[16] Звіти. *Рахункова палата*. URL: https://rp.gov.ua/FinControl/FinReports/

billion, which is UAH 11.7 billion more than in 2022, but UAH 208 billion less than in 2021. This indicates that things are getting worse this year compared to last year, but there are some positive changes in 2021.

The number of violations in public finance planning has increased a lot: from UAH 83.8 billion in 2021 to UAH 7.7 billion in 2022, which shows that things are getting better. In 2023, there were some problems with the way the government managed its money, which cost them UAH 19.2 billion. This is UAH 26.7 billion less than the previous year, but UAH 10.4 billion more than in 2021.

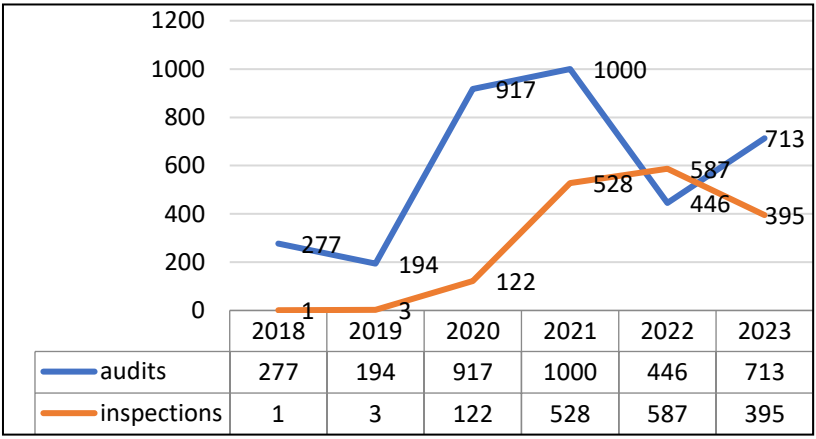
These trends show that people are getting better at managing their money, making sure the government is tracking finances and finding ways to spend money more wisely [17].

The overall analysis shows that in 2023, state financial control was strengthened, the amount of audited funds increased, and additional budget reserves were identified. At the same time, the number of violations decreased compared to 2021, which may indicate an improvement in financial discipline. However, some aspects, such as resource management and the efficiency of budget revenue administration, remain areas for further improvement.

The effectiveness of state financial control directly depends on the achievement of the objectives of control measures, which is assessed based on the results of inspections. One of the key performance indicators is the number of audits conducted by the controlling authorities. Fig. 1 shows the data

[17] Давиденко Н.М., Ключка О.В., Ключка С.С. Державний фінансовий контроль у системі економічної безпеки держави. Державний фінансовий контроль у системі забезпечення економічної безпеки держави: монографія. К.: 2019. 202 с.

on inspections conducted by the State Audit Service of Ukraine[18].



	2018	2019	2020	2021	2022	2023
audits	277	194	917	1000	446	713
inspections	1	3	122	528	587	395

Fig. 2.1 - Control measures carried out by the State Audit Service of Ukraine as of 2018-2023*

**compiled by the authors on the basis of* [19]

The analysis of the indicators shows how the way of conducting state financial control is changing. So, in 2018-2019, the number of checks decreased by 83 units.

It is possible that they changed the way they control things or something else that happened within the company.

From 2019 to 2021, there was a big jump in the number of inspections - from 194 to 1000. This shows that they are doing a better job of keeping things under control and making sure everything is running smoothly.

Due to the ongoing military aggression, the number of inspections decreased by 55% to 446 in 2022, a clear sign of the difficult economic conditions in the country. But in 2023,

[18] Статистичні звіти. *Державна аудиторська служба України*. URL: https://dasu.gov.ua/ua/plugins/userPages/53

the regulatory authorities began to return to their normal activities, and they increased the number of inspections to 267 units. This shows how our bodies and minds adapt to new situations and regain control over our lives.

A comprehensive analysis of the impact of external and internal factors on the state's financial system is an important prerequisite for the development of an effective and adaptive public finance management model. External factors, such as global economic fluctuations, geopolitical risks, currency instability, inflation, international sanctions or changes in the terms of cooperation with international financial organizations, significantly affect the state's ability to conduct strategic budget planning. At the same time, internal factors such as political stability, the effectiveness of tax policy, the state of institutional capacity of public authorities, the level of transparency of the budget process and compliance with the principles of financial discipline determine the state's ability to independently regulate financial flows and implement socio-economic priorities.[19].

By analyzing the interaction of these factors, it is possible to assess the level of maturity of the state financial control system, identify its vulnerabilities and outline areas that require structural reform. This approach allows not only to identify problems in the functioning of control mechanisms, but also to facilitate their timely adjustment in accordance with dynamic changes in the external and internal environment. This is especially relevant in times of crisis or transformation processes, when flexibility and adaptability of the public

[19] Ключка О.В., Ключка С.С. Світова практика організації державного фінансового контролю та можливість її адаптації в Україні. Міжнародні економічні відносини. 2021. №6. с.93-104. URL: https://eco-science.net/wp-content/uploads/2021/06/06.21._note_ukr_Kliuchka-O.V.-Kliuchka-S.S.-93-104.pdf

finance management system are critical to maintaining financial stability.

A high level of efficiency in making management decisions based on a thorough analysis of current risks allows for more efficient spending of public funds, avoiding duplication of costs, and preventing inappropriate or inefficient use of resources. In this context, there is a need to regularly improve monitoring procedures, evaluate the effectiveness of budget programs, expand audit tools, and implement risk management systems in the public sector.

The formation of an effective public finance management system is impossible without a clear interaction between the analytical approach to assessing the impact of external and internal factors and the mechanisms of operational regulation[20]. It is the ability of the state to adapt its financial policy to new challenges, adjusting control instruments in accordance with the current needs of society and the economy, that is the key to its financial stability, sustainability and long-term development[21].

Fig. 2.2 shows the dynamics of changes in the total amount of identified violations and deficiencies in public financial management for the period 2021-2023. The graphical representation is made in the form of a blue bar chart, which allows us to visually analyze the trends and assess the extent of the identified problems in financial control.

[20] Луніна І. О. Потенціал публічних фінансів для забезпечення видатків воєнного періоду та поствоєнного відновлення України. Фінанси України. 2022. № 8. С. 7–26. URL: https://doi.org/10.33763/fi nukr2022.08.007

[21] Марченко С. М. Стратегічне управління державними фінансами: євроінтеграційний курс, міжнародні тренди, національні особливості. Фінанси України. 2022. № 1. С. 7–26. URL: https://doi.org/10.33763/fi nukr2022.01.007

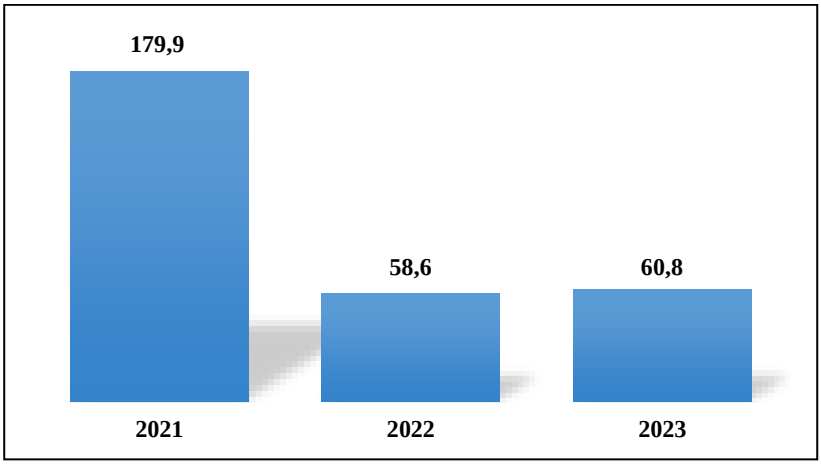


Fig. 2.2 - Total amount of violations and deficiencies in public finance management in 2021-2023

**compiled by the authors on the basis of* [22]

Looking closely at the patterns of the indicators, we can see important shifts in their values from 2021 to 2023. The index took a big hit in 2022, falling year-on-year. Thus, in 2021, its value was 179.9, but in 2022 it decreased by 121.3 points (or 67.4%), ending at 58.6. The state financial control of the state has taken a hit, likely due to external factors such as military aggression and the restrictions that come with it.

In 2023, the index slightly increased to 60.8, which is 2.2 points (or 3.8%) higher than in 2022. However, even after this moderate increase, the index remained significantly lower than in 2021 - by 119.1 points (or 66.2%). This indicates that although the situation has improved somewhat, the effectiveness of control has not yet reached previous levels.

In general, the trend shows a sharp drop in 2022 and partial stabilization in 2023, but the index value is still below

[22] Звіти. *Рахункова палата*. URL: https://rp.gov.ua/FinControl/FinReports/

the level of 2021, indicating that additional measures are needed to restore the effectiveness of state financial control.

In order to comprehensively and objectively assess the effectiveness of the state financial control system, a comprehensive methodology combining elements of quantitative and qualitative analysis was used. This approach provides a deeper understanding not only of the formal results of the audits, but also of their practical significance in terms of managing budgetary resources and ensuring financial discipline.

The quantitative component of the methodology included an analysis of the official financial statements of public sector entities, the results of audits, performance audits and cost monitoring conducted by the State Audit Service of Ukraine. This data allowed us to assess the scale and nature of the violations detected, the amount of funds recovered, and the effectiveness of the response to the identified financial risks.

The qualitative component of the assessment was implemented through an expert survey involving independent experts with proven experience in the field of financial audit, state control or public finance management. To ensure the representativeness of the sample, 50 independent experts from different regions of Ukraine were randomly selected for the study, which allowed to take into account the regional peculiarities of financial control implementation.

Each expert individually assessed the identified indicators of the control system's effectiveness on a five-point scale, where 1 point meant the lowest level of effectiveness, indicating critical shortcomings in the control procedure, while 5 points indicated high efficiency, compliance with international standards and the effectiveness of mechanisms to ensure financial responsibility. The assessment covered such criteria as completeness of inspections, timeliness of response

to violations, quality of reporting documentation, transparency of procedures, effectiveness of interagency cooperation, and the level of implementation of modern digital tools in control activities.

The obtained results were summarized and presented in Table 2.4, which allows not only comparing average scores in certain areas of control, but also identifying the most problematic areas requiring strategic intervention and improvement.

Table 2.4 - Assessment of the effectiveness of existing financial control mechanisms

The control aspect	Level of effectiveness (1-5)	Comments
Transparency	3	Monitoring hampered by lack of operational reporting
Compliance with regulations	4	Generally complies with regulatory requirements
Efficiency	2	Delays in auditing due to limited access to data
Efficiency	3	Reduced efficiency due to lack of coordination between agencies

**compiled by the authors on the basis of* [23]

The survey results showed that the financial control systems have a moderate level of transparency, mainly because it is difficult to report on the operational side. The level of compliance with regulatory requirements is assessed to be in line with the law. However, the speed and effectiveness of

[23] Сікора Є.І. Ефективність фінансового контролю за видатками Державного бюджету України у період воєнного стану. «Здобутки економіки: перспективи та інновації». 2024. №8. URL: https://econp.com.ua/index.php/journal/article/view/38/32

controls are still lacking, mainly due to delays in audits and lack of coordination between different government agencies[24].

Consequently, making the financial control system work well in wartime is really important if we want to see big improvements. Even though there are fewer control measures in place, the fact that more financial irregularities are being detected indicates that the focus is on the most important and resources are being used appropriately. From 2021 to 2023, the State Judicial Service of Ukraine conducted inspections and audits, which helped prevent large losses of resources, compensate for damages and create additional money for the state budget.

2.2. INTERNATIONAL LIQUIDITY MAINTENANCE AS A CRITICAL CONDITION FOR ENSURING FINANCIAL SECURITY OF THE STATE

In the context of unprovoked military aggression against Ukraine, the effectiveness of managing its financial security is directly contingent upon the ability to maintain an adequate level of international liquidity. Relevant measures encompass not only the attraction and rational allocation of international financial assistance but also the optimization of existing resource utilization, restructuring of external debt, and effective foreign exchange oversight. Thus, international liquidity, typically a routine objective of financial policy during periods of economic growth, elevates to a priority of state financial security in times of crisis. This underscores the

[24] Єфименко Т. І. Управління фінансами в період воєнного стану та повоєнної побудови України: науковий супровід трансформацій. Фінанси України. 2023. № 1. С. 7–25. URL: https://doi.org/10.33763/fi nukr2023.01.007

theoretical importance and practical value of studying international liquidity as a pivotal benchmark for managing financial security.

The fundamentally positive impact of a central bank's reserve assets on a country's financial stability indicators during economic crises and armed conflicts has repeatedly been the focus of researchers and has found empirical support. For instance, Shane Lowe emphasizes that international reserves play a critical role in ensuring financial stability, acting as a buffer against external shocks[25]. It is noted that since the 1990s, emerging market countries have accumulated substantial reserve stocks to protect against sudden capital flow stops and to reduce debt rollover risks. The study asserts that an increase in reserves lowers sovereign bond spreads, thereby reducing perceived default risk and borrowing costs, a finding corroborated by empirical evidence from a sample of 27 emerging market countries. However, the spread-reducing effect diminishes at high reserve levels (with a threshold of 15% of GDP), and it is less pronounced for smaller countries than for larger ones.

In a study by Hernández, employing a Cole-Kehoe-style self-fulfilling crises framework within a standard Eaton-Gersovitz setup, it was demonstrated that an increase in net foreign exchange reserves reduces the scope for multiple equilibriums regarding repayment and rollover, while higher reserve asset volumes decrease current sovereign bond spreads, mitigating some of the risks of a debt crisis[26]. This research broadly substantiated the link between larger foreign exchange reserve stocks and a lower likelihood of sovereign debt crises.

[25] Lowe, S. (2018). International Reserves, External Debt and Sovereign Bond Spreads. *CERT's Annual Monetary Studies Conference 2018*. URL: https://surl.li/hjslqv.

[26] Hernández, J. (2018). How International Reserves Reduce the Probability of Debt Crises. *Discussion paper* No IDB-DP-579. https://doi.org/10.18235/0001235.

Later studies have shown that the ability of reserve assets to reduce sovereign spreads and the risks they represent depends directly on how the reserves are accumulated. By replicating a dynamic equilibrium model of a small open economy with long-term defaultable debt and short-term reserves, Sosa-Padilla and Sturzenegger convincingly demonstrated that government debt tied to income provides hedging, reducing perceived default risk[27]. This implies that reserve accumulation financed through domestic liabilities contributes to spread reduction, whereas reliance on external liabilities either has no noticeable effect or may even produce adverse outcomes. These findings call into question the advisability of international financial organizations' programs that bolster reserve assets through external borrowing. Using Argentina as an example, it was shown that reserve accumulation via state-contingent debt delivered a macro-stabilizing hedging effect equivalent to 8% of GDP during a sudden capital stop in 2018.

Analysing the effectiveness of international reserve management during crisis periods, Aizenman and Jinjarak highlight that mitigating damage from sudden capital stops and external debt crises – by transferring purchasing power accumulated in reserves from favourable periods – is especially critical for countries with external borrowings denominated in key currencies[28]. Using the example of eight major emerging economies, the authors empirically demonstrate that the dynamics of reserve buffers explain a significant portion of the variation in sovereign spreads and real exchange rates. Abdel

[27] Sosa-Padilla, C., and Sturzenegger, F. (2023). Does it matter how central banks accumulate reserves? Evidence from sovereign spreads. *Journal of International Economics*. Vol. 140. 103711. https://doi.org/10.1016/j.jinteco.2022.103711.

[28] Aizenman J., and Jinjarak, Y. (2020). Hoarding for stormy days – Test of international reserves adjustment providing financial buffer stock services. *Review of International Economics*. Vol. 28 (3). P. 656-675. https://doi.org/10.1111/roie.12466.

Khalek and Rizk affirm the importance, for emerging market and developing countries, of accumulating foreign exchange reserves as a self-protection tool against the risks of financial globalization[29]. These trends have been particularly evident since the East Asian crisis of 1997, with recovery from the global financial crisis of 2008 occurring more rapidly for countries with substantial reserve stocks, such as South Korea, Mexico, India, and Brazil. Although the article under review lacks empirical evidence, the authors, relying on a methodological foundation, suggest that the positive impact of reserve asset accumulation on financial stability occurs by smoothing investors' perceptions of country risk – implying that reserve increases can potentially reduce sovereign spreads.

In a study by Yeyati and Gómez, it is confirmed that deploying reserve assets to smooth financial and commodity cycles is particularly relevant for commodity-exporting countries[30]. Empirical evidence indicates a reduction in sovereign risks with rising reserve volumes, as the resulting buffer of dollar liquidity significantly lowers the likelihood of liquidity crises. Consistent with later findings by Sosa-Padilla and Sturzenegger[31], the results of Yeyati and Gómez underscore the importance of building additional reserve assets through domestic debt – under such conditions; a unit increase in reserves relative to GDP reduces spreads nearly twice as effectively[32]. Additionally, the authors challenge the traditional view of sovereign spreads as a proxy for the cost of

[29] Abdel Khalek, G., and Rizk, A. (2023). Cost of foreign reserve accumulation in emerging market and developing economies. *Review of Economics and Political Science*. https://doi.org/10.1108/REPS-12-2022-0108.

[30] Yeyati E. L., and Gómez, J. F. (2019). The cost of holding foreign exchange reserves. *CID Faculty Working Paper*. No. 353. URL: https://surl.li/wzozvx.

[31] Sosa-Padilla, C., and Sturzenegger, F. (2023). Does it matter how central banks accumulate reserves? Evidence from sovereign spreads. *Journal of International Economics*. Vol. 140. 103711. https://doi.org/10.1016/j.jinteco.2022.103711.

[32] Yeyati E. L., and Gómez, J. F. (2019). The cost of holding foreign exchange reserves. *CID Faculty Working Paper*. No. 353. URL: https://surl.li/wzozvx.

international reserves, arguing instead that the use of these assets to stabilize exchange rates (via LAW interventions) defines their cost as the differential between interest rates and the effect of foreign currency revaluation.

The well-known study by Samano examines the processes of reserve asset accumulation as a function independent of government actions, whereby the central bank shifts excess resources from periods of prosperity into the future, irrespective of the government's desire to utilize all available funds in the present[33]. This approach aligns with the findings of Aizenman and Jinjarak[34], yet in Samano's model, the central bank's actions aim to sustain household consumption levels and reduce the costs of excessive borrowing, ultimately enhancing social welfare with a net efficiency gain of 10%. A distinctive feature of this model is a contradiction in empirical data: while reserve accumulation potentially lowers country risk in the long term, its short-term effect increases sovereign spreads. Unlike Yeyati and Gómez[35], Samano's model suggests that default risk accumulation accompanies reserve asset build-up, which attributes to heightened incentives for default due to perceptions of its reduced "painfulness" given substantial reserve volumes[36].

Nevertheless, the literature has devoted insufficient attention to exploring the impact of international liquidity and its associated indicators – such as foreign exchange reserves, external debt, international investment positions, and foreign

[33] Samano, A. (2022). International reserves and central bank independence. *Journal of International Economics*. Vol. 139. 103674. https://doi.org/10.1016/j.jinteco.2022.103674.

[34] Aizenman J., and Jinjarak, Y. (2020). Hoarding for stormy days – Test of international reserves adjustment providing financial buffer stock services. *Review of International Economics*. Vol. 28 (3). P. 656-675. https://doi.org/10.1111/roie.12466.

[35] Yeyati E. L., and Gómez, J. F. (2019). The cost of holding foreign exchange reserves. *CID Faculty Working Paper*. No. 353. URL: https://surl.li/wzozvx.

[36] Samano, A. (2022). International reserves and central bank independence. *Journal of International Economics*. Vol. 139. 103674. https://doi.org/10.1016/j.jinteco.2022.103674.

exchange turnover – on the financial security of states, particularly under conditions of existential disruptions. This gap highlights an area warranting further investigation.

One of the most critical tasks imposed on the central bank and government by the necessity of ensuring national financial security is maintaining a high level of international liquidity. In a narrow sense, international liquidity is often equated with foreign exchange liquidity, referring to the foreign currency resources available to public authorities that can be rapidly allocated to meet the demand for foreign exchange. However, the International Monetary Fund offers a broader concept, defining international liquidity as actual and potential inflows and outflows of foreign currency arising from short-term obligations and off-balance-sheet operations of public authorities[37]. This perspective highlights the dichotomy within the concept, distinguishing between "liquidity as a stock" and "liquidity as a flow".

The analysis of international liquidity's conceptual foundations, conducted by L. Batiuk & V. Onehina, revealed that most scholars view this category as an attribute of a country's financial system, quantifiable through a specific set of variables, characterized by dynamism, and inherent to both money and financial assets[38]. Such perspectives predominantly reflect a "flow-based" understanding, further reinforcing the semantic origins of the term (i.e. "liquid").

As global practice demonstrates, foreign exchange reserves, while not identical to international liquidity, constitute a crucial component. Therefore, the adequacy (or

[37] International Monetary Fund (2013) International Reserves and Foreign Currency Liquidity : Guidelines for a Data Template. URL: https://surl.li/avndwp.

[38] Batiuk L. A., Onehina V. M. (2020) Formuvannia hroshovoi propozytsii u svitovii ekonomitsi ta suchasna modyfikatsiia yii mekhanizmu [Formation of Money Supply in World Economy and Modern Modification of its Mechanizm]. *Ukrainskyi zhurnal prykladnoi ekonomiky – Ukrainian Journal of Applied Economics*. Vol. 5. No. 3. P. 49-57. URL: https://surl.li/pyoang.

sufficiency) of them serves as one of the most widely used indicators of a country's relative liquidity level, quantitatively measuring its capacity to respond promptly to foreign exchange demand both in the domestic market and in international capital movements. Several well-known adequacy criteria exist, including imports coverage, the Greenspan–Guidotti rule, the Reddy criterion, and broad money coverage[39]. Each of these metrics is a single-factor measure, considering only one potential source of a currency crisis. An attempt to address these limitations is reflected in the ARA EM (composite criterion), employed by the IMF to assess reserves' adequacy in emerging markets.

When analyzing the nature of the indicators used in various reserve adequacy metrics, it can be observed a certain conceptual conflict between the "stock" and "flow" approaches. E.g., foreign exchange reserves themselves are a stock variable, yet they are often compared with different flow variables. This creates a methodological inconsistency – dividing a stock by a flow distorts the economic meaning of the resulting indicator. In this regard, older metrics, such as the Greenspan-Guidotti rule, are more methodologically sound.

This consideration is crucial when conducting empirical studies on the adequacy of international reserves and their impact on liquidity conditions. Specifically, the critical ratio of foreign exchange reserves to GDP, as established by Aizenman et al.[40], necessitates adjustments to preserve the economic coherence of its components. Given that GDP represents the aggregate outcome of economic agents' productive activities,

[39] Hrytsyshyn A. T. (2021) Mizhnarodni rezervy krain Yevropeiskoho Soiuzu: teoriia i praktyka upravlinnia [International reserves of the European Union countries: management theory and practice]. Lviv, Spolom. 224 p. URL: https://surl.li/shjuva.

[40] Aizenman, J., Ho, S.-Y., Huynh, L. D. T., Saadaoui, J., Uddin, G. S. (2024) Real Exchange Rate and International Reserves in the Era of Financial Integration. *Journal of International Money and Finance*. Vol. 141. URL: https://surl.gd/lhchhu.

measured as the total value of goods and services produced for final use[41], while reserves constitute a stock variable fixed at a specific point in time, it would be prudent to calculate at least a weighted average of foreign exchange reserves in the numerator (Fig. 2.3).

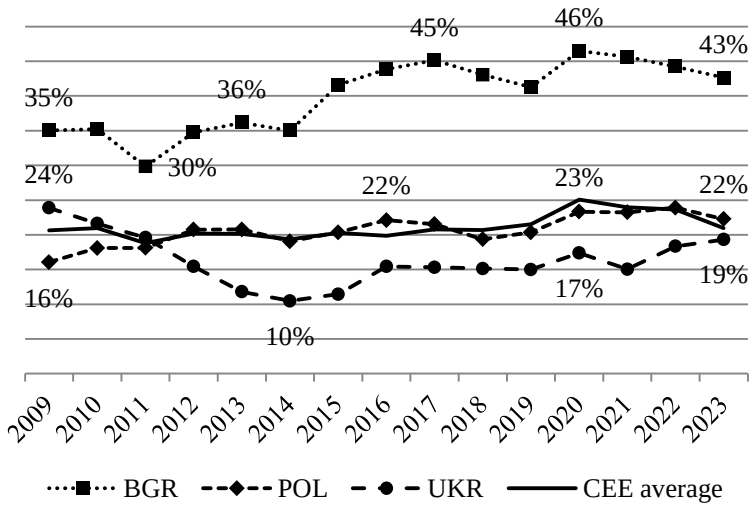


Fig. 2.3 - FX Reserves-to-GDP Ratio dynamics in some CEE countries, 2009 – 2023

Source: *calculated based on World Bank data*[42]

Fig. 2.3 illustrates that the average level of reserves in Central and Eastern European (CEE) countries fluctuated marginally around 20 % over a 15-year period, aligning with the minimum threshold identified by Aizenman et al. However, this ratio exhibited divergent trends across countries. For instance, Bulgaria's international reserves exceeded the

[41] Kvasha, S., Davydenko, N., Pasichnyk, Yu., Viatkina, T., Wasilewska, N. (2018) GDP Modelling: Assessment of Methodologies and Peculiarities of its Usage in Ukraine. *Problems and Perspectives in Management*. Vol. 16. No. 4. P. 186-200. URL: https://surl.li/zvwtjh.
[42] World Bank Open Data (2025) Data. URL: https://surl.li/aormpe.

regional average by more than twofold and predominantly followed an upward trajectory. Poland's reserve assets closely approximated the CEE average and remained stable. In contrast, Ukraine's corresponding indicator displayed significant volatility, frequently falling below the minimum required level. Notably, the decline to its lowest point of 10 % in 2014 – concurrent with a synchronous contraction in GDP – began as early as 2010, well before the annexation of Crimea and the conflict in Donbas. Subsequent measures and international assistance enabled Ukraine to increase its reserve assets almost twice, reaching 17 % of GDP by 2020, and to maintain an upward trend despite the conditions of war.

However, a pertinent question arises regarding the utilization of foreign exchange reserves during such times: does their continued accumulation effectively support international liquidity, or do these trends stem from inefficiencies in managing reserves and the international aid that sustains them? Measures taken by the central bank to manage the level of international liquidity are represented by the volume of gross reserve assets (foreign exchange reserves). The corresponding indicator for Ukraine, as of the beginning of each month, is published by the National Bank of Ukraine (NBU). Data on the primary components driving changes in reserve volumes are also available from the same source (Fig. 2.4).

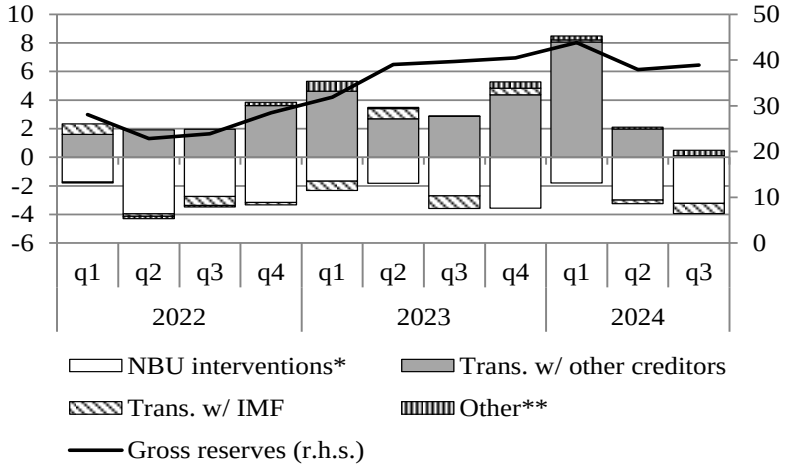


Fig. 2.4 - Dynamics of Ukraine's Gross Reserve Assets, 2022q1 – 2024q3, USD bln[43]

Source: *National Bank of Ukraine[44]*

Fig. 2.4 indicates a positive trend in the volume of international reserves, beginning in August 2022 and continuing, with minor interruptions, through the end of the observation period. The primary factors driving this trend include transactions with other creditors (excluding the IMF), essentially representing external financial assistance in the form of loans and grants, as well as net interventions by the NBU, which remained negative throughout the period. Transactions with the IMF – both in terms of financing inflows and outflows – also exerted episodic but significant influence. Notably, in 2024, external financing, previously received on a regular basis, shifted to a pattern of occurring every two to

[43] Note. *NBU interventions: (+) refers to purchasing FX to increase reserves; (-) refers to selling FX from reserves. **"Other" means the revaluation of financial instruments due to changes in their market value and exchange rate fluctuations, as well as other transactions.
[44] National bank of Ukraine (2024) Financial Stability Report, December 2024. URL: https://surli.cc/jjkowk.

three months, albeit in substantially larger amounts. This change in the rhythm of reserve replenishment contributed to short-term downward trends in reserve volumes, as the need for currency market interventions remained consistent.

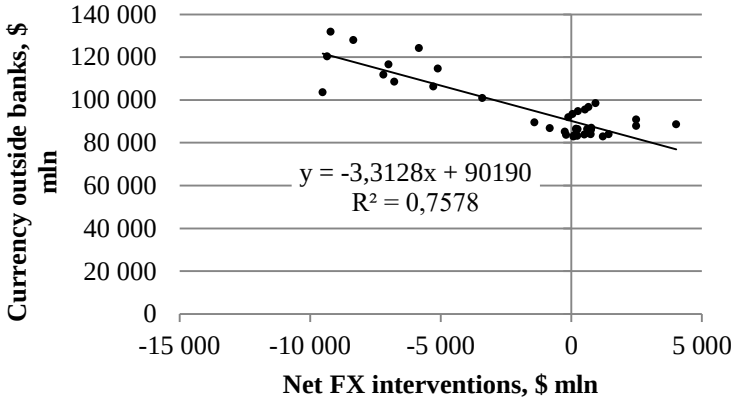


Fig.2.5 - Dependence of foreign cash outside the banks on net FX interventions in Ukraine, 2015 – 2024q3

Source: *calculated based on National Bank of Ukraine data*[45]

When examining the deployment of foreign exchange reserves in the context of aligning state financial security management with wartime challenges, one of the key aspects warrant attention: are actual reserves being inadvertently used to facilitate further outflows of foreign currency assets into non-institutional savings? The answer to this question lies in identifying a clear relationship between the dynamics of currency interventions and the flow of foreign currency from the domestic market into informal savings (Fig. 2.5).

An ordinal graphical analysis of the trend depicted in Fig. 2.5 demonstrates a relatively robust linear relationship (with a 75 % level of determination) between informal cash currency

[45] National bank of Ukraine (2025) Statistics. URL: https://surl.li/xtjdrc.

savings and the net foreign exchange interventions of NBU. At a neutral level of approximately USD 90 bln, such savings increase by USD 3 mln for every additional USD 1 mln in net currency sales by the central bank over purchases within a given quarter. This corroborates President Zelensky's statement from February 2025, which highlighted that Ukrainian citizens transferred USD 35 bln abroad during the first year of the invasion. It also points to a "leakage" of currency from foreign exchange reserves, thereby undermining their effectiveness in supporting international liquidity[46].

An alternative approach to assessing the impact of international liquidity (via the dynamics of reserve assets) on a state's financial security is through correlation analysis. As a proxy for the level of financial security, it is appropriate to employ the Financial Stress Index, calculated by the National Bank of Ukraine, specifically its decomposition by sectors (banking, household behaviour, government debt, corporate, and foreign currency market). Based on daily data from May 2008 to November 2024[47], monthly average values of the sub-indices were computed. Correlation coefficients between these sub-indices and the monthly growth of gross reserves were determined for the entire period and disaggregated by periods of escalating external threats (Tab. 2.5).

The obtained coefficients in Tab. 2.5 indicate a consistent decline in the relationship between Ukraine's international liquidity and the level of stress across key segments of the financial sector. Prior to the onset of russia's hybrid aggression against Ukraine in February 2014, a moderate but logical inverse relationship was observed: an increase in reserve assets

[46] Gislén, M., Hansson, I., Melander, O. (2021) Dollar liquidity from the Federal Reserve to other central banks. *Sveriges Riksbank Economic Review*. No. 1. URL: https://surl.gd/khkphi.
[47] National bank of Ukraine (2024) Financial Stability Report, December 2024. URL: https://surli.cc/jjkowk.

was associated with a reduction in financial stress across all segments, most notably in household behaviour.

Table 2.5 - Correlation between gross reserves and sub-indices of the Financial Stress Index in Ukraine

Financial Stress Index sub-indices	Gross reserves in:		
	2008m05 – 2014m01	2014m02 – 2022m01	2022m02 – 2024m11
Banking	-0,48	-0,12	-0,08
Household behavior	-0,55	-0,15	0,03
Government debt	-0,39	-0,05	-0,05
Corporate	-0,40	-0,18	-0,15
FX market	-0,41	-0,13	-0,18

Source: *calculated based on National Bank of Ukraine data*[48]

During the period of conflict in eastern Ukraine, this relationship remained inverse but became practically negligible, having weakened by a factor of 2-3 (and by nearly 8 times in relation to government debt). Following the commencement of the full-scale invasion in February 2022, a further weakening of this linkage was observed, providing additional evidence of the suboptimal efficiency of international liquidity management.

Thus, the task of maintaining international liquidity is critical for ensuring financial security of the state. The analysis has identified signs of inefficiencies in the deployment of NBU's reserve assets. This underscores the need to develop a scientifically grounded mechanism for preserving international liquidity in accordance with the objectives of financial security management under conditions of external threats and the impact of existential shocks.

[48] National bank of Ukraine (2025) Statistics. URL: https://surl.li/xtjdrc; National bank of Ukraine (2024) Financial Stability Report, December 2024. URL: https://surli.cc/jjkowk.

2.3. BEHAVIORAL VULNERABILITY AS A THREAT TO THE ECONOMIC SECURITY OF THE STATE AMID INFORMATIONAL TURBULENCE

The world of the 21st century increasingly compels a rethinking of established approaches to understanding economic security. While traditional emphases were placed on resources, finances, and institutions, behavioral factors have now come to the forefront—capable of triggering cascading crises no less effectively than economic sanctions or physical damage. Informational turbulence, rising distrust in official sources, and the influence of manipulative narratives are giving rise to new types of vulnerabilities that have long remained beyond the scope of systematic analysis.

The condition of the economy can no longer be interpreted solely through GDP or inflation rates. Increasingly, what proves decisive is not the objective existence of risk but how it is perceived by citizens, businesses, and investors. Therefore, both academic and policy attention must now be directed toward behavioral indicators of economic security—capable of signaling crises long before their macroeconomic manifestation.

The purpose of this monograph is to highlight the role of behavioral factors as a new generation of threats to economic security, to propose a typology of such indicators, and to examine their variability in the context of war-related shocks and prolonged uncertainty. Special attention is given to the informational context as a critical environment where irrational economic decisions are formed.

For a long time, the economic security of the state was predominantly associated with macro-level categories: currency stability, energy independence, fiscal sustainability, and inflation control [1, p. 12]. It was understood as the state’s

ability to withstand internal and external threats that could destabilize the national economy. In this paradigm, a rationalist approach prevailed, identifying key threats as military aggression, economic expansion, sanctions pressure, or technological disasters [2, p. 35]. However, with increasing informational dependence, the rising role of market expectations, and the emergence of new hybrid influences, this approach has become evidently insufficient [3, p. 104].

Today, economic security extends beyond institutional resilience or the balance of payments. It is undermined not only by missile strikes on energy infrastructure but also by waves of panic that devalue the currency more rapidly than any embargo; not only by the loss of export opportunities but by the erosion of trust in public administration [4, p. 72]. In other words, the psycho-emotional vulnerability of the population and businesses has become as dangerous as physical damage or financial shortages.

This context fosters a new understanding: economic security is not only about numbers but also about behavior. Will people keep their savings in banks? Will entrepreneurs invest in modernization or wait in the shadows? Does society trust the government's ability to manage a crisis? These questions defy quantitative models but shape macro-level reality, which can either stabilize the system or push it toward deeper turbulence [5, p. 59].

Such an expanded interpretation of security demands an updated toolkit—not only structural indicators monitoring, but also the evaluation of behavioral indicators that can warn of threats before they materialize as defaults, devaluations, or capital flight [6, p. 44].

The following section attempts to identify these indicators—behavioral sensors of economic vulnerability shaped by informational, sociocultural, and cognitive factors.

The earliest concepts of economic security emerged at the intersection of geoeconomics and state policy, where key factors included resource autonomy, control over strategic industries, and foreign trade balance. During the 1970s–1990s, academic discourse was dominated by approaches focusing on financial and energy independence, protection of domestic markets, and preservation of industrial potential [7, p. 16].

With the rise of globalization and liberalization of world trade since the early 2000s, new non-classical threats began to be incorporated into the concept of economic security—technological backwardness, loss of competitiveness, dependence on transnational capital, and instability of institutional frameworks [8, p. 41].

Later, deeper and more subtle forms of vulnerability came to be acknowledged—those not associated with objective deficits but with reactions to information, mass expectations of risk, or distrust toward government decisions and financial institutions. This shift became particularly visible after 2008, when the global financial crisis demonstrated that illusions of growth, collective misjudgments of risk, and asset overvaluation could be as destructive as any embargo or foreign intervention [9, p. 77].

Thus, in the modern interpretation, economic security involves not only external pressure or internal resources but also the psychological resilience of economic agents: from households to investors and policymakers. It includes information security, cognitive trust, behavioral predictability of economic actors, and society's ability for strategic thinking under stress [10, p. 23].

Under the current conditions of prolonged uncertainty and persistent economic disturbances, traditional macroeconomic indicators—such as inflation, GDP dynamics, or unemployment levels—are increasingly failing to keep pace

with reality. They record outcomes rather than causes; they reflect statistical retrospection rather than the living fabric of economic expectations. In an era of instantaneous information flows, hybrid threats, and collective emotional fatigue, it is behavioral indicators that can serve as early warning signals – before a crisis becomes a fact [11, p. 49].

Behavioral indicators do not measure economic results but rather its internal sentiment: perceptions, biases, and reactivity among the population and businesses. These are psycho-economic markers that reveal the degree of institutional trust, adaptability, propensity for risk-taking, or conversely – paralytic inaction. Their analytical value lies in the ability to detect crisis conditions before they materialize – through mass expectations, public interpretation, and collective sentiment.

Typology of Preconditions for the Formation of Behavioral Indicators:

For the systematic analysis of behavioral risks, it is advisable to distinguish four groups of preconditions that shape such indicators:

Socio-cultural preconditions – the general level of education, the dominant type of societal thinking (rational, fatalistic, infantile), and the presence of traditions of civic responsibility.

Institutional preconditions – the level of trust in government, the degree of corruption, the quality of public administration, and the transparency of policymaking.

Informational preconditions – access to the media, freedom of speech, media literacy, and the prevalence of misinformation or fake news.

Psycho-emotional preconditions – accumulated levels of frustration, anxiety, cognitive inertia, and the presence of conspiratorial thinking.

Table 2.6 outlines the key indicators of the behavioral vulnerability of the state and provides a qualitative analysis of their impact under varying levels of each indicator:

Table 2.6. - General Indicators of the State's Behavioral Vulnerability for 2023–2024

Indicator	**Essence / Relevance to Security**	**Behavioral Risks at Low / High Levels**
1	*2*	*3*
Level of Education (higher education, %)	Education as the foundation for critical thinking	Low levels increased susceptibility to manipulation, reduced adaptability
Average Years of Schooling	Number of years spent in formal education [13, pp. 83–85]	Correlates with the level of economic rationality [12, p. 27]
Trust in Government (0–100)	Reflects the perceived legitimacy of government decisions [13, pp. 83–85]	Low trust → non-compliance with policies, reliance on informal solutions
Belief in Conspiracies (%)	Share of the population that believes in conspiracies or "hidden truths" [13, pp. 83–85]	High levels devaluation of official information, emotional interpretation of decisions
Internet Access (%)	Access to timely information and influence [13, pp. 83–85]	High access without critical thinking susceptibility to fake news, panic

Continuation of table 2.6

1	*2*	*3*
Corruption Perception Index (CPI)	Measure of trust in the fairness of the state and governance system	High corruption heightened frustration, distrust in long-term solutions
Digital Literacy Index (DAI, %)	Ability to critically interpret digital content [13, pp. 83–85]	Low DAI vulnerability to misinformation, fragmented thinking
Democracy Index	Degree of openness of the political system [13, pp. 83–85]	Low index growing alienation, pessimism, civic passivity
Press Freedom Index	Access to alternative sources of information [13, pp. 83–85]	Weak media environment monopolization of narratives, limited critical assessment of events
Gini Index	Level of income inequality [13, pp. 83–85]	High inequality societal polarization, radicalization of economic expectations

**Source: Compiled by the author based on sources [10, 12, 13]*

To gain a deeper understanding of the role of general preconditions in shaping behavioral vulnerability, it is appropriate to conduct a comparative analysis across groups of countries with different levels of development. Based on aggregated data, profiles were constructed for three types of economies—developed, transitional, and developing—according to key indicators that determine their potential for behavioral stability or, conversely, for cognitive vulnerability.

The visualization in Figure 2.6 allows for a clear observation of behavioral contrasts among country groups.

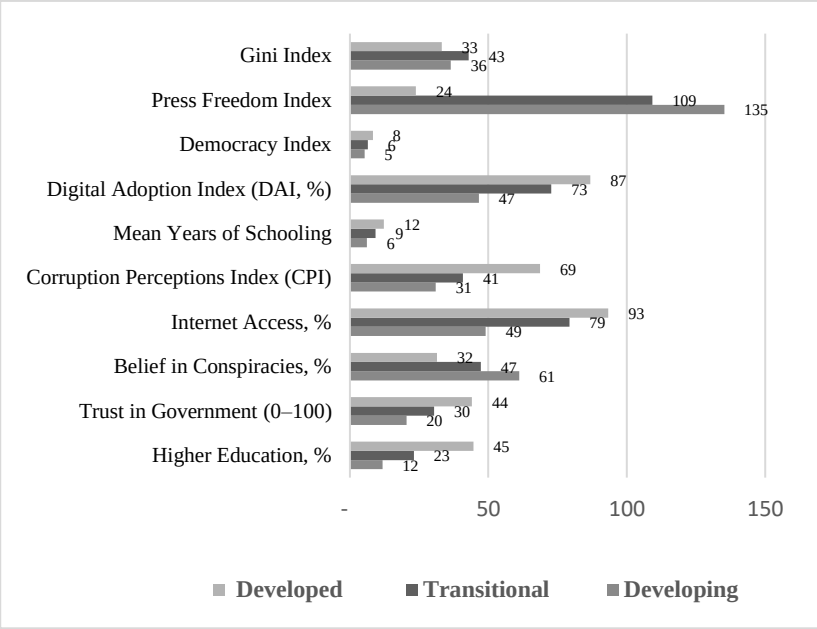


Fig. 2.6 - Analysis of Behavioral Indices by Country Development Type (Aggregated for 2022–2024)

**Source: Compiled by the author based on sources [10, 12, 13]*

Developing countries are characterized by the lowest average values in key behavioral dimensions: higher education

attainment (23%), trust in government (30%), digital literacy (73%), and average years of schooling (9 years). These figures indicate limited cognitive resilience and a high susceptibility to informational manipulation.

Transitional economies are typically marked by a high prevalence of belief in conspiracies (47%) and low institutional trust (30%). Combined with low scores in democracy, press freedom, and the Corruption Perception Index (CPI), this creates a fertile ground for distorted economic perceptions and reactive behavior to external stimuli.

In contrast, developed countries exhibit a higher degree of behavioral resilience, reflected in elevated levels of digital literacy (87%), trust in government (42%), and education (45%), along with the lowest level of conspiracy belief (22%). This suggests stable institutional engagement and reduced susceptibility to irrational collective decisions [].

To deepen the understanding of behavioral risk structure, it is advisable to generalize the indicators by their domains of influence. Such classification enables not only the observation of absolute values but also the spatial concentration of vulnerability – revealing in which spheres it manifests most critically. The analysis is based on grouping indicators by their dominant characteristics: education, digital infrastructure, institutional order, and social equity (Figure 2.7).

Behavioral vulnerabilities differ significantly across domains. The greatest disparity is observed in the domain of institutional order, where developing countries exhibit average values that are 54% lower than those of developed countries, and transitional economies trail by 32%. In the education domain, the advantage of developed economies over developing ones exceeds 73%, and over transitional economies – 49%.

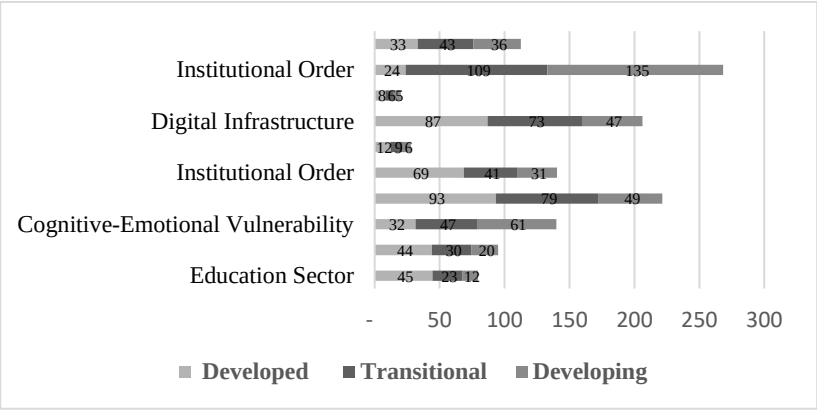


Fig.2.7 - Analysis of Behavioral Domains by Country Development Type (Aggregated for 2022 – 2024)

**Source: Compiled by the author based on sources [10, 12, 13]*

In terms of digital infrastructure (combined index of digital literacy and internet access), developing countries lag behind developed ones by an average of 42%, while transitional economies fall behind by 17%. Particularly critical is the gap in cognitive-emotional vulnerability: belief in conspiracies is 91% higher in developing countries compared to developed ones, and 30% higher than in transitional countries.

The only domain where a radical difference is not observed is social equity: the Gini index in transitional economies is only 30% higher than in developed countries and 19% higher than in developing ones.

Overall, the most sensitive domains to behavioral risks remain institutional trust, digital awareness, and cognitive stability. These areas require systematic monitoring within the broader framework of economic security.

Thus, the overall picture demonstrates that behavioral vulnerability is not a random phenomenon, but rather has a

clear structural basis in measurable indicators — from education level and digital access to institutional quality and trust in governance. However, for the construction of a quantitatively grounded irrationality index, simple group comparisons are insufficient. It is necessary to determine the relative weight of each indicator — that is, to identify which variables exert the strongest influence on the tendency toward irrational behavior.

To that end, the next stage of the study employed the conspiracy belief index as an integral marker of irrational perception. Using Pearson correlation coefficients between this index and a set of key indicators, we calculated quantitative weights reflecting the influence of each variable on behavioral instability during periods of crisis. This approach made it possible not only to identify the most sensitive domains but also to establish the groundwork for constructing an integral irrationality index within a composite analytical model.

The model included 10 independent variables: educational level (percentage with higher education and average years of schooling), Corruption Perception Index (CPI), trust in government, digital literacy (DAI), internet access, Democracy Index, Press Freedom Index, and Gini Index (as a proxy for social inequality).

Based on data from 30 countries for the period 2022–2024, Pearson correlation coefficients were calculated between each indicator and the conspiracy belief index. To avoid information loss due to the directionality of relationships (positive/negative), the subsequent calculations were conducted using the absolute values of the correlation coefficients. This enabled the determination of the relative weight of each indicator within the overall structure of influence.

The following indicators received the highest weights in the model:

Digital Literacy Index (DAI) — 11.89%
Average Years of Schooling — 11.85%
Democracy Index — 11.63%
Internet Access — 11.60%
Corruption Perception Index — 11.48%

These indicators exert the most significant influence on irrational behavior, highlighting the primary role of informational awareness, education, and institutional quality in shaping critical thinking.

Other variables, including trust in government (11.31%), share of population with higher education (10.77%), Press Freedom Index (10.21%), and Gini Index (9.25%) also demonstrated notable influence, although to a lesser extent.

The resulting weights can subsequently be used to construct a composite irrationality index, enabling a quantitative assessment of behavioral vulnerability in each country or region depending on the structure of its indicators. This, in turn, allows for not only identifying behavioral instability but also formulating key directions in institutional, educational, and informational policy aimed at its mitigation. The formula for calculating the irrationality index will take the following form:

$$\textbf{Irrationality Index (II)} = 0.1189 * (1 - \text{DAI}) + 0.1185 * \left(1 - \left(\frac{Democracy\ Index}{Max}\right)\right) + 0.1160 * (1 - Access\ to\ Internet) + 0.1148 * \left(\left(1 - \frac{CPI}{100}\right)\right) + 0.1131 * \left(1 - \left(\frac{Trust\ in\ government}{100}\right)\right) + 0.1077 * \left(1 - \left(\frac{Education}{100}\right)\right) + 0.10.21 * \left(1 - \left(\frac{Press\ freedom}{Max}\right)\right) + 0.0925 * \left(\frac{Gini}{100}\right);$$

Notes to the Formula:

DAI, CPI, Education, Government Trust, and Gini Index are expressed as percentages (0–100).

The Democracy Index, Press Freedom Index, and Average Years of Schooling are normalized to their maximum values in the sample.

The higher the Behavioral Irrationality Index (II), the greater the potential for behavioral irrationality of the population in times of crisis.

The proposed Behavioral Irrationality Index (II) includes indicators that reflect deep-rooted socioeconomic and cognitive characteristics of a society—structural factors. These are not situational reactions but long-term preconditions that shape perceptions of reality and the likelihood of irrational decision-making in response to external stimuli.

This nature of the irrationality index carries several important analytical implications:

The index evolves slowly, as it is based on inertial variables (education, democratic institutions, digital literacy, etc.).

This makes it a reliable indicator of the fundamental level of behavioral vulnerability, unlike short-term sentiment indices that may fluctuate due to current events.

Irrationality index is appropriate for use as a fundamental variable in models of social resilience, risk of panic waves, or destructive economic decisions.

Reducing the (II) is only possible through systematic efforts in education, access to quality information, and increasing trust in democratic institutions.

By calculating the irrationality index for Ukraine and other countries and comparing them, the analysis reveals significant differences in the structural behavioral resilience of nations. The highest (II) is recorded in Ukraine (0.4782), indicating a high latent vulnerability to irrational responses

during crises. This is due to relatively low institutional trust, moderate digital literacy, and weak democratic traditions.

Georgia also shows a high (II) (0.4361), confirming common features of transitional economies. Poland (0.3820) demonstrates a somewhat lower index due to higher levels of democracy and education, although signs of vulnerability persist.

The lowest (II) values were recorded in Germany (0.2993) and the United States (0.3167), reflecting established institutional trust, mature democratic culture, and strong cognitive resilience. These countries display lower risks of uncontrolled mass reactions to informational shocks and retain self-regulation potential in turbulent environments.

Behavioral Problems Confirmed by the Irrationality Index:

Ukraine (II – 0.4782)

Characterized by a high level of conspiracy beliefs, low institutional trust, and moderate digital and educational capacity. This creates fertile ground for manipulation of public opinion, panic, and inertial perception of economic decisions, especially under conditions of military and informational aggression.

Georgia (II – 0.4361)

Structurally similar to Ukraine: post-war trauma, polarized media landscape, and low trust indicators contribute to reactive economic thinking and unstable social behavior under risk.

Poland (II – 0.3820)

Exhibits stronger digital infrastructure, but shows signs of declining trust in democratic institutions and partial radicalization of the political field, leading to greater sensitivity to populist economic messaging.

USA (II – 0.3167)

Despite high education and digital integration, the crisis period of 2020–2022 saw increased distrust, social polarization, and disinformation campaigns that triggered irrational economic reactions among households and businesses.

Germany (II – 0.2993)

The most stable among the analyzed countries, with high levels of democracy, education, and institutional trust. However, even here, the 2022–2023 period witnessed spikes in anxiety and distrust in response to external crises (energy, inflation), confirming the general vulnerability of even stable systems.

In the context of a hybrid reality—where classical challenges intertwine with informational, psychological, and trust-based threats—national economic security ceases to be a purely material category. The findings of this study have demonstrated that behavioral factors—digital and critical literacy, the level of institutional trust, educational potential, and perceptions of conspiracy—are playing an increasingly prominent role in shaping the resilience of national economies.

The proposed Behavioral Irrationality Index (II) represents an attempt to quantitatively capture this new reality. Its calculation based on publicly available international data enables not only the assessment of countries' behavioral vulnerability, but also the comparison of their adaptive potential in crisis conditions. The case of Ukraine vividly illustrates that a high (II) correlates with low levels of trust, widespread misinformation, and unstable social responsiveness.

The analytical generalizations confirm the necessity of revising national security strategies with consideration of cognitive-behavioral determinants. Enhancing digital and critical education, supporting democratic institutions, and

fostering information hygiene should be viewed not as auxiliary but as fundamental directions of modern security policy.

Thus, the transformation of economic security challenges lies not only in the changing nature of threats, but also in the urgent need to transform the tools by which these threats are identified, measured, and neutralized.

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2.4. LEGAL REGULATION OF PAYMENT CARD OPERATIONS AND ITS ROLE IN STRENGTHENING THE ECONOMIC SECURITY OF THE STATE

In the context of global financial integration and the rapid digital transformation of the economy, the legal regulation of payment card operations has become a crucial component of ensuring financial transparency and strengthening the economic security of the state. The effective functioning of payment card systems not only promotes the development of cashless transactions but also reduces the risks associated with the circulation of cash, including the financing of illegal activities and corruption schemes.

A well-structured legal framework for payment card operations provides a foundation for enhancing state control over financial flows, improving the efficiency of banking supervision, and protecting the rights of consumers and financial institutions. These measures contribute to the stability of the national financial system and create favorable conditions for sustainable economic development.

Furthermore, in the post-crisis and post-war recovery period, the importance of such regulation increases significantly, as it enables the state to implement mechanisms for combating financial crime, expand the tax base through the

reduction of shadow transactions, and increase public trust in the banking system.

Therefore, research on the legal regulation of payment card operations and its role in strengthening the economic security of the state is highly relevant, as it provides a basis for developing effective financial policies, aligning national legislation with international standards, and ensuring the resilience of the financial system to internal and external threats.

The general principles of the functioning of payment systems in Ukraine, including the issuance and execution of transactions using electronic payment instruments, are set forth in the laws of Ukraine, including the Law on the National Bank of Ukraine [16], the Law on Banks and Banking [15], the Law on Payment Systems and Money Transfers in Ukraine [16], and other regulations. These include the Regulation on Conducting Transactions with Special Means of Payment approved by the Board of the National Bank of Ukraine on 30.04.2010 No. 223 [42], the Regulation on the Operation of National and International Payment Systems in Ukraine No. 348 [41], and other regulatory documents of the National Bank of Ukraine.

The Law of Ukraine On the National Bank of Ukraine defines the main functions of the NBU. Pursuant to Article 7(6), the NBU regulates the activities of payment and settlement systems in Ukraine, establishes the procedure and forms of payments, including interbank payments. Clause 7 of Article 7 states that the NBU determines the directions of development of modern electronic banking technologies, creates and ensures continuous, reliable, and efficient functioning of payment and accounting systems, controls development of payment instruments, automation of banking activities, and protection of banking information. Clause 25 of Article 7 provides that the NBU determines the procedure for

routing, clearing, and settlements between payment system participants for transactions with payment cards issued by resident banks in Ukraine. Paragraphs 27-29 of Article 7 state that the NBU issues licenses to non-bank financial institutions to participate in payment systems, maintains a register of payment and settlement systems, and supervises their activities.

Article 40 of the Law provides a detailed legal framework that regulates the procedure for making payments within the national financial system. Specifically, it entrusts the National Bank of Ukraine (NBU) with the authority to establish comprehensive rules, standardized forms, and procedural standards governing payment operations. These regulations apply uniformly to banks, other legal entities, and individuals who participate in the economic turnover of Ukraine. The scope of these regulations encompasses payments executed through various means, including traditional paper-based documents, electronic documentation, diverse payment instruments, as well as cash transactions.[37, 38, 42]

Furthermore, the Article highlights the pivotal role of the NBU in ensuring the orderly coordination of settlements across the banking and financial sectors. This includes the oversight and regulation of clearing and settlement processes, which are essential for maintaining the integrity and efficiency of the payment system. The NBU is also vested with the authority to issue permits and licenses necessary for conducting clearing and settlement operations, thereby exercising supervisory control to mitigate risks associated with payment transactions.

Through these provisions, Article 40 establishes a robust institutional framework that not only standardizes payment procedures but also enhances transparency, reliability, and security within Ukraine’s payment infrastructure. This legal foundation enables the harmonization of payment practices and

supports the development of an effective, safe, and modern financial environment conducive to economic growth.

The Law of Ukraine "On Payment Systems and Transfers in Ukraine" establishes the basic principles of payment and settlement systems in Ukraine, defines the concept and general procedure for transferring funds within the country, establishes responsibility of transfer participants, and regulates the general procedure for supervising payment systems.

Article 1 (clause 1.29) states that the payment system is a set of payment organizations, payment system participants, and relations between them arising in the course of money transfer. A mandatory function of the payment system is the transfer of funds.

Article 9 defines the basic principles of payment systems in Ukraine. Payment systems that use payment cards in Ukraine are classified as follows:

- An international payment system is a system in which a payment organization can be both a resident and a non-resident. It operates in two or more countries and allows money transfers, including between different countries.

- Internal payment systems - covers internal interbank and local systems implemented by Ukrainian banks that use technologies similar to international payment systems, as well as other technologies. Among them is the National System of Mass Electronic Payments (NSMEP).

The Law on Payment Systems also defines the forms and types of payments (Article 4), as well as the types of accounts that banks or other institutions participating in the payment system may open for their clients. In particular, Article 7 (clause 7.1.2) establishes that a current account is an account opened by a bank based on an agreement for storing customer funds and performing payment transactions in accordance with

the terms of the agreement and requirements of the Ukrainian legislation.

Article 8 defines the deadlines for money transfers, and clause 8.5 specifies these deadlines for transfers using payment instruments. Pursuant to Article 14 of this Law (clause 14.2), the issuance of electronic payment instruments in Ukraine may only be carried out by banks that have entered into an agreement with the payment organization of the relevant payment system and received its permission to conduct these operations (except for banks that issue electronic payment instruments for their own use). [37, 38, 42]

Clause 14.4 establishes that the payment organization of the respective payment system independently determines the type of electronic payment system (except for mobile payment software), the type of identification means (for example, a magnetic stripe or a chip), and the graphic data applied to them.

A payment system participant shall have the right to simultaneously place two or more trademarks (trademarks for goods and services) on a payment card in accordance with agreements with payment organizations of all payment systems whose trademarks are depicted on the card. These agreements must contain the rules for conducting transactions using a payment card. [37, 38, 42]

An electronic payment instrument must contain mandatory information to identify the payment system and the issuer. The Bank and the user shall enter into an agreement on the procedure and terms of use of the electronic payment instrument. Before entering into this agreement, the bank is obliged to familiarize the user with the terms of the agreement, tariffs for servicing the electronic payment instrument, and the rules for its use. [37, 38, 42]

The bank is obliged to provide this information in an understandable form and place it in a place convenient for the user, as well as provide it upon request in writing or electronically. When issuing an electronic payment instrument, the bank must provide the user with a copy of the agreement, rules for using the electronic payment instrument, and tariffs for its maintenance.

Article 14 (clause 14.9) states that the National Bank of Ukraine has the right to set mandatory terms of the contract.

The Bank shall, in accordance with the terms of the agreement to:

- inform the user about transactions using an electronic payment instrument;
- provide the user with the opportunity to notify the bank of the loss of an electronic payment instrument;
- register and store information confirming the user's data received by the bank and the user within the time limits established by law.

In accordance with the terms of the Agreement, the User is obliged to provide the Bank with contact information, which the Bank is obliged to keep for the duration of the Agreement. Purchases in Ukraine are made exclusively by resident legal entities that have entered into relevant agreement with a payment organization. [37, 38, 42]

According to Article 14 (clause 14.19), business units are obliged to provide payment methods to holders of electronic payment instruments for goods sold (services rendered) using at least three payment systems, one of which must be a multi-level payment system based in Ukraine, and which payment organization is a payment service provider also located in Ukraine. Requirements for economic entities to obtain electronic means of payment for goods (services) sold are determined by the Cabinet of Ministers of Ukraine.

The State Tax Service of Ukraine monitors compliance with the requirements for payments by electronic means. The specially authorized central executive body in the field of consumer protection is responsible for protecting the rights of holders of electronic payment instruments during these settlements .[37, 38, 42]

Due to the low level of financial literacy of the population, it is important to pay attention to clause 14.20, according to which the acquirer is obliged to familiarize the user with the amount of its commission for receiving cash through an ATM immediately before initiating the transaction. Information on the amount of the commission fee must be provided to the user on the screen of the ATM and/or printed on paper documents related to transactions using electronic means of payment. [37, 38, 42]

When a user sees information about the amount of the fee on the ATM screen, he or she should be able to cancel the transaction that has already been initiated. Initiation of a transfer by means of an electronic payment instrument is regulated by Article 25 of the Law of Ukraine "On Payment Systems". Electronic payment instruments of both national and international payment systems may be used to make transfers within Ukraine in accordance with the procedure established by the National Bank of Ukraine.

Initiation of a transfer using electronic payment instruments must be documented with appropriate documents regulating transactions with electronic payment instruments, in accordance with the rules of payment systems.

The latest amendments to the Law of Ukraine "On Payment Systems and Money Transfers in Ukraine" were designed to ensure the continuous, reliable and effective functioning of payment systems, mass introduction of non-cash payments and development of the national payment

infrastructure. They also contribute to reducing banks' costs by switching to payment for payment services in hryvnias and improving the quality of services provided to banks and citizens of Ukraine. These changes create the legal basis for the formation of the national payment infrastructure, which includes the national card transaction routing system and multilateral clearing. [37, 38, 42, 44, 50]

In accordance with Article 7 of the Law of Ukraine "On the National Bank of Ukraine" and Articles 9, 10, 12 and 41 of the Law of Ukraine "On Payment Systems and Money Transfers in Ukraine", the Board of the National Bank of Ukraine adopted regulations on the activities of international payment systems in Ukraine, as well as money transfer systems between individuals without opening an account, the payment organizations of which are resident banks (hereinafter referred to as money transfer systems). These provisions are approved to regulate issues related to the activities of international payment systems in Ukraine and systems of money transfers between individuals without opening an account.

The position determines the order:

- registration of banks, non-banking financial organizations that have a license from a specially authorized executive body for the regulation of financial services markets, a national postal operator, payment organizations of national payment systems, and other organizations, the founders (participants) of which are banks and financial institutions. Also, the registration includes payment organizations of international payment systems that have a license issued by a national postal operator, as well as organizations which founders are banks and financial institutions, with a license issued by a specially authorized executive body that regulates payment system markets. This also applies to non-resident institutions or non-resident institutions authorized by them that

carry out money transfers and have registered agreements on the membership or participation in international payment systems with the National Bank of Ukraine;

— coordination with the National Bank of the rules of domestic and international payment systems in which payment organizations are residents, including funds transfer systems, intrabank payment systems, interbank settlement systems, and systems in which funds transfers are initiated using electronic payment instruments;

- registration and issuance of permits to non-bank payment systems to carry out activities related to the transfer of funds;

- granting permission to conduct clearing and settlement operations;

- notification to the National Bank by resident payment organizations of international payment systems about the conclusion of agreements with non-resident legal entities regarding their membership or participation in these systems, as well as about the conclusion of agreements with non-resident payment organizations of international payment systems for making money transfers with the participation of two payment systems. [37, 38, 42, 44, 50]

In accordance with Articles 7 and 40 of the Law of Ukraine “On the National Bank of Ukraine” and Articles 13 and 14 of the Law of Ukraine “On Payment Systems and Money Transfers in Ukraine”, the Board of the National Bank of Ukraine approved the Regulations on the issuance of special payments and conducting transactions with them to improve the issue of electronic payment means and conducting transactions with them (hereinafter referred to as the Regulations).

This provision defines general requirements of the National Bank of Ukraine (hereinafter referred to as the

National Bank) for the issuance of special payments by banks and branches of foreign banks (hereinafter referred to as banks) and regulates the procedure for conducting transactions using them.

The requirements set forth in this Regulation are binding upon all members and participants of payment systems who act as subjects in the legal and operational relationships that arise during the execution of transactions initiated through the use of special payment instruments specific to these systems. These participants include financial institutions, payment service providers, and other entities involved in the processing, clearing, and settlement of payments within the framework established by the payment system. The Regulation ensures a uniform standard of conduct and operational procedures aimed at enhancing the security, transparency, and efficiency of payment transactions conducted via these specialized instruments. [37, 38, 42, 44, 50]

To facilitate a clearer and more precise understanding of the specialized terminology used within the card payment industry, and to harmonize it with existing legal frameworks, we have developed a comparative table of terms. This table systemically aligns key definitions as articulated in the Law of Ukraine “On Payment Systems and Money Transfers in Ukraine” with the corresponding provisions and regulatory acts that govern the issuance, circulation, and transactional use of special payment instruments within payment systems (Table 2.8).

Table 2.8 - Comparative table of terms

Law of Ukraine "On Payment Systems and Money Transfers in Ukraine"	**Regulations on the procedure for issuing special payment instruments and conducting transactions using them**
A payment card is an electronic payment instrument in the form of a plastic card or other card, issued in accordance with the procedure established by law. It is used to initiate the transfer of funds from the payer's account or the corresponding bank account to pay for goods and services, transfer funds to the accounts of other persons, receive cash at bank counters or through ATMs, as well as to carry out other operations provided for by the relevant agreement.	A payment card is a special payment instrument in the form of a plastic card or other card issued on legal grounds. It is used to perform payment transactions from the payer's or bank's account, as well as to carry out other transactions specified in the agreement.
An electronic payment instrument is a payment instrument that allows the holder to receive information about their funds and initiate their transfer using a payment device.	A special payment instrument is a payment card, mobile payment instrument, or other payment instrument that performs an identification function. This instrument allows the owner to make payment transactions from the payer's or bank's account and perform other transactions.
The owner of an electronic payment instrument is an individual who lawfully uses the electronic payment instrument to initiate a transfer from the relevant bank account or to carry out other transactions with this electronic payment instrument.	A holder of a special payment instrument is an individual who legally uses the special payment instrument to initiate a transfer of funds from the relevant bank account or to carry out other transactions using this special payment instrument.

Source: [47]

This comparative analysis serves multiple purposes: it aids practitioners, regulators, and stakeholders in navigating complex legislative and regulatory language; it promotes consistency in interpretation and application of legal norms; and it supports the integration of domestic payment practices with international standards. By establishing a common terminology base, the table contributes to the development of a more coherent, efficient, and legally sound payment infrastructure in Ukraine. [38, 42, 44, 50-54]

However, the requirements of this provision do not apply to enterprises that issue telephone, transport, fuel, discount cards, and other means that are not subject to payment and are intended to record the issuer's debt to the owner of these funds in electronic form for prepaid goods (services) and for transactions carried out using them.

From this, we can conclude that there is a term “electronic payment instrument”, which in the old version of the law and in the version of the Regulation on the Issuance and Implementation of Special Payments is used as a “special payment instrument”.

Analyzing the concept of “payment card”, it can be argued that in the wording of the Law of Ukraine “On Payment Systems and Money Transfers in Ukraine”, it has a clearly defined list of capabilities and functions.

According to the Regulation on the issuance of special payment instruments and transaction with them, the issuance of special payment instruments in Ukraine may be carried out exclusively by banks that have concluded an agreement with the payment organization of the payment system and received its permission to conduct these transations, with the exception of deposit systems that work with a participant in a bank that are interconnected. [38, 42, 44, 50-54]

The issuer has the right to provide special personal payments to individuals who are not engaged in business, as well as special corporate payment instruments to business units.

This rule is governed by:

1. conducting transactions using special payment methods;

2. features of issuing mobile payment instruments and conducting transactions with them;

3. acquiring with the participation of special payment instruments;

4. general requirements for the security of payment transactions and risk management;

5. basic rules for document flow for transactions with special payment instruments;

6. interbank transfers within the framework of transations with special payment instruments;

7. monitoring and control of transactions using special payment instruments.

This rule comprehensively governs multiple critical aspects related to the use and management of special payment instruments within the payment system.

Firstly, it regulates the conduct of transactions executed through special payment methods, establishing clear procedural guidelines to ensure their proper execution, accuracy, and compliance with established legal norms. This includes defining the roles and responsibilities of all parties involved in such transactions, thereby safeguarding the interests of both payers and payees.

Secondly, the rule addresses the distinctive features associated with the issuance of mobile payment instruments, reflecting the growing importance of mobile technologies in the financial sector. It outlines the specific procedures,

technical standards, and regulatory requirements that must be adhered to when issuing these instruments and conducting transactions through mobile platforms, ensuring security and reliability in an evolving technological landscape.

Thirdly, the regulation covers acquiring operations that involve the participation of special payment instruments. It specifies the conditions under which acquiring entities - such as merchant service providers and payment processors - operate, including their obligations and the mechanisms for processing payments made with special payment instruments.

Fourthly, the rule establishes general requirements aimed at ensuring the security of payment transactions and the effective management of associated risks. This encompasses the implementation of measures to prevent fraud, unauthorized access, and other security threats, as well as the development of risk assessment and mitigation strategies to maintain the integrity of the payment system.

Fifthly, the regulation sets forth the basic rules governing the document flow related to transactions involving special payment instruments. It defines the standards for documentation, record-keeping, and reporting necessary to support transparency, auditability, and regulatory compliance throughout the lifecycle of payment transactions.

Sixthly, the rule governs interbank transfers that occur within the framework of transactions using special payment instruments. This includes the protocols for settlement between financial institutions, timelines for processing, and mechanisms to ensure the accuracy and finality of funds transfers across banking entities.

Finally, the regulation outlines the procedures for monitoring and control of transactions conducted via special payment instruments. This involves ongoing supervision to detect irregularities, enforce compliance with regulatory

requirements, and maintain overall trust and stability within the payment system.

Together, these provisions form a comprehensive regulatory framework that promotes secure, efficient, and transparent operation of payment transactions involving special payment instruments, supporting the development of a robust and trustworthy financial infrastructure.

The legal regulation of payment card operations is a key element in ensuring the economic security of the state in the context of the modern development of cashless payments and the digital economy. An effective regulatory framework not only creates the conditions for the stable and secure functioning of payment systems but also acts as a tool for countering financial crime and protecting consumer rights. In recent years, Ukraine has made significant progress in this area, harmonizing its legislation with international standards, particularly with the norms of the European Union. This has allowed for expanding the possibilities of using payment cards, increasing the level of trust in the banking system, and stimulating the development of innovative payment technologies. [32, 38, 42, 44, 50-54]

One of the most important functions of legal regulation is combating money laundering, terrorist financing, and other illegal financial operations. The legislation establishes strict requirements for customer identification (KYC – Know Your Customer), transaction monitoring, and reporting of suspicious operations. This allows regulatory bodies to track capital flows, prevent the use of payment cards for shadow economy transactions, and reduce risks to the financial system as a whole. An important aspect is also consumer protection, which is an integral part of economic stability. A clear definition of the rights and obligations of participants in payment relationships, the establishment of mechanisms for disputing

unauthorized operations, and compensation for losses increases citizens' trust in cashless payments. This, in turn, contributes to a reduction in the volume of cash circulation, which is a positive factor in the fight against corruption and the shadow economy.

Despite the successes achieved, the field of legal regulation of payment operations requires constant improvement. In particular, with the development of financial technologies (FinTech) and the emergence of new payment instruments, such as cryptocurrencies and digital wallets, there is a need to adapt legislation. It is necessary to clearly define the legal status of these instruments, develop rules for their circulation, and integrate them into the overall system of financial monitoring. Another important direction is strengthening cybersecurity. The increase in the number of cashless transactions leads to an increase in the risks of cyberattacks, phishing, and other types of fraud. Accordingly, the legislation must set high standards for data protection and require banks and payment systems to implement modern encryption technologies and multi-level authentication.

In summary, it can be argued that the legal regulation of payment card operations plays a decisive role in strengthening the economic security of the state. Effective legislation ensures the stability of the financial system, protects the interests of both consumers and the state, and creates a favorable environment for innovation. However, given the dynamic development of technology, it is necessary to constantly adapt the regulatory framework to meet modern challenges and ensure reliable protection against new threats. Further improvement of legislation in the field of combating cybercrime, regulating new financial instruments, and strengthening consumer rights protection are priority tasks for

ensuring the long-term economic security of Ukraine. [30, 38, 42, 44, 50-54]

In 2025, the legal regulation of payment card operations in Ukraine reached a qualitatively new level, marked by the adaptation of legislation to European standards, the strengthening of consumer protection, and the introduction of cybersecurity requirements aligned with international payment system rules. In the context of the digitalization of the financial sector, payment cards have become not only a convenient tool but also an effective mechanism for increasing the transparency of financial flows, reducing the scale of the shadow economy, and strengthening tax discipline all of which directly contribute to the economic security of the state.

The legal framework governing card operations ensures a balance between financial technology innovation and the protection of the country's economic interests. It supports the stability of the payment infrastructure, fosters the development of a cashless economy, and facilitates Ukraine's integration into global financial processes. At the same time, new challenges are emerging including the threats of cyberattacks, abuses in the field of electronic payments, and dependence on external payment operators requiring the state to form a strategy for technological independence. [38, 42, 44, 50-54]

The development prospects lie in the comprehensive improvement of legal regulation, with emphasis on:

- harmonizing national legislation with EU Payment Services Directives (PSD2 and the upcoming PSD3);

- promoting the growth of domestic payment solutions capable of ensuring financial autonomy in critical situations;

creating unified security and user verification standards based on biometric technologies;

- expanding regulatory provisions aimed at preventing financial fraud and money laundering;

supporting innovative FinTech solutions, including the integration of payment cards with digital wallets, mobile banking services, and blockchain platforms.

Thus, the advancement of the legal regulation of payment card operations in the coming years will become a determining factor in strengthening the economic security of the state. Its effectiveness will depend on the ability of state institutions to respond quickly to technological and geopolitical challenges, ensuring the reliability and competitiveness of the national payment system in the global economic environment.

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SECTION 3. INVESTMENT AND INNOVATION SECURITY AS A FACTOR OF ECONOMIC GROWTH

3.1. INVESTMENTS IN THE CONSTRUCTION INDUSTRY: RISKS, OPPORTUNITIES AND SOCIO-ECONOMIC IMPACT

Relevance of the Topic. Georgia's construction sector has been a significant driver of economic growth, contributing to infrastructure development, job creation, and increased property values. Current construction projects play a crucial role in shaping the future landscape of the country.

Georgia is steadily gaining recognition for its economic resilience and strategic location. As the country maintains its course towards sustainable development, investments in the construction sector have become a key driver of inclusive growth. Investments in construction play a significant role in the inclusive growth and sustainable economic transformation of countries. As an integral part of everyday life, the construction and real estate sectors are priority areas where our investments can make a tangible difference.

Economic growth is a strategic goal of every country. The construction business is an important factor in the economic growth of developing countries. The economic situation of the country is immediately reflected in it. When economic growth slows down, it should be assumed that the construction process also proceeds with delays and the risk factor increases.

The construction industry serves as a cornerstone of economic development, playing a crucial role in shaping the physical infrastructure of societies around the world. From residential and commercial buildings to critical infrastructure projects such as roads, bridges and utilities, construction is a

multifaceted industry that directly impacts the quality of life and economic well-being of a society. The construction sector is a significant contributor to employment, innovation and economic growth, acting as a catalyst for progress.

Indeed, the construction industry is one of the most important sectors in the economy of any country. It not only creates new jobs, but also significantly contributes to the development of infrastructure and the economic growth of the country. In recent years, there has been an increase in investments in the construction sector, which is due to various factors, including increased urbanization, the expansion of cities and the need for public infrastructure. Although the construction industry provides access to many opportunities for investors, it also requires attention to risks, which can significantly affect the success of investments.

The dynamics of the construction industry directly depend on technological progress. Modern technologies, such as digital transformation, 3D printing, artificial intelligence and Building Information Modeling (BIM), create new opportunities for effective project management and cost reduction. In addition, environmental sustainability requirements and green construction practices are becoming increasingly important, posing new challenges for investors.

As a result of global conflict regions, pandemics, and global economic crises, the construction sector is now more sensitive to risks. Financial difficulties, rising construction material prices, and labor shortages are factors that affect the implementation of construction projects. In addition, environmental regulations and sustainability requirements are becoming increasingly important, posing new challenges for the construction industry.

Managing investment in the construction sector requires not only taking into account financial difficulties, but also

assessing social and environmental factors. Strict regulations, environmental legislation, and social responsibility related to the construction process have a significant impact on investor decisions.

It is also necessary for investors to pay attention to local and international market trends in order to correctly assess which projects may be more profitable and safe in terms of investment. It is known that the construction industry includes a variety of types of projects – residential buildings, commercial facilities, infrastructure projects, etc. The business strategy and risks of each of them are different, which requires the development of individual approaches.

Research objectives. The aim of the scientific paper is to analyze the risks and opportunities of investments in the construction sector. The study covers both local and international markets in order to explore how investors can make effective decisions in an environment where risks and opportunities exist equally. Through this study, we will try to assess how investors can manage risks and how to use existing opportunities as effectively as possible. Data analysis and study of various cases will help us identify best practices and analogies that will contribute to the success of investments in the construction sector. Therefore, the ultimate goal of the study is to assess the current situation in the Georgian construction market and draw appropriate conclusions, determine the trend characteristics and risk impacts of the construction business in Georgia; in addition, it aims to present an overview of the current construction processes in Georgia, reflect the main projects, developments and directions that shape the construction industry in different regions.

Subject and object of the research: The object of the research is to determine the efficiency of construction

development companies operating in the three leading regions of Georgia (Tbilisi, Imereti and Adjara), and the subject of the research is the assessment of risks and socio-economic impact based on the correlation between the volume of turnover in construction, investments made in construction and the number of employees in construction.

Research objectives. The objective of our research is to analyze the risks and opportunities of investments in the construction sector in order to develop strategies and recommendations for investors. More specifically, the research objectives are:

1. To identify the main risks that affect construction projects;

2. To study the development opportunities of the sector in the context of technological innovation and sustainability;

3. To compile best practices for risk management and investment optimization.

4. To determine the inclusiveness of the construction business environment in Georgia, to identify ways to improve the sector based on the analysis of risk factors.

Research Methods. This scientific paper examines the importance of investing in construction projects in Georgia to promote inclusiveness and sustainability. Qualitative, quantitative and statistical methods will be used in the research. The research tool is statistical analysis, sampling - purely random. In order to ensure the accuracy of the data, cumulative, comparative, correlation and regression methods were also used. Generalization was used to formulate final conclusions. The research methodology includes an analysis of the literature available in hard (printed) or various scientific databases, case studies, interviews with industry experts and the collection of statistical data, which allows us

to identify successful practices and risk management strategies in real situations.

Literature review

It should be noted that the construction sector is mainly supported by local financial resources; indeed, the construction industry is not even among the top three in the sectoral structure of foreign direct investment. „In 2023, the three main economic sectors accounted for 66.5% of foreign direct investment (FDI). The largest share of FDI was recorded in the financial and insurance activities sector, totaling $630.1 million (39.5%). This was followed by the manufacturing industry with $291.7 million (18.3%), and the transport sector with $138.2 million (8.7%) **(***Tsinaridze et al…2024).*

In general, investments have different macroeconomic purposes, the authors (Tsinaridze, Makharadze…2023) also noted in a previous study that „The impact of foreign direct investment is great not only on economic indicators, but also on the standard of living of citizens in general. The impact on employment, GDP, and the trade balance is particularly large. The correlation between FDI and employment is quite high at 0.655715. This is not unusual, because more financial resources and more investments allow us to increase the number of employees and help reduce unemployment. For many years, investment was associated only with employment, but this is definitely not the case. Investments are closely related to many other areas.“

Although the construction industry remains an important sector of the country's economy, this "sector is also subject to objective or subjective obstacles, undevelopment-oriented legislative acts. There are violations of construction norms, economic crimes, biased decisions, etc. Just like any other sector of the economy, the construction industry is also

very sensitive to faulty regulations and artificially created barriers." *(Jalaghonia et al…2022.)*

One of the challenges in risk analysis for the construction sector remains the lack of development plans. "The deadlines for obtaining construction permits are further complicated for major investment cities. For example, according to the National Statistics Service of Georgia, the Adjara Autonomous Region ranked second after Tbilisi in terms of construction permits issued in 2018-2019, and has been in 4th-5th position since 2020. This is the result of a competition announced by the Batumi City Hall to prepare a development plan for the city of Batumi, and during the preparation of the development plan (according to the legislation), the issuance of permits has been partially suspended" *(Tsinaridze et al…2023).*

Zhang and Shen (2017) explore the multifaceted nature of investments within the construction sector, emphasizing the inherent risks such as project delays, cost overruns, and regulatory uncertainties. They underscore that while these risks pose significant challenges, they also open avenues for innovative investment strategies, including public-private partnerships and sustainable development initiatives. The authors highlight that strategic risk management and technological advancements are crucial for harnessing opportunities and ensuring the socio-economic benefits of construction projects. This study provides a comprehensive framework for understanding the delicate balance between risk mitigation and opportunity capitalization in construction investments. *(Zhang et al…2017).*

Liu and Walker (2020) focus on the socio-economic dimensions of construction investments, analyzing how these projects influence local economies, employment rates, and community development. They argue that investments in

construction have significant ripple effects, contributing to urbanization, infrastructure development, and economic growth. However, they also caution about potential negative impacts such as displacement, environmental degradation, and socio-economic inequalities. Their research advocates for inclusive planning and sustainable practices to maximize positive impacts while minimizing adverse effects. The study underscores the importance of integrating socio-economic considerations into investment decision-making processes. *(Liu et al…. 2020).*

These authors collectively highlight that investments in the construction industry are complex and multifaceted, involving significant risks but also substantial opportunities for socio-economic development. Effective risk management, innovative strategies, and sustainable practices are essential for maximizing benefits and minimizing negative impacts.

Main part

A thriving construction and real estate sector is essential for economic growth. The growth in demand for construction and real estate projects is driven by macroeconomic and disruptive megatrends such as increased urbanization, expanding trade, demographic trends such as rising income levels and a younger workforce. Technology and a sustainable environment. While these are boosting economic activity, they are also creating additional demand for quality and sustainable real estate that is largely unmet. This imbalance will widen as demand continues to grow and will ultimately become a barrier to further growth. Investment in the sector can play a major role in determining whether cities become local and regional hubs for sustainable growth. But without this investment and growth, local populations are at risk of being lost.

However, the sector faces several challenges in meeting this unmet demand and maximizing the potential it has to impact people's lives. In many markets where investment is taking place, the sector is fragmented with sub-scale developers and little use of efficient, sustainable construction practices and technologies. All of these factors typically lead to high construction costs, a proliferation of low-quality small and medium-sized projects, and a lack of large-scale investment opportunities.

As a result, the sector in emerging markets often struggles to attract the interest of institutional investors, with activity concentrated in projects that are shorter-term or have the greatest potential for high returns. Those sub-sectors that contribute to long-term economic growth, support the creation of sustainable communities, and offer large-scale development opportunities – such as residential, industrial and logistics parks, student housing, and others.

The growth of construction projects stimulates related industries, since construction requires goods and services. Thus, it can be said that the growth and stimulation of construction by the government also contributes to the development of other industries, which in the long term is a prerequisite for the country's economic growth**.**

In developing countries, the development of the construction business not only contributes to the development of adjacent industries, but also has a positive impact on agriculture, transport infrastructure, etc. Infrastructure projects contribute to the national GDP, which is directly aimed at increasing the economic well-being of the country.

The development of the construction industry is accompanied by an increase in the number of jobs. The construction industry is a business where the implementation

of each project can be of importance for the country's economy, especially when it comes to developing countries, such as Georgia. The implementation of each large-scale construction project creates additional jobs. The jobs created in the construction industry, taking into account all the conditions, are a positive event for the country's economy.

Therefore, investors who invest in the construction industry should be focused on eliminating the challenges they face, they can do their best to eliminate market failures and reduce risks. In this way, they ensure the achievement of sustainable development goals.

Investing in the construction business is accompanied by economic opportunity: the creation of high-quality jobs and improved livelihoods through the expansion of economic activity and contributes to greater economic productivity. Here we can highlight:

Inclusive urbanization: ensuring more inclusive access to social and economic benefits and the safety and health of all people in the city.

Ecological sustainability: improving energy and resource efficiency, land use, reducing emissions and climate sustainability.

It is not new that investing in a construction project is one of the optimal decisions for investors today. Investing in real estate development can bring many benefits and present new opportunities. The construction business in Georgia has been characterized by constant growth dynamics in recent years, it is distinguished by its multi-profile direction, this has a significant impact on stimulating economic growth, without which the development of various sectors of the economy is impossible.

Table 3.1 - Construction Sector Trends in Georgia 2014 – 2023

	2019	2020	2021	2022	2023	2024 I	2024 II	2024 III	2024 IV
Turnover, Billion Gel	8.3	8.2	8.3	10.9	12.1	2.6	3.2	4.1	4.4
Production Value, Billion Gel	8.9	9.1	9.1	11.9	13.5	3.0	3.7	4.5	4.8
Value Added, Billion Gel	3.6	3.5	3.3	4.1	4.8	...	...	...	...
Intermediate Consumption, Billion Gel	5.3	5.6	5.9	7.8	8.7	...	...	...	...
Fixed Assets, Billion Gel	2.7	4.6	4.6	5.0	4.6	...	...	...	...
Number of Employed, Thousand Person	70.0	66.1	64.3	65.5	68.2	60.6	63.4	68.0	69.7
Average Monthly Renumeration of Employees, Gel	1641.8	1726.0	1807.0	2040.4	2312.9	2628.6	2951.0	3204.0	3365.8

Source: *National Statistics Office of Georgia*

Construction, in turn, is directly related to improving the socio-economic situation and attracting investments. This connection, of course, is reflected in the overall state of the economy. It is important to keep up with global trends and build not only low-quality, but also premium-class real estate of modern standards, this is a real challenge not only for Georgia, but also for many developing and transitional economies. In order to see what place the construction sector occupies in the development of the country's economy, statistical data will give us a clear idea. As can be seen from the data of the National Statistics Service of Georgia, according to 2023 data, the turnover of the construction sector amounted to 12.1 billion GEL, while in 2022 it amounted to 10.9 billion GEL. In addition, according to preliminary data for the four quarters of 2024, the volume of production in 2023 amounted to 16.0 billion GEL.

Construction in Georgia is one of the largest sectors of the economy. In 2022, the value added created in the construction sector reached 4.1 billion GEL and accounted for 8% of the Georgian economy (gross domestic product - GDP). According to 2023 data, it was 4.8 billion GEL and the share of the construction sector is 7.2%. In 2022, the real value added in the construction sector increased by 16%, and in 2023 by 17%. Over the past 10 years, the average share of construction in GDP is 8%.

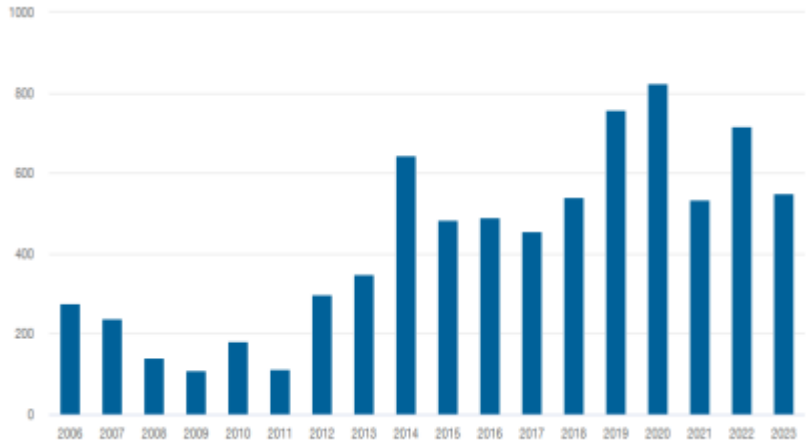


Fig. 3.1 - Investments in fixed aseets in construction, Million GEL, 2006-2023

Source: *National Statistics Office of Georgia*

We should pay special attention to construction in Georgia and its regions, we should find out what place it occupies in the country's economic growth process. This especially concerns the importance of the sector in determining the urban form in cities and its potential for strengthening economic, inclusive and sustainable growth in

the coming years, regardless of the impact of climate change or other risk factors.

Based on the data of the Tbilisi, Imereti and Adjara regions, we will determine the correlation between the volume of turnover in the construction sector and the number of employees using the Pearson coefficient, and we will build regression models based on the data of the volume of turnover and investments made in construction in all three regions.

Table 3.2 - Region - Tbilisi (capital) - Selected indicators of the construction industry

Indicators/period	Turnover in construction, million GEL (Y)	Number of people employed in construction, thousand people (X1)	Investments in construction, million GEL (X1)
2006	776,3	23 754	166,0
2007	1 122,2	28 925	80,1
2008	891,0	20 055	92,7
2009	1 267,4	24 545	95,2
2010	1 196,3	24 248	166,3
2011	2 480,5	42 520	70,2
2012	3 421,1	40 521	255,4
2013	2 185,2	40 025	279,8
2014	2 680,0	41 446	472,1
2015	3 771,1	42 516	415,3
2016	4 969,3	45 040	367,4
2017	5 081,5	46 287	334,2
2018	5 176,8	45 493	352,5
2019	5 417,4	40 673	421,8
2020	5 560,4	38 008	378,2
2021	5 450,3	35 203	366,7
2022	7 232,2	35610	371,8
2023	8 086,5	37 786	364,3

Note: Compiled by us based on data from the National Statistics Office of Georgia

Table 3.3 - Region - Imereti, Autonomous Republic of Adjara - Selected indicators of the construction industry

Indicators/period	Turnover in construction, million GEL (Y)	Number of employees in construction, thousand people (X1)	Investments in construction, million GEL (X1)
Region - Autonomous Republic of Adjara			
2006	94,2	4 951	9,5
2007	138,1	4 750	7,1
2008	239,3	5 359	8,7
2009	186,7	5 629	3,2
2010	210,6	4 099	3,1
2011	328,5	6 292	16,0
2012	512,8	8 202	14,2
2013	462,9	8 793	17,1
2014	672,0	10 276	129,7
2015	815,6	10 494	35,1
2016	984,2	10 272	46,5
2017	899,5	9 777	72,1
2018	883,2	10 217	144,3
2019	1 353,6	10 458	194,8
2020	1 085,4	10 398	265,5
2021	1 168,4	10 543	84,3
2022	1 476,3	11015	235,7
2023	1 418,4	10 536	77,6
Region - Imereti			
2006	50,1	3 225	1,6
2007	65,1	5 097	8,4
2008	38,1	3 241	0,4
2009	46,9	2 837	1,7
2010	39,2	2 110	1,2
2011	203,1	3 687	3,4
2012	147,8	5 082	16,2

Continuation of table 3.3

1	*2*	*3*	*4*
2013	117,2	3 833	2,7
2014	134,7	4 332	7,2
2015	184,8	4 147	9,6
2016	208,4	4 744	4,2
2017	242,8	4 911	10,3
2018	235,6	4 521	9,4
2019	349,9	4 032	72,3
2020	481,3	4 891	90,2
2021	625,9	5 847	42,7
2022	999,7	6010	53,1
2023	1 038,4	6 016	42,6

Source: *Compiled by us based on data from the National Statistics Office of Georgia*

Table 3.4 - Correlation analysis of turnover volume and number of employees in the construction sector in Tbilisi, the Autonomous Republic of Adjara and the Imereti region

Tbilisi		
Turnover	**Number of employees (X1)**	**0,599357071**
Adjara Autonomous Republic		
Turnover	**Number of employees (X1)**	**0,897740746**
Imereti		
Turnover	**Number of employees (X1)**	**0,75477164**

Source: *The table is compiled based on our calculations*

As we can see, the correlation between the turnover volume and the number of employees in the construction sector is strong in all three regions, a moderately optimistic

scenario is presented. Although the turnover volume increased in the capital during the post-pandemic period, the number of employees decreased, which negatively affected the overall result. In another case, a much stronger correlation was observed in the Autonomous Republic of Adjara - the turnover volume in the construction industry is directly proportional to the increase in the number of employees. A similar correlation was observed in the Imereti region, although the increase in the number of employees over the last two years is insignificant.

Following the theoretical material and the data in Table 3.2 and Table 3.3, let us formulate several hypotheses, which we will confirm or reject through correlation-regression analysis. The goal of the study is to build an econometric model using selected factors, and the task is to conduct a correlation-regression analysis of the obtained data. Therefore, let's build regression models to determine the relationship between investment and turnover in the construction industry for the three regions.

Let's explain the meaning of some indicators:

• x – independent variable

• y - dependent variable

• Model: y = b0 + b1x, where: y - dependent variable, x - independent variable;

b0 (Intercept) – estimated value of y when x is equal to zero.

b1 - measures the estimated change in y due to a one-unit change in x;

• Multiple R - is a correlation coefficient that measures how well the data clusters around our regression line, i.e. whether there is a linear relationship between the independent and dependent variables. If this indicator

approaches 0, it means that there is no linear relationship between the variables;

• R Square - this measures the percentage of the variation in the dependent variable that can be explained by the linear relationship between x and y. In other words, how well the model is built;

• P value - It indicates whether our model is statistically significant. If $p<0.05$ then the model is statistically significant;

• Significance F- is the probability that the null hypothesis (H^0) in our regression model cannot be rejected. Significance F should be less than 0.05.

Let's formulate the hypothesis:

H0: Direct investments in construction according to the three leading regions affect the change in turnover in construction.

H1: Direct investments in construction according to the three leading regions do not affect the change in turnover in construction.

Our goal is to determine the extent to which this factor affects the change in turnover in construction for each region. In our model, y (the dependent variable that is affected by other variables) is the volume of turnover in construction, and x (the independent variable that affects the dependent variable) is the investments made in construction. Let's build models and perform a regression analysis of the data.

Table 3.5 - Model 1: Tbilisi (capital) – Summary result

SUMMARY OUTPUT					
Regression Statistics					
Multiple R	0,7295012				
R Square	0,532172				
Adjusted R Square	0,5029327				
Standard Error	1595,5358				
Observations	18				
ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	46333900,31	46333900	18,2006	0,0005909
Residual	16	40731752,78	2545735		
Total	17	87065653,09			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	243,13472	895,2620527	0,271579	0,789418	-1654,736
Investments in construction mln. GEL (X1)	12,354272	2,895838229	4,266216	0,000591	6,2153695

Source: *Compiled based on our calculations*

Multiple R = 0.73, and R2 = 0.53, which means that there is a linear relationship between the selected variables and the model is built correctly. Accordingly, 53% of the change in construction turnover is due to investments made in this industry, although the model is not perfect. Significance at F<0.05, which confirms the truth of the H0 hypothesis. It is interesting to see how close the relationship is between the selected variables. To determine this, let's build a model using the results obtained:

Y = 243 + 12.35x1, where:

y – turnover in the construction sector;

x1 - investments made in construction;

This model shows how much a change in the independent variable by one unit changes the dependent variable (in our case, the turnover in the construction sector in the Tbilisi region). As we can see, there is a strong relationship between investments in construction and turnover, and a one-unit increase in investments in construction increases turnover by 12.4 points.

The volume of the selected independent variable ($p<0.05$) is statistically and economically significant.

Table 3.6 - Model 2: Autonomous Republic of Adjara – Summary Result

SUMMARY OUTPUT					
Regression Statistics					
Multiple R	0,758803				
R Square	0,575783				
Adjusted R Square	0,549269				
Standard Error	313,3508				
Observations	18				
ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2132317	2132317	21,71652	0,000261
Residual	16	1571019	98188,71		
Total	17	3703337			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	399,9691	100,6065	3,975581	0,001086	186,693
Investments in construction mln. GEL (X1)	4,199528	0,901167	4,660099	0,000261	2,289139

Source: *Compiled based on our calculations*

Multiple R = 0.76, and R2 = 0.58, which means that there is a greater linear relationship between the selected variables than in the previous region and the model is built correctly. Accordingly, 58% of the change in construction turnover is due to investments made in this industry, although the model is not perfect. Significance at F<0.05, which confirms the truth of the H0 hypothesis. It is interesting to see how close the relationship is between the selected variables. To determine this, let's build a model with the results obtained:

Y = 399.9 + 4.2x1, where:

y – turnover in the construction sector;

x1 - investments made in construction;

This model shows how much a change in the independent variable by one unit changes the dependent variable (in our case, the turnover in the construction sector in the region of the Autonomous Republic of Adjara). As we can see, there is a strong relationship between investments in construction and turnover, and a one-unit increase in investments in construction increases the turnover by 4.2 points.

The volume of the selected independent variable (p<0.05) is more statistically and economically significant (compared to the previous region).

In the case of the following model, Multiple R = 0.67, and R2 = 0.45, which means that there is a linear relationship between the selected variables (slightly less than in the previous two regions) and the model is built correctly. Accordingly, 45% of the change in construction turnover is due to investments in this industry, although the model is not perfect. Significance at F<0.05, which confirms the truth of the H0 hypothesis. It is interesting how close the relationship

is between the selected variables. To determine this, let's build a model with the results obtained:

Y = 129.9 + 7.6x1, where:

y – turnover in the construction sector;

x1 - investments made in construction;

The above model shows how much a change in the independent variable by one unit changes the dependent variable (in our case, the turnover in the construction sector in the Imereti region). As we can see, there is a strong relationship between investments in construction and turnover, and a one-unit increase in investments in construction increases turnover by 7.6 points.

Table 3.7 - Model 3: Imereti – summary result

SUMMARY OUTPUT					
Regression Statistics					
Multiple R	0,67286				
R Square	0,452741				
Adjusted R Square	0,418537				
Standard Error	235,0319				
Observations	18				
ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	731189,9	731189,9	13,23661	0,0022131
Residual	16	883839,6	55239,97		
Total	17	1615029			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	129,953	70,635	1,839782	0,084428	-19,7865
Investments in construction mln. GEL (X1)	7,608287	2,091214	3,638215	0,002213	3,1751107

Note: Compiled based on our calculations

The volume of the selected independent variable ($p<0.05$) is less statistically and economically significant (compared to the previous regions).

Finally, we conclude that investments in the construction sector in the three regions of Georgia (Tbilisi, Autonomous Republic of Adjara, Imereti) significantly increase turnover in the construction industry of these regions. The obtained results allow us to emphasize the fact that the construction industry remains an important sector of the country's economy from a socio-economic perspective, therefore, along with changes in the market situation, risks that may arise for this sector at a later stage should be eliminated as much as possible, state regulations should be relaxed taking into account the ecological environment, and more incentives should be given to the construction industry in other regions of Georgia.

Conclusion. The construction industry is an important mechanism that contributes to economic development and social well-being. However, at the appropriate investment level, the sector is full of both opportunities and challenges. As a result of our research, we have obtained several important conclusions that may be of interest to investors and professionals.

First, the risks of investing in the construction industry, such as: economic stability, rising prices of construction materials and labor problems, should be assessed comprehensively. Investors should create strategies that include risk assessment and management. This includes taking into account both financial and social and environmental factors, which will help them effectively adapt to market changes.

On the other hand, the opportunities available in the construction sector, such as: the use of new technologies and

meeting sustainability requirements, create unique opportunities for investors. Modern technologies, such as BIM and artificial intelligence, contribute to the optimization of processes, which will ultimately lead to cost reduction and shortening of project completion times. Investors should consider that implementing sustainable practices can be done not only for the sake of protecting the environment, but also for the sake of obtaining economic benefits.

In addition, it is necessary for investors to pay attention to current trends in international and local markets. This will allow them to find out which projects may be more profitable and safe in terms of investment. For example, urban development projects that respond to the demands of modern consumption are often more successful.

In recent years, cooperation between international and local markets has increased significantly, which facilitates the sharing of knowledge and the dissemination of best practices. Investors should be open to new ideas and approaches in order to make the most of the existing opportunities.

In general, the construction sector requires constant attention and adaptation. For investors who have considered both risks and opportunities, it is possible to make successful and sustainable investments, which will ultimately contribute to increased economic and social well-being**.**

Public-private partnerships play a crucial role in the inclusive development of the construction sector. Sustainable growth potential and positive social impact can only be achieved through effective cooperation. Based on the analysis of data from three leading regions and correlation-regression analysis, we can note that the construction industry is an important axis of the country's socio-economic development. Georgia has indeed been making progress in recent years, the inclusion of smart technologies in construction projects can

increase efficiency and improve the overall quality of life. Smart infrastructure investments contribute to the creation of modern, interconnected urban centers that are environmentally sustainable and inclusive, which ultimately should guarantee improved services and increased economic well-being for all citizens.

Finally, it should be emphasized that the trends in improving the current construction processes in Georgia are still growing, its role in promoting economic development and improving the overall quality of life in the state is great.

In addition, as a recommendation, we call on stakeholders, including government agencies, developers and investors, to ensure the sustainable and successful completion of ongoing construction projects. Considering technological advancement and progress, we can say that the future prospects of the construction industry in Georgia are growing. Considering development trends, technological advancement and potential opportunities for expansion, we should expect the implementation of future smart projects in the sector in the future.

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3.2. IMPACT OF DIGITAL TECHNOLOGIES ON THE OPERATIONS OF FINANCIAL INSTITUTIONS

Today, it is important to identify and deeply understand the impact of digital technologies on the transformation of financial institutions. We justify our position as follows. Today, rapid changes are observed in the activities of financial institutions, which is explained by the introduction of digital technologies that are transforming financial services: from online banking to the use of blockchain and artificial intelligence. Digital technologies allow you to automate many processes, reducing operating costs and increasing the efficiency and speed of transaction processing. The impact of digital technologies on the risk management system, cyber threats and data protection is critically important. New technologies require updating the regulatory framework and changing the regulatory field. Digital technologies are changing the way customers interact with financial institutions. This requires a deep understanding of new work models to ensure the stability and competitiveness of financial institutions, which will help identify the most effective innovations and practices, improve security systems and prevent financial crimes, improve the quality of service, and help determine how regulators can adequately respond to innovations to ensure the stability of the financial system.

The problems of financial institutions in terms of increasing their use of digital technologies attract the attention of many researchers from Ukraine and Europe, especially interesting developments and substantiated proposals are highlighted in the publications of well-known scientists, such as: V. Bilyavsky, O. Bolduyeva, A. Buryak, V. Geyets, D. Geld, O. Gordey, N. Davydenko, N. Demchyshak, V. Dovgalyuk, Yu. Kozyr, A. Linenko, R.

Loik, A. Loik, E. McGrew, O. Novytska, V. Polishchuk, L. Prymostka, P. Puzyryova, O. Chub.

Today, financial institutions are experiencing transformational changes in their operations due to military operations, the introduction of new technologies, new environmental standards and comprehensive geopolitical fluctuations, and, "blockchain technology has become the basis of modern payment systems, ensuring transparency, speed and security of transactions"[49].

At the same time, we would like to draw your attention to the fact that "in the context of modern geopolitical challenges and economic changes caused by full-scale military aggression against Ukraine, the issue of effective financial management acquires particular importance and requires in-depth scientific analysis"[50]. The analysis and special surveys show that today, in Ukraine, the financial institutions that use digital technologies the most are banks, insurance companies, leasing and factoring companies, and credit unions.

Thus, to increase transparency and speed of service, banks are using digital platforms that allow customers to open accounts, conduct transactions, and receive consultations online without visiting branches. In addition, automation of lending processes, risk management, and analytics is being introduced.

Insurance companies are also widely implementing digital platforms for issuing insurance policies, processing applications and claims, using Big Data and artificial

[49] Козир Ю. Р. Функціональна роль блокчейн технологій у трансформації платіжних систем. *Інвестиції: практика та досвід*. 2023. № 20. С. 112–116.

[50] Давиденко Н.М., Гордей О.Д., Новицька О.В. Фінансовий менеджмент на підприємстві в умовах сучасних викликів. *Бізнес-навігатор*. 2025. Випуск 2 (79). С. 314. DOI: https://doi.org/10.32782/business-navigator.79-51 URL: http://business-navigator.ks.ua/journals/2025/79_2025/45.pdf. http://www.business-navigator.ks.ua/2025/79-2025

intelligence to assess risks and make quick decisions, and implementing online services for customers that increase convenience and the level of service.

Leasing and factoring companies are automating customer assessment and deal-making processes, using digital platforms for asset monitoring and management, and online applications for rapid application processing and processing.

Credit unions are also implementing digital services for application submission, document processing, and servicing, and are using mobile apps for convenience and increased customer engagement.

Interestingly, the institutions in question have begun to actively use digital technologies, primarily due to the intensification and increase in the level of competition, since: in order to remain competitive, it is necessary to offer a modern, fast and convenient service, reduce operating costs, increase security and risk management, better control and prevent fraud and abuse. In addition, their decisions were influenced by customer requirements, as modern consumers expect quick access to services via smartphones and online platforms. In general, the use of digital technologies is a key factor in the transformation of modern financial institutions, allowing them to be more flexible, efficient and customer-oriented.

Thus, we are convinced that digital technologies have significantly transformed the financial sphere, making it more accessible, fast and secure. Thus, fintech platforms are used by financial institutions to provide financial services without traditional banking institutions. For example, mobile banks such as Monobank offer a full range of banking services via smartphone. Blockchain and cryptocurrencies ensure transparency and security of financial transactions and are used for international transfers without intermediaries.

Artificial intelligence and Big Data are used by financial institutions to analyze customer behavior, predict risks and personalize services. Contactless payments (NFC and QR codes) allow payments to be made quickly and without physical cards. Robotic financial advisors help clients manage investments and finances. Electronic wallets (Apple Pay, Google Pay services) allow you to store card data and make payments via smartphone.

It is worth noting that there are several key differences between digital and traditional financial solutions. Traditional solutions require physical visits to banking institutions, paper documents and lengthy procedures, while digital technologies allow transactions to be carried out instantly through mobile applications and online platforms. At the same time, traditional solutions rely on manual management of accounts, loans and financial transactions, while digital technologies use AI and Big Data to analyze customer data, personalize offers and detect fraud. Also, traditional solutions are limited by bank opening hours and physical access to institutions, while digital technologies provide access to financial services 24/7 via smartphones and computers. In addition, traditional solutions rely on physical documents and personal interaction, which can have fraud risks, while digital technologies implement multi-factor authentication, biometric identification and blockchain technologies to increase security. Finally, traditional solutions have barriers for people in regions with limited access to banks, while digital technologies provide financial services to people regardless of their geographical location. That is, thanks to digitalization, financial institutions become more efficient, convenient, secure and accessible.

And we are convinced that new technologies are gradually replacing traditional financial practices, making the

sector more efficient and accessible. Let's consider several changes that are causing the disappearance of old methods. First of all, this applies to cash payments, as digital currencies, mobile wallets and contactless payments reduce the need for physical money, and some countries are already actively transitioning to a cashless economy. Then, the physical number of bank branches will significantly decrease, as online banking and mobile applications allow customers to carry out all operations remotely, which reduces the need for physical branches. Also, paper documents will almost disappear, as digital contracts, electronic signatures and blockchain technologies replace traditional paper transactions, making processes faster and more secure. At the same time, lengthy credit checks will become a thing of the past, as artificial intelligence and Big Data allow you to instantly assess the financial condition of the client, reducing the time for making decisions on loans. In addition, the number of traditional bank transfers will decrease, as instant payments and cryptocurrencies allow transactions to be made without intermediaries, reducing costs and processing times. Finally, the role of financial advisors will be significantly transformed, as automated systems and AI robots can analyze the market and offer investment solutions without human intervention. These changes are already happening, and the financial sector continues to adapt to new technologies.

Digital technologies have significantly transformed the activities of domestic financial institutions, opening up new opportunities to improve the efficiency, convenience and security of customer service. Most often, Ukrainian financial institutions use: online banking and mobile applications, introducing convenient platforms for managing accounts, transfers and payments via the Internet and mobile devices; automation and robotization of business processes (RPA);

artificial intelligence (AI) and data analytics; blockchain and cryptocurrencies; Internet of Things (IoT) and Big Data; cybersecurity and biometric technologies. In general, digital technologies contribute to the creation of more flexible, fast and secure financial services that meet modern customer needs and market challenges.

Interestingly, the following factors have a significant impact on the choice and implementation of digital technologies in the activities of financial institutions: technological readiness and infrastructure; regulatory and legal environment; level of digital literacy and culture of change; consumer demand and customer expectations; level of competition in the financial market; economic feasibility and expected profitability; ensuring data protection and financial transactions; innovativeness and reliability of technological partners; international experience and trends; availability of sufficient financial resources for the implementation of digital projects.

In general, the successful implementation of digital technologies in financial institutions depends on a comprehensive approach, taking into account technical capabilities, regulatory context, market trends and internal readiness. Currently, the state is faced with a particularly „acute problem of avoiding or partially mitigating the negative consequences of financial globalization”[51], and „financial inclusion is one of the main directions of financial sector transformation in the context of digitalization”[52]. It should be emphasized that when choosing and implementing digital technologies, all financial institutions face the

[51] Довгалюк В. В. Роль фінансової глобалізації у розвитку фінансового ринку. Ефективна економіка № 7. 2016. URL: http://www.economy.nayka.com.ua/?op=1&z=5081

[52] Поліщук В. Г., Іщук Л. І. Сутність фінансової інклюзії та доступності до фінансових продуктів. *Економічний форум*. 2022. № 1. С. 135–143

following threats and challenges: the growth of cyber threats, such as phishing, hacking and malware, which jeopardizes the confidentiality and integrity of financial information and necessitates the implementation of modern protection systems and constant monitoring; the constant updating of legislation on digital financial services, in particular on AML (anti-money laundering), KYC (know your customer), GDPR and other standards, necessitates the need to quickly respond to changes and ensure compliance with protocols and regulations; the transition to automated processes causes job losses and requires an increase in staff competencies, which encourages retraining employees to work with new technologies; technological dependence on the stable operation of digital platforms and Internet infrastructure, the possibility of system failures, cloud services, technical failures, which generates additional risks; high initial costs for system modernization, staff training and support of new platforms, requires professional assessment of projected efficiency and adequate risk management; lack of trust and fear of customers in digital transactions, especially regarding the security and confidentiality of personal data, creates the need for educational campaigns and increasing the level of awareness and financial literacy; legal challenges regarding liability for automated decisions, algorithmic injustice, discrimination raise ethical questions regarding ensuring transparency and fairness in digital services.

The threats and challenges identified require a strategic approach, innovative solutions and close cooperation between financial institutions, regulators and technology companies to ensure a safe and effective digital transformation. At the same time, scientists draw attention to the fact that „the adaptation of banks to FinTech is an important stage of their

transformation and a response to modern challenges"[53], and „modern cybersecurity technologies include real-time monitoring, the use of artificial intelligence to detect threats, and the automation of incident response processes"[54].

It is advisable to assess the impact of digital technologies on the transformation of financial institutions' activities based on a systematic approach using six blocks using appropriate criteria and indicators:

Block 1 - operational efficiency: reduction of transaction processing time (indicator: average transaction processing time); reduction of operating costs (indicator: percentage reduction in costs); automation of business processes (indicator: share of automated processes in total activities).

Block 2 - improvement of customer experience: increase in customer satisfaction (indicator: survey results/NPS - Net Promoter Score); reduction of customer service time (indicator: response time to requests); expansion of communication chains of interaction (indicator: number of active digital channels);

Block 3 - innovation and implementation of new technologies: number of implemented digital products/services (indicator: number of new digital offers for a certain period); degree of use of modern technologies (indicator: level of application of AI, blockchain, Big Data).

Block 4 - security and risk management: reducing the number and severity of security incidents (indicator: number of information incidents); compliance with regulatory

[53]Болдуєва О., Горбунова А., Кусакова Ю. Цифрова трансформація платіжних систем і роль банків у глобалізації фінансової інфраструктури. *Економіка та суспільство.* 2024. № 69. URL: https://doi.org/10.32782/2524-0072/2024-69-59

[54]Демчишак Н. Б., Лоїк Р. В., Лоїк А. В. Розвиток цифрових технологій у банківській системі України: інновації в кредитуванні, ризики та перспективи. *Економіка та суспільство*. 2024. № 61. URL: https://economyandsociety.in.ua/index.php/journal/article/view/3714/3636

requirements (indicator: level of compliance with security standards and regulatory requirements);

Block 5. Financial indicators: growth in revenues from digital products (indicator: share of digital channels in total revenue); reduction in customer service costs through digital channels.

Block 6 - strategic adaptation and competitiveness: growth in market share (indicator: market share in relevant segments); response to competitors' innovations (indicator: speed of implementation of new technologies).

The proposed criteria and indicators for six blocks will help to comprehensively assess the extent to which digital technologies contribute to the transformation of financial institutions' activities and ensure their competitiveness in modern conditions.

At the same time, we emphasize that digital technologies open up wide opportunities for financial institutions to improve their operations and increase competitiveness:

1. Process automation (RPA and AI): reducing manual work, processing transactions quickly, increasing accuracy and reducing operational risks.

2. Online and mobile banking: providing customers with convenient access to financial services from anywhere in the world, increasing satisfaction.

3. Artificial intelligence and data analytics: personalizing offers, managing risks, detecting fraud and financial abuse.

4. Blockchain and cryptocurrencies: increasing transaction security, creating new financial products such as smart contracts.

5. Fintech innovations and open banking: open access to data for third-party developers, creating new services and increasing competition.

6. Biometric technologies: fast and secure customer identification for login and transaction confirmation.

7. Cloud solutions: ease of scaling services and reducing infrastructure costs.

8. Internet of Things (IoT): real-time monitoring and analysis of financial flows, new insurance and lending models.

In general, digital technologies contribute to increasing efficiency, security and customer experience in the financial sector, allowing faster adaptation to market changes and customer needs.

The financial sector is developing rapidly, and in the near future we can expect the emergence of breakthrough innovations. It is predicted that in the next 10 years we can expect the emergence and active development of new digital technologies and tools in the activities of financial institutions, which will significantly change the financial market.

Thus, in the near future, the most promising digital technologies for financial institutions may be the following:

artificial intelligence, automation and machine learning - AI will be even more deeply integrated into financial services, helping financial institutions make decisions quickly, analyze risks, personalize financial services and offers, and fight fraud and improve customer experience;

blockchain and decentralized ledgers (DLT) and financial protocols (DeFi) will lead to the emergence of new forms of lending, insurance and payment systems without intermediaries, will ensure a high level of security, transparency and speed of transactions, expand access to

financial services in regions with low financial infrastructure and will facilitate the issuance of digital assets, smart contracts, as well as reduce transaction costs and increase trust between participants;

central bank digital currencies (CBDC) - many countries, including the EU and China, are actively developing digital versions of their national currencies, which can significantly change the payment system, facilitate international settlements and reduce transaction costs, and strengthen control over financial flows (the NBU is already actively developing the country's fintech ecosystem, it has introduced a regulatory "sandbox" that allows testing innovative financial products and is working on the introduction of an electronic hryvnia (e-hryvnia), which will significantly change the digital payment system);

the Internet of Things (IoT) and big data will contribute to the accumulation of real-time data for assessing creditworthiness and risk management and the development of innovative insurance products based on monitoring the physical condition of clients;

Fintech innovations based on quantum computing and new computing platforms, which will allow financial institutions to analyze large data sets and cryptography faster, improving risk management models and combating fraud, developing new financial instruments and algorithms for high-frequency trading, will contribute to the implementation of qualitatively new approaches to data protection and optimization of financial transactions;

integration of digital assistants and chatbots will improve customer service and automate internal processes and consultations;

biometric technologies, as facial, fingerprint and voice recognition will become the standard for financial transactions, increasing security and convenience.

The above innovations will further influence the transformation of financial institutions and the change of priorities in the financial market due to: increased competition from new players, in particular technology companies; increased efficiency and reduced operating costs of financial institutions; shifting the business model towards more personalized and fast services; increased financial inclusion, especially in regions with a low financial network; increased regulatory control and the need to adapt the regulatory framework. „An important aspect of the digital transformation of the financial system is also regulatory initiatives aimed at ensuring cybersecurity, personal data protection and compliance with international standards in the field of financial technologies”[55]. As a result, digital technologies will make the financial market more dynamic, open and innovative, build new business models and products that will meet the needs of modern customers, but at the same time require attention to cybersecurity and data protection.

In conclusion, we note that for the widespread and effective use of modern digital technologies, financial institutions must take a number of important measures:

– invest in infrastructure and technology, i.e. implement modern IT systems, cloud technologies and data processing platforms and ensure the security of information systems by using modern cyber protection tools;

[55]Пузирьова П.В. Механізм забезпечення економічної безпеки у сфері сталого розвитку фінансової системи держави в умовах цифрової економіки та глобалізаційних змін. *Актуальні проблеми економіки*. № 1 (283). 2025. С. 189 – 204

– develop a digital strategy, i.e. define clear goals and priorities for the digitalization of business processes and form a roadmap for the implementation of technologies;

– improve and develop staff competencies, i.e. conduct regular training, training for employees on the use of new technologies and implement a system for stimulating innovative thinking and adaptability of employees;

– implement financial technologies (FinTech), integrate mobile applications, online banking, fast payment systems, use artificial intelligence and big data to improve customer service and risk management;

– ensure security and privacy, implement modern encryption and authentication tools, meet regulatory requirements for data protection and anti-money laundering;

– support innovation and partnership, collaborate with technology companies and startups, participate in industry initiatives and platforms for sharing experience;

– carry out constant monitoring and adjustments for improvement, analyze the effectiveness of digital solutions, implement modern approaches to increase competitiveness.

Most importantly, for a successful digital transformation, it is important for financial institutions to create a culture of innovation, provide appropriate infrastructure and competencies, as well as comply with regulatory requirements for security and privacy.

3.3. DEVELOPMENT OF THE PAYMENT CARD MARKET IN UKRAINE IN THE CONTEXT OF INVESTMENT-INNOVATION SECURITY AND ECONOMIC GROWTH

The development of the payment card market in Ukraine represents a critical dimension of the country's broader financial modernization and economic transformation. In the context of rapid digitalization and the global shift towards cashless economies, payment cards have emerged as a fundamental tool that not only facilitates efficient and secure financial transactions but also serves as a catalyst for investment and innovation within the financial sector. Understanding the dynamics of this market is essential for formulating policies that support sustainable economic growth. [1, 4-12, 22, 44]

Investment-innovation security is increasingly recognized as a vital component in strengthening the resilience and competitiveness of national economies. For Ukraine, which is undergoing significant economic restructuring and seeking to accelerate post-conflict recovery, fostering an environment where investment flows align with innovative technological development in payment systems is crucial. The payment card market, as a nexus of financial technology and consumer behavior, offers a unique vantage point for studying how these elements interact to drive economic growth.

Moreover, the integration of advanced payment technologies enhances not only transactional efficiency but also contributes to broader financial inclusion, transparency, and regulatory compliance. These factors collectively improve the investment climate by reducing risks and uncertainties associated with financial operations. Therefore, analyzing the development of the payment card market

through the lens of investment-innovation security allows for a comprehensive assessment of its impact on economic growth. [37, 38, 46]

Given the strategic importance of the payment card sector in Ukraine's financial infrastructure, its development must be supported by robust regulatory frameworks, technological innovation, and active investment promotion. Research in this area addresses existing knowledge gaps and provides empirical insights that can guide policymakers, financial institutions, and technology developers in fostering a resilient, secure, and growth-oriented payment ecosystem.

In summary, this research topic is highly relevant as it intersects key domains of financial technology development, economic security, and sustainable growth, all of which are vital for Ukraine's economic future amid ongoing global and regional challenges. In modern conditions, digitalization is becoming the main global trend in economic development, radically changing its structure and raising it to a qualitatively new level. At this new level, digital technologies dominate all areas of socio-economic life. This is because the transformation of economic relations based on digital technologies provides many important benefits for the economic activity of humanity, including:

1. cost optimization: reducing costs for promoting goods and services;
2. acceleration of all business processes: reduction of communication time;
3. reducing response time to market changes;
4. automated data processing and analysis;
5. reduction of operating and payment costs;
6. continued launch of innovative products;
7. maximum adaptation of the services provided to the needs and requests of consumers [36].

The organization of payment transactions, as the most important function of the banking system, cannot be implemented in recent decades without the emergence of electronic transactions, bank cards, modern money transfer instruments, and virtualization of interaction between banks and customers. In essence, this has fundamentally changed all banking activities, making them dynamic to meet the needs of the new digital economy system, especially in the sphere of payment technologies.

The growing popularity of online banking, virtual wallets, contactless payments, and other modern technologies is the digital economy is a response to the current demand for reducing the costs of financial transactions between market participants. This also takes into account their need for increased convenience, speed, and security of payment transactions.

In recent decades, active development of Internet networks, the digitalization of economic relations, and virtualization of the functional basis of the financial sector, especially the interaction between banks and clients, have brought payment cards to the forefront of the introduction of innovative technologies into the capital movement and payment mechanisms.Even banks that are completely branchless, called digital banks or semi-banks, are emerging, which primarily engage and serve customers through digital channels, including mobile apps [52]. In this case, payment cards are the main instrument for completing the difficult task of reducing the share of cash transactions, which is an important step in reducing overall distribution costs and increasing the efficiency of economic development. Despite the presence of a developed network of banking institutions, modern electronic payment systems, mobile banking, affordable card services, and contactless readers in Ukraine,

which provide households and businesses with wide access to cashless payments, cash remains an important tool for retail transactions. They are the main competitor of payment cards in the payments market. In addition, the ratio of non-bank money in Ukraine to this indicator in developed countries remains high, since the monetary aggregate M0 is about 30%. It is obvious that the main factors behind this trend are, on the one hand, the outflow of funds from the banking sector during financial and economic crises, panic among the population, and growing customer distrust in the ability of banks to meet their obligations. On the other hand, individual consumer preferences (especially the older generation) play a significant role, for whom even the high-tech development of payment services, remote banking services, and market instability cannot completely replace the use of cash as a more reliable source of liquidity. Let's consider the dynamics of the number of payment cards in Ukraine for the period 2020-2024 (Fig. 3.2).

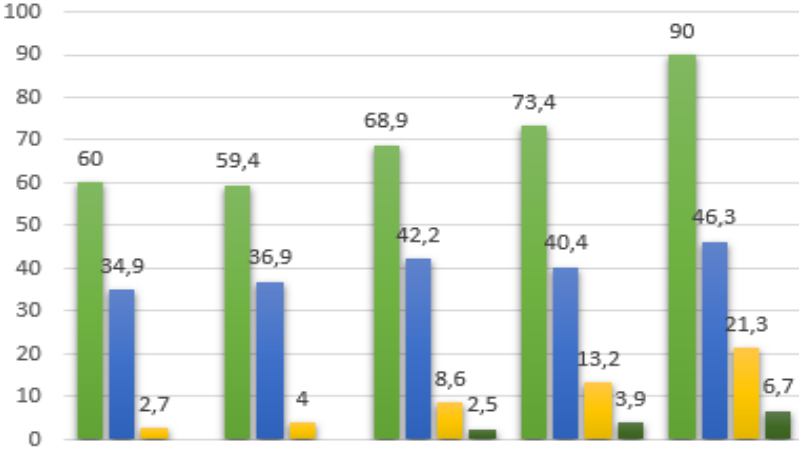


Fig. 3.2 - Dynamics of the number of payment cards in Ukraine for the period 2020-2024, million pcs. [36]

As can be seen from the data presented in Figure 1, the total number of payment cards issued by commercial banks in Ukraine over the past five years has increased by almost 50%: from 60 to 90 million cards. And in the last year alone, the growth rate was 21.3% compared to the previous period. At the same time, more than half of the issued payment cards (52%) were active payment instruments used by economic agents to carry out expenditure transactions.

The gradual growth in the popularity of contactless and tokenized payment cards that use more advanced information protection technologies indicates further digitalization of payment mechanisms and the growth in the number of economic agents that carry out payment transactions. However, it is worth noting a negative aspect: more than two-thirds of the cash in circulation is withdrawn by payment card holders at ATMs, rather than being used for cashless transactions.

In addition, compared to other countries, the coverage level of society with cashless technologies per capita in Ukraine remains relatively low. Therefore, it is extremely important that domestic banks continue to focus not on the quantitative growth of payment cards in circulation, but on improving the quality of their use to increase the number of transactions on already issued cards.

Analyzing the structure of the payment card market in Ukraine from the perspective of banks, it is worth noting a significant level of monopolization. The leader in card issuance remains Commercial Bank “Privatbank”, which share is almost half of all payment cards issued in the country - 34.0%. Second place is occupied by JSC “Oshchadbank” with a share of 15.5%, and third is JSC “Universal Bank”, which with a share of 9.5% displaced JSC “Raiffeisen Bank” from the top three in the issuance of payment cards (Fig. 3.3).

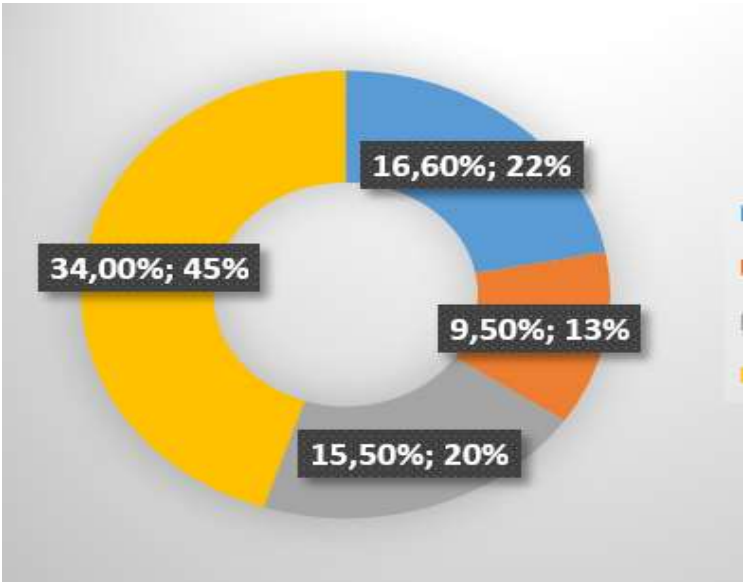


Fig. 3.3 - Structure of the number of issued payment cards by banking institutions as of 01.01.2024, %. [55]

It is obvious that this market concentration between several major payment card issuers does not contribute to the creation of an optimal tariff policy for the clients of the commercial banks. However, this state of the payment card market reflects the overall level of high monopolization of the Ukrainian banking sector, where most assets are concentrated in a few large banks.

A similar situation in the banking market also affects the payment card infrastructure. Banks that have a monopoly position in issuing cards are interested in gradually reducing the number of ATMs to reduce their own costs and encourage users to switch from cash payments to cashless payments. This trend indicates a change in both the quantitative and

qualitative structure of the Ukraine's payment infrastructure over the past five years (Fig. 3.4).

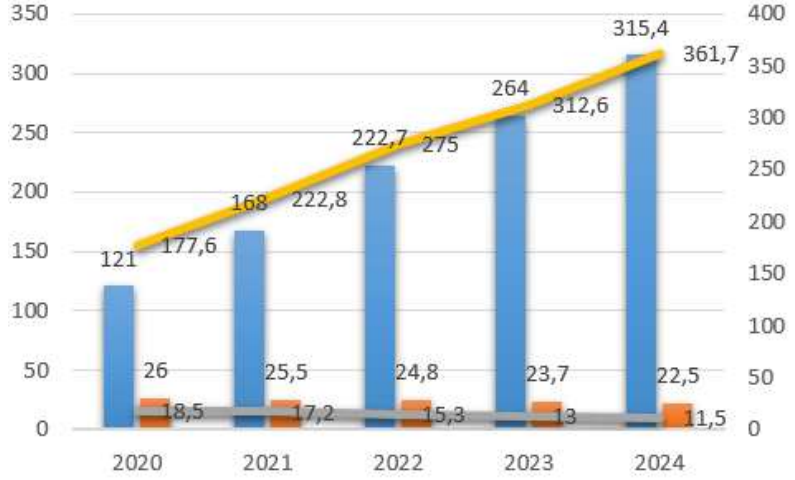


Fig. 3.4 - Development of the payment infrastructure in Ukraine, thousand units [56]

As can be seen from the data in Fig. 3, the total number of payment infrastructure units during the analyzed period was constantly growing, almost doubling from 121,000 to 315,400 units. However, some of its components showed a reverse trend. In particular, the number of ATMs and self-service software and hardware complexes (SSSHC) decreased from 26 to 22.5 thousand units, and the number of banking terminals decreased from 18.5 to 11.5 thousand units.

At the same time, the number of payment terminals in the retail and service network has increased by 16.2% over the past year, reaching 315.4 thousand units [56].

The number of payment terminals per 1 million permanent population of Ukraine is also growing, which as of January 1, 2024 amounted to 10.6 thousand units, compared

to 8.3 thousand units per 1 million population as of January 1, 2023. Although it should be noted that, despite the positive dynamics, the number of payment terminals in the country continues to grow, this level of provision of the population with POS terminals still remains almost half the EU average.

In addition, the analysis of the regional distribution of payment infrastructure in Ukraine by the number of terminals demonstrates uneven development. The highest concentration of payment terminals per million inhabitants is observed in Kyiv (15.2 thousand terminals), as well as in Kiev (15.3 thousand terminals) and Dnipropetrovsk (11.8 thousand terminals) regions. The fewest terminals were recorded in Donetsk (3.2 thousand terminals) and Luhansk (1.5 thousand terminals) regions, which is due to objective reasons, in particular, the partial occupation of these regions. [32, 35, 37, 38]

This indicates that the current development of payment infrastructure is still not sufficient to ensure the effective use of payment cards and reduce the volume of cash payments. In the same context of the payment infrastructure development, it is possible to propose the creation of a single network of ATMs that can be used by all banks. This will contribute to the expansion of the infrastructure for payment to card holders, increasing the customer base and territorial coverage of user needs.

For banks, this cooperation is beneficial not only due to increased revenues from expanding the customer base, but also from the point of view of reducing future operating costs for technical maintenance and capital expenditures for relevant equipment, including ATMs and self-service terminals. These trends reflect the development of the payment card market, which is accompanied by constant innovation. This process will remain a determining factor in

the success of banks as the main organizers of payment transactions and will determine the range of their services and products in both the short and long term.

Innovative changes play a key role in transforming the payment infrastructure. This is due to factors such as increased competition in the financial market, technological changes in the financial and non-financial sectors, which create new requirements and opportunities for payment instruments and services. Continuous scientific and technological progress provides new, fast communication channels, while the growing need of consumers to increase the security of payment transactions, reduce transaction costs, and implement innovative and efficient solutions also contributes to these changes.

In conclusion, it should be emphasized that the payment card market is constantly developing: the number and volume of non-cash transactions involving payment cards are constantly growing. At the same time, the total volume of payment cards issued is also increasing. Contactless payment methods are becoming increasingly popular, which is contributing to the growth in the number of these cards.

The 2020 pandemic has caused changes in citizens' payment habits, especially in the context of online shopping. People are increasingly purchasing goods online and paying with cards.

Starting with “Ukrgasbank”, Ukraine has one of the largest commercial banks with international capital. Founded in 1993, the bank holds leading positions in all sectors of the banking market. It is considered one of the most stable banks in Ukraine and is among the top ten financial institutions in the country according to data from the National Bank of Ukraine.

In 2001, the financial institution joined the Worldwide Interbank Financial Telecommunication System (SWIFT) and became an associate member of VISA International. In the same year, it became a member of the First Financial and Trading System (PFTS) and has been a member of the Board since August 2004. JSB "Ukrgasbank" has also been a member of the "Deposit Guarantee Fund for Individuals" since September 2, 1999 (Certificate No. 14 dated 08/28/2018).

JSB "Ukrgasbank" in Ukraine offers banking services:

1. for individuals: credit cards, cash loans, savings accounts, payments and transfers, service packages, etc.;
2. for small businesses: lending, overdraft, leasing, acquiring, etc.;
3. for financial institutions: correspondent accounts, interbank transactions, securities transactions, etc.;
4. for enterprises: asset investment, capital management and financing;
5. online services: instant online loan, profitable and safe services, instant money transfers by mobile phone number.

In 2018, JSB "Ukrgasbank" received several significant financial awards. The bank took fourth place in the annual ranking of the "50 Leading Banks of Ukraine" by the "Financial Club" and received the "Gold" Award at the Financial Club Awards - 2018 in the "Card Lending" nomination.

JSB "Ukrgasbank" received four awards "Financial OSCAR" from Business magazine: first place in the category "Consumption Drivers" for the leadership in retail lending, second place in the nomination "The Most Professional Bank", as well as third place in the category "Card Market Leader" and fourth place in the category "Online Bank".

JSB “Ukrgasbank” received two FinAwards 2018 from the resources of the Ministry of Finance and Finance.ua. The Max card was named the “best mass market credit card,” while the Platinum Black was named the “best VIP debit card.” JSB “Ukrgasbank” in Ukraine provides comfortable and innovative banking services for clients of various categories - from individual clients to large enterprises - and is one of the leaders in the implementation of modern technologies.

JSB “Ukrgasbank” proudly received two prestigious FinAwards in 2018, presented by the Ministry of Finance of Ukraine and the financial portal Finance.ua. Among the accolades, the Max card was honored as the “Best Mass Market Credit Card,” recognizing its widespread popularity and the exceptional value it provides to a broad range of customers. Simultaneously, the Platinum Black card earned the title of the “Best VIP Debit Card,” reflecting the bank’s commitment to delivering premium, personalized banking experiences tailored to the needs of high-net-worth clients.

For a more detailed study of the bank's activities, let’s analyze its balance sheet. The balance sheet provides a comprehensive snapshot of the bank’s financial position, illustrating the structure of its assets, liabilities, and equity at a specific point in time. By examining key indicators such as total assets, loan portfolios, and capital reserves, we can assess the bank’s stability and capacity for growth. This analysis will also help identify trends in resource allocation and risk management practices, offering valuable insights into the bank’s operational efficiency and strategic priorities. (Table 3.8).

Table 3.8 - Analysis of the financial condition of JSB "Ukragazbank" during 2021-2023 (thousands of UAH)

Indicator	As of			Deviations 2023/2021 (+/-)
	01.01.2023	01.01.2022	01.01.2021	
ASSETS				
Cash and cash equivalents	49 749 451	35 346 787	30 188 103	19 561 348
Result from transactions shareholders	(1 102 304)	(1 102 304)	(1 102 304)	0
Client funds	154 133 564	112 778 613	96 736 381	57 397 183
Authorized capital	13 837 000	13 837 000	13 837 000	0
Derivative financial assets	2 933	15 069	509	2 424
Investment property	154 269	156 366	153 955	314
Current tax assets	1 070 155	2 690 423	-	1 620 268
Deferred tax assets	54 449	30 138	32 254	22 195
Fixed assets and intangible assets	1 225 785	1 234 025	1 187 141	38 644
Right-of-use assets	138 631	166 113	255 664	−117 033
Other assets	2 112 157	1 271 769	637 119	1 475 038
Total assets	223 580 698	168 628 607	144 130 430	80 234 447

Source [35, 36, 38]

As one of Ukraine's leading financial institutions, JSB "Ukrgasbank" consistently strives to offer comfortable, reliable, and innovative banking services that cater to a diverse client base spanning individual retail customers, small and medium-sized enterprises, and large corporations. The bank distinguishes itself through its proactive adoption and integration of cutting-edge technologies, which enhance

operational efficiency and improve the overall customer experience.

Ukrgasbank's strategic focus on digital transformation includes the expansion of its electronic payment solutions, mobile banking platforms, and secure card products, positioning it at the forefront of the country's banking sector modernization. The recognition received through the FinAwards underscores the bank's dedication to excellence and its role as a key driver of innovation in Ukraine's financial market.

The next step is to consider the main income statements and other comprehensive income of JSB "Ukrgasbank" for the period 2021-2023 (Table 3.9).

Table 3.9 - Analysis of financial profits and losses and other comprehensive income as of 2021-2023 (UAH million)

Indicators	2023	2022	2021	Deviations 2023/2021 (+/-)
Interest income calculated using the effective interest method	17 300 343	11 316 936	8 414 359	8 885 984
Other interest income	69 390	11 566 183	8 702 055	-8 632 665
Interest expenses	(10 690 068)	(6 559 296)	(3 422 172)	-7 267 896
Other interest expenses	(10 690 068)	(6 571 938)	(3 442 539)	-7 247 529
Total other comprehensive income (loss)	2 393 104	853 267	688 936	1 704 168
Total comprehensive income (loss)	4 329 530	4 714 780	3 082 071	1 247 459

Source [35, 36, 38]

Examining the financial condition of JSB "Ukrgasbank", it can be noted that as of January 1, 2023, the bank's assets increased significantly compared to 2021 (by UAH 80,234,447 thousand). This growth was made possible by an increase in cash and cash equivalents, which as of January 1, 2023 amounted to UAH 49,749,451 thousand, as well as loans and liabilities to banks and customers, in particular, customer funds, which reached UAH 154,133,564 thousand, as well as investments in financial assets and real estate. [37, 38, 46]

Looking at the key financial results for 2021–2023, it is clear that the bank's total income in 2023 increased to UAH 4,329.530 million, which is UAH 1,247.459 million more than in 2021. The main driver of this growth is the increase in interest income calculated using the effective interest method, which increased to UAH 17,300.343 million in 2023, compared to UAH 8,414.359 million in 2021. [37, 38]

Other interest income, although showing significant changes during this period, turned out to be lower in 2023 - UAH 69.390 million, while in 2022 it amounted to UAH 11,566.183 million. Expenses also underwent changes; in particular, interest expenses increased from UAH 3,422.172 million in 2021 to UAH 10,690.068 million in 2023. There is also a significant increase in the bank's total income by UAH 1,704.168 million for the period 2021–2023, which indicates a positive impact on the bank's financial condition. [37, 38]

Summing up the first quarter of 2023, JSB "Ukrgasbank" received a profit of UAH 415.808 million, which is 2.5 times more than in the same period in 2022. The bank's net interest income in 2023 increased by 10.25% compared to the first quarter of 2022, reaching UAH 1,019 million.

According to the agency, for nine quarters, JSB "Ukrgasbank" has shown its ability not only to generate income, but also to increase profits. This demonstrates the effective current business strategy of the bank's management and deserves praise. As of April 1, 2023, compared to January 1, 2023, the following changes occurred in the loan portfolio of JSB "Ukrgasbank":

1. the share of loans in bank assets (in hryvnia equivalent) decreased by 1.18 percentage points, from 42.71% to 40.42%;

2. the share of loans denominated in foreign currency (in hryvnia equivalent) decreased by 3.83 percentage points, from 40.55% to 35.61%;

3. the share of loans granted to individuals (excluding reserves) increased by 1.1 percentage points from 25.78% to 28.08%.

In the first quarter of 2023, the share of non-performing loans (NPL) in the loan portfolio of JSB "Ukrgasbank" decreased from 18.12% to 16.10% (data in Chart 4 do not take into account interest rates on loans to individuals, as well as the tenth class for loans to legal entities and created reserves). As of April 1, 2023, the share of outstanding loans (defaults) was 15.04%, which is 5.50% more compared to January 1, 2023.

As of April 1, 2023, the average share of loan defaults in the banking system was 42.23%. Thus, despite the growth, the share of defaults in the loan portfolio of JSB "Ukrgasbank" was half the average market value. In the period from 02.01.2022 to 02.05.2023, the current liquidity policy of JSB "Ukrgasbank" (N4) ranged from 16.23% to 76.33%. This indicates that during the specified period, the bank exceeded the limit set by the NBU (10%) with sufficient

reserves and constantly exceeded the average values of this indicator in the banking system.

As of May 2, 2023, the bank's N4 value was 62.50%, which exceeds the limit set by the NBU by 42.50 pp. During 12 months of 2022 and from January to April 2023, the bank's current liquidity ratio (N5) consistently exceeded the NBU limit, but remained below average market values. Between January 2, 2022 and May 2, 2023, H5 fluctuated between 41.74% and 68.08%. As of May 2, 2023, the current liquidity ratio (N5) reached 62.62%, which is 22.62 pp above the limit set by the NBU. In the period from January 2, 2022 to May 2, 2023, the short-term liquidity ratio of JSB "Ukrgasbank" (N6) significantly exceeded the limit set by the NBU, but remained below the average values of this ratio for the banking system. During the specified period, H6 fluctuated between 56.14% and 64.78%. As of May 2, 2023, the bank's short-term liquidity ratio (H6) reached 62.05%, which is 12.05 points above the limit set by the NBU. [37, 38]

From 2022 to April 2023, JSB "Ukrgasbank" consistently maintained a substantial liquidity buffer that significantly exceeded the minimum thresholds established by the National Bank of Ukraine (NBU). This conservative approach to liquidity management ensured that the bank remained well-prepared to meet both expected and unexpected cash outflows, thereby safeguarding its operational stability even amid volatile economic conditions. Throughout this period, the bank's adherence to regulatory liquidity standards remained within acceptable limits and generally aligned with, or stayed below, average market values, demonstrating prudent financial discipline. [37, 38]

According to official reports and internal assessments, the liquidity management strategy implemented by JSB

"Ukrgasbank" is well-aligned with the scope and scale of its operational activities. This strategy has had a measurable positive impact on the institution's key financial performance indicators, including revenue growth and profitability margins. Such outcomes indicate the effectiveness and robustness of the bank's risk management frameworks, which balance liquidity retention with the need to optimize asset utilization. [37, 38]

In addition to strong liquidity management, JSB "Ukrgasbank" maintains active membership in major global payment systems, including MasterCard International and Visa International. This affiliation enables the bank to offer a wide range of international payment solutions, enhancing the convenience and security of financial transactions for its diverse client base. Participation in these networks not only expands the bank's service portfolio but also reinforces its position as a competitive and innovative player within Ukraine's banking sector.

Currently, the bank offers modern credit card programs (Table 3.10).

By studying the bank's credit card transactions from October 24, 2023, we can obtain comparative data on interest rates on loans from competitors for the same period (Fig. 4).

The overpayment on a credit card from "Ukrgasbank" is 3.35% lower than the average level of competitors, ranging from 31.7% to 41.3% per year. In this indicator, "Ukrgasbank" ranks fourth among 11 financial institutions. The following banks offer the lowest real interest rates on credit cards: "Monobank", "Privatbank", and "Credit Agricole". Their rates are 1.30% - 10.27% per annum lower than "Ukrgasbank".

Table 3.10 - Types of new credit card programs of JSB "Ukrgasbank" in 2023

Name	Conditions
Maximum	**Borrower requirements:** Age: from 18 to 65 years old. **Credit amount:** Gold, Debit World: from 500 UAH to 75 thousand UAH (exclusively up to 200 thousand UAH in exceptional cases). Platinum: from 20 thousand UAH to 200 thousand UAH. **Income certificate:** Required for loans of UAH 50,000 or more. **Interest rate:** Gold: 40.00% per annum. Debit World: 39.99% per annum or 45.00% per annum (personal card). Platinum: 36.00% per annum. **Loan grace period:** Up to 62 days (until the last day of the next month) - only when paying for goods and services by card. **Cash withdrawal fee:** 4.00% of the amount, minimum 20 UAH. **Minimum monthly payment:** 5.00% of the loan debt, minimum 50 UAH. **Card issuance fee:** Free. **Card service fee:** Gold: 60 UAH per month if there is a debt at the end of the month. Platinum: 750 UAH per year. **Insurance:** Gold and Debit World: None. Platinum: Included in the service fee.
Maximum – cash	**Loan amount:** From 500 UAH to 75 thousand UAH (up to 200 thousand UAH in exceptional cases). **Income certificate:** Mandatory for loans of UAH 50,000 or more. **Interest rate:** Gold: 26.00% per annum. Debit World: 26.00% per annum or 29.99% per annum (for name cards). **Loan grace period:** None. **Cash withdrawal fee:** Free of charge when receiving credit funds. 4.00% of the amount, minimum 20 UAH — when receiving the client's own funds. **Minimum monthly payment:** 5.00% of the loan debt, minimum 50 UAH. **Card service fee:** Gold and Debit World: 3.50% monthly of outstanding balance if any. Debit World (nominal): 4.50% monthly of outstanding balance at the end of the billing period. **Insurance:** Not mandatory.

Source [35, 36, 38]

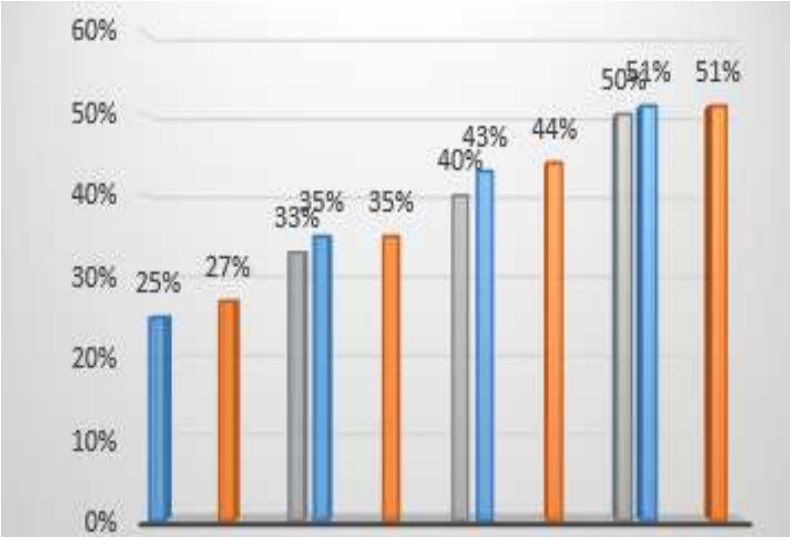


Figure 3.5 - Approximate level of annual overpayment on "Ukrgasbank" credit cards and comparison with major competitors as of October 24, 2023 [35]

Cards of "Ukrgasbank" give an overpayment on average one and a half times less than cash loans in other financial institutions, and compared to cash loans in "Ukrgasbank" itself, this advantage is twice as large. Mortgage loans may be of interest to borrowers who plan to borrow more than $40,000 or for a long period of time. Even taking into account all registration fees, the effective interest rate on mortgage loans ranges from 27.3% to 31.6% per annum (for an amount of UAH 40,000 over 4 years with an apartment costing UAH 400,000). Credit cards of "Ukrgasbank" have advantages over the conditions of its main competitors. However, their disadvantage is the high monthly fee, especially for small amounts. However, the average fee for credit cards is much lower than for cash

advances. Therefore, the overall rating of credit cards from "Ukrgasbank" is positive. [35, 37, 38, 44]

The main debit card programs of JSB "Ukrgasbank" include: "Platinum Black Plus" Package, "Alfa-Space", "Comfort" Package, "Carbon Card", "Platinum Black" Package, and "Ultra" Package. The bank also offers debit cards in collaboration with Wargaming for fans of the games World of Tanks Blitz, World of Warships, and World of Tanks. These cards are issued free of charge based on World MasterCard PayPass, and the annual fee is 200 UAH. By using the card in everyday life, owners receive additional in-game bonuses and other benefits. Today, the bank offers a comprehensive and diversified portfolio of card products designed to meet the varied needs of its clients, encompassing both individual customers and corporate entities. These products include cards issued under the auspices of leading international payment systems such as VISA International and MasterCard International, which are globally recognized for their reliability, security, and wide acceptance.

Among the offerings are salary cards specifically tailored for corporate clients to facilitate convenient and timely payroll distribution to their employees. Additionally, the bank provides pension cards aimed at ensuring seamless payment of pensions and other social cash benefits to eligible recipients, alongside social cards designated for the receipt of targeted social assistance programs. Deposit cards are also issued, enabling clients to accrue interest on their deposits while enjoying convenient access to funds.

With the steady increase in the issuance of payment cards and the corresponding growth in the volume and frequency of transactions conducted through these instruments, the importance of robust security measures and

comprehensive risk management frameworks has become paramount. Recognizing these challenges, the bank has implemented an advanced transaction monitoring system that actively detects and flags operations potentially indicative of fraudulent activity. This proactive approach serves to protect both the bank and its customers from financial losses and enhances overall trust in the institution.

Throughout the reporting year, the bank devoted substantial attention and resources to the integration and advancement of cutting-edge information technologies. These strategic initiatives were designed not only to reinforce the bank's standing as a market leader but also to foster dynamic and sustainable growth amid an increasingly complex and competitive banking landscape.

Recognizing the critical role of digital transformation in the modern financial sector, the bank invested in upgrading its technological infrastructure, adopting innovative software solutions, and enhancing cybersecurity measures to safeguard client data and transactional integrity.

By actively leveraging these technological innovations, the bank succeeded in creating a range of competitive advantages that distinctly differentiate it from other financial institutions operating within Ukraine. These advantages include streamlined service delivery, improved operational efficiency, expanded digital product offerings, and enhanced customer experience through personalized and convenient banking solutions. Furthermore, the bank's commitment to embracing emerging technologies has enabled it to respond agilely to evolving market demands, regulatory requirements, and customer expectations, thereby maintaining resilience and relevance in a fast-changing environment.

As a result, the bank has solidified its reputation for excellence, reliability, and a customer-centric approach,

positioning itself as a trusted partner for individuals and businesses alike. The continuous focus on technological enhancement not only contributes to the bank's current success but also lays a robust foundation for future innovation, growth, and leadership within the Ukrainian banking sector.

Let's consider the interest rates on deposits and loans in the national currency, as well as the terms of using bank cards on November 11, 2023 (Table 3.11).

Table 3.11 - Interest rates on loans and deposits as of 11.11.2023

DEPOSITS		CREDITS	
Name	**Interest rate**	**Name**	**Rate**
"Ukrgasbank" - Deposit promotion	up to 16.64%	Consumer standard	from 14.4%
"Ukrgasbank" - Children's Deposit	up to 16.14%	Cash loan Personal loan*	from 30.21%
"Ukrgasbank" - Deposit with replenishment	up to 16.14%	Cash loan Personal loan	from 40.21%
"Ukrgasbank" - Deposit with choice of term	up to 16.14%	Credit-ready grace period (400 thousand)	from 42.77%

Source *[35, 36, 38]*

As of the end of 2023, Ukrgasbank offered competitive interest rates on deposit programs, reaching over 16% per annum, while credit products ranged from moderate rates of 14.4% to higher rates typical for unsecured consumer lending. In 2024 and 2025, trends in Ukraine's financial market were influenced by macroeconomic factors (inflation, currency fluctuations, political instability) as well as technological innovations in the banking sector, which led to

a gradual adjustment of interest rates and transformation of deposit and loan products.

During 2024, Ukrgasbank adapted its deposit terms considering increased inflation and the need to maintain attractiveness for depositors. Interest rates on deposits fluctuated between 14% and 17%, depending on the type and term of the deposit. This policy helped ensure a stable inflow of resources into the financial market, which is crucial for financing the economy and supporting the bank's liquidity.

In 2025, the bank continued the trend of differentiating deposit products by introducing additional conditions that encourage clients to maintain longer-term deposits, such as replenishable deposits and deposits with flexible terms. This approach aligns with modern financial market trends and contributes to strengthening investment stability.

Regarding credit products, Ukrgasbank in 2024–2025 increased focus on a risk-oriented approach, reflected in the adjustment of interest rates based on borrowers' creditworthiness and current macroeconomic challenges. Simultaneously, the bank expanded the use of technological solutions for credit process automation, which contributed to reducing operational costs and improving customer service.

In 2024, Ukrgasbank continued to develop its unique product cards without physical embossing of card numbers, CVV2 codes, and expiration dates integrating this service with modern mobile applications and biometric user identification. This corresponds with global trends in digital transformation of banking services and enhances cybersecurity, which is a key factor in strengthening customer trust.

In 2025, further expansion of such cards' functionality is expected through integration with other financial services, including digital wallets and personal finance management

platforms. This will enhance convenience for users and strengthen Ukrgasbank's position as an innovation leader in the market. [12, 22, 35, 37, 38, 44]

The dynamics of interest rates on deposits and loans at Ukrgasbank reflect nationwide economic processes and align with theoretical models of macroeconomic factors' influence on financial markets (according to Fisher's theory, Keynesian economics, and modern institutional theories). The increase in deposit rates in 2023–2024 can be explained by adaptation to inflationary processes, while credit rate adjustments correspond to balancing credit risk and financing demand.

Innovations in payment cards support the hypothesis that digital transformation of the financial sector is not only a factor in improving operational efficiency but also a significant component of economic security, as it reduces vulnerability to financial fraud and contributes to building a transparent financial system. Thus, the analysis of Ukrgasbank's trends confirms the importance of integrating macroeconomic stabilization and technological innovation to ensure sustainable development of Ukraine's banking sector. [35, 37, 38, 44]

Conclusion and Prospects for 2025–2026. The development of the payment card market in Ukraine continues to be a pivotal factor in the country's ongoing financial modernization and economic transformation. In 2025, the market is expected to expand significantly, driven by increased consumer adoption of cashless payment methods, advancements in financial technologies, and growing investor interest in innovative payment solutions. This expansion contributes directly to enhancing economic growth by facilitating more efficient transactions, improving financial inclusion, and fostering a more transparent financial ecosystem.

Investment-innovation security plays a critical role in this process by ensuring that investments in payment infrastructure and technologies are safeguarded against systemic risks, including cyber threats, regulatory uncertainties, and geopolitical challenges. Strengthening this security framework will boost investor confidence and promote the sustained inflow of capital needed for technological upgrades and market expansion.

Looking ahead to 2026, several key trends are expected to shape the payment card market's evolution in Ukraine. These include the widespread adoption of biometric authentication, integration of payment cards with digital wallets and mobile banking platforms, and the development of domestic payment systems aimed at reducing reliance on international operators. Such innovations will enhance the resilience and autonomy of the national payment ecosystem, aligning with broader goals of economic security and sovereignty.

Furthermore, ongoing improvements in regulatory frameworks to harmonize with European Union standards will facilitate cross-border transactions and attract foreign investments, fostering deeper integration into the global financial system. Enhanced regulatory oversight will also mitigate risks related to financial fraud and money laundering, further strengthening the market's credibility.

In conclusion, the synergistic development of Ukraine's payment card market, supported by a foundation of robust investment-innovation security, will represent a key pillar in ensuring sustainable and balanced economic growth for the period 2025–2026.

This growth will be driven not only by the expansion of financial technologies and infrastructure but also by the creation of a secure and adaptive ecosystem capable of

responding to both domestic challenges and global market trends. The stability and resilience of the payment card market will directly contribute to strengthening the country's financial system, expanding the volume of cashless transactions, increasing trust in banking institutions, and stimulating consumer activity.

Achieving this vision will require sustained and coordinated efforts from policymakers, financial institutions, technology developers, and other stakeholders in the payment ecosystem. Policymakers must ensure a transparent and predictable regulatory environment that balances innovation with stringent security requirements. Financial institutions should focus on expanding the availability and quality of payment card services, ensuring accessibility for all segments of the population, including underserved and rural communities.

Meanwhile, technology developers must continue to innovate in the fields of payment security, biometric authentication, mobile integration, and data protection, enabling the introduction of next-generation payment solutions tailored to the needs of Ukrainian consumers and businesses.

Furthermore, fostering a collaborative framework between these stakeholders will be critical to creating synergies in investment, innovation, and market development. Such cooperation will not only enhance the competitiveness of Ukraine's financial services sector but will also align domestic payment infrastructure with leading international standards. By embedding innovation and security into the strategic priorities of the payment card market, Ukraine will strengthen its competitive position in the global economy,

attract foreign investment, and accelerate the transition to a modern, inclusive, and technology-driven financial ecosystem.

Ultimately, the effective integration of security, innovation, and inclusivity within the payment card sector will serve as both a driver and a safeguard for economic growth, ensuring that the benefits of financial modernization are distributed broadly across society and that Ukraine's economic trajectory remains resilient, progressive, and globally competitive.

The future prospects of JSB "Ukrgasbank" in the credit card segment will largely be determined by the competitiveness of its products compared to other leading banks in Ukraine. As of October, the approximate level of annual overpayment on the bank's credit cards remains moderate and competitive, creating favorable conditions for retaining and expanding its customer base. A comparison with major competitors shows that in terms of interest rates, commission fees, and additional services, Ukrgasbank has the potential to strengthen its market position, especially among clients who value transparent lending terms and a stable level of service.

In the future, key areas of development will include the optimization of interest rate policies and the flexible adjustment of credit limits, which will help attract new borrowers and reduce customer migration to competing banks. Another promising area is the expansion of digital services and the integration of innovative technologies for online issuance and management of credit cards, in line with the trends of cashless payments and mobile banking.

An additional growth driver will be the introduction of loyalty programs and partnership projects with retail chains,

which will encourage more active use of cards in everyday transactions. Furthermore, the bank could strengthen its presence in the premium segment by offering card products with extended privileges and services.

Thus, by maintaining competitive rates, actively developing its digital infrastructure, and implementing effective marketing strategies, Ukrgasbank has all the prerequisites to strengthen its position in the credit card market in the coming years, ensuring a steady increase in its customer base and improving the profitability of this business segment.

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SECTION 4. TAX SECURITY IN THE POST-WAR ECONOMIC RECOVERY OF UKRAINE

4.1. GUARANTEE OF THE COUNTRY'S TAX SECURITY

Tax security is a fundamental component of the financial security of the state, determining the level of its ability to function effectively within the modern economic system. It ensures not only the stability of the budget process, but also creates preconditions for sustainable socio-economic development, improvement of the population's welfare and efficient distribution and use of public resources. In the context of deepening economic integration and transnational capital flows, the issue of tax security is becoming particularly relevant.

Tax security is a set of institutional, legal and administrative measures aimed at preventing a decline in budget revenues, combating tax evasion, minimising the informal economy and increasing the transparency of tax policy. The effective functioning of this system contributes to ensuring fiscal discipline, preventing financial crime and preserving the fiscal independence of the State.

At the same time, the level of tax certainty has a direct impact on the legitimacy of the government in the eyes of society and on the investment climate in the country. A high level of business and public confidence in the tax system is a key factor in economic stability and a prerequisite for broadening the tax base. Tax security not only fulfils the function of financial control, but also acts as a strategic instrument of state policy in the field of economic security[56].

Given the multifaceted nature of the concept of tax security, the complexity of the interrelationships and interdependencies of its various elements, and the need to

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take into account the economic interests of individuals and legal entities - taxpayers, regions and the state - in order to ensure sustainable economic growth, tax security comprises the following levels: national tax security; regional tax security; taxpayer tax security[57]. National tax security is a state of the economy that ensures guaranteed tax payments to the budget, which allows to protect national interests in a changing external environment[58]. Regional tax security is the state of taxation in the region, determined by the level of local taxation[59]. Tax security of taxpayers is the financial and economic position of a taxpayer that ensures minimisation of tax risks subject to compliance with tax discipline. At present, we can distinguish four main types of tax strategies, which, regardless of the fact of their formal declaration, are implemented by enterprises and affect the tools used to ensure tax security of enterprises. The strategy of maximum tax security is aimed at absolute compliance with the requirements of the tax legislation, based on the absolute acceptance of the position of the tax authorities in all disputed issues; the strategy of tax evasion is expressed in the deliberate violation of the tax legislation (distortion of income and/or expenses, manipulation of civil law rules in the qualification of transactions, non-payment of taxes, etc.); the strategy of tax evasion is expressed in the deliberate violation of the tax legislation (distortion of income and/or expenses, manipulation of civil law rules in the qualification of transactions, non-payment of taxes, etc.). The strategy of 'mitigating' the tax consequences involves deliberately refusing to enter into illegal transactions and minimising questionable

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transactions; the strategy of 'optimising' the tax consequences involves reducing the amount of tax liabilities (or postponing their fulfilment to a later date) and reducing tax risks through targeted legal action by the taxpayer.

As tax security is closely linked to economic, political and social processes, its provision is becoming one of the key tasks of public policy[60]. Special attention is paid to the creation of an effective tax system, the fight against corruption and smuggling, and the development of digital technologies for monitoring tax revenues. This will not only protect the financial interests of the state, but also create a favourable climate for business development, investment and innovation.

The introduction of modern technologies, such as the automation of tax administration and electronic services, opens up new opportunities to improve tax compliance. At the same time, digitalisation creates new risks in the form of cybercrime, which also requires appropriate safeguards. At the international level, issues such as the harmonisation of tax policies, the exchange of information between countries and the fight against cross-border tax evasion are relevant.

Tax security is not only a tool for ensuring the stable functioning of the state budget, but also an important factor in the country's economic independence, global competitiveness and social stability[61]. That is why research and development of strategies in this area is of particular importance for both academics and practitioners.

The issue of adapting the Ukrainian tax system to international standards, such as BEPS, and integrating it into

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the global economy, which is essential for attracting investment and developing entrepreneurship, is of particular importance. The digitalisation of tax processes and the introduction of automated tax revenue monitoring systems open up new opportunities to reduce tax risks and increase the transparency of the system.

Tax security is one of the key components of the overall economic security of the state, which plays an important role in ensuring the stability and functionality of its financial system[62]. In today's globalised and rapidly changing economic environment, the effective functioning of the tax system is becoming a cornerstone of any country's financial stability. The concept of tax security is multifaceted and encompasses various principles of activity related to the design, administration and implementation of tax policy. This phenomenon can be considered both at the macro level, from the point of view of the state, and at the micro level, taking into account the interests of businesses and citizens[63].

The state seeks to maximise tax revenues to fulfil its functions, businesses are interested in minimising the tax burden to increase profitability, and citizens expect a fair distribution of the tax burden and transparency in the use of resources. Tax security therefore depends on the effectiveness of tax policy, which includes setting optimal tax rates, ensuring fair administration and creating mechanisms to prevent tax evasion.

Of particular importance in ensuring tax certainty are the following principles: stability of tax legislation,

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transparency in its implementation and efficiency of the tax administration system. Frequent changes in tax legislation can create instability for businesses, reduce the country's attractiveness for investment and encourage tax evasion. The transparency and predictability of the tax system helps to build trust between the state and taxpayers, which is an important factor in economic stability.

In addition to internal challenges, tax security also faces a number of external threats. These include global competition for capital, cross-border tax evasion, the use of offshore jurisdictions to minimise tax liabilities and the challenges posed by the digital economy[64]. In today's world, companies increasingly operate across national borders, making income taxation difficult to control. In particular, large international companies use various tax optimisation schemes, resulting in a significant loss of revenue for the state.

Ensuring tax security requires the development of an effective strategy that takes into account both internal and external challenges. Such a strategy should be based on the principles of fairness, efficiency and neutrality of taxation. The principle of fairness means that the tax system should ensure an equitable distribution of the tax burden among taxpayers based on their ability to pay. The principle of efficiency means minimising the administrative costs of tax administration and preventing tax evasion. Neutrality means that tax policy should not distort economic decisions of

[64]Волкова В., Дмитренко Т. (2022). Децентралізовані фінанси: їх розвиток у сучасній фінансовій системі та ризики, які вони спричиняють. Grail of Science, (12-13), 71–80. https://doi.org/10.36074/grail-of-science.29.04.2022.007

economic agents, such as investment, consumption or saving[65].

In the context of Ukraine, tax certainty is particularly important given a number of structural problems, such as the grey economy, corruption, inefficient tax administration and frequent changes in tax legislation. The large size of the informal economy results in significant losses to the budget, which limits the state's ability to finance social programmes and investment projects. Corruption in the tax administration undermines confidence in state institutions and encourages tax fraud.

Comprehensive reforms are needed to improve Ukraine's tax security. These include strengthening the tax administration, introducing modern digital technologies to automate processes, strengthening the fight against corruption and preventing shadow tax regimes. Another important principle is to harmonise tax legislation with international standards, which will help to increase the transparency of the tax system and create a favourable business climate[66].

As a complex phenomenon, it encompasses various principles governing the relationship between the State, economic entities and citizens. Tax security is a multi-level category that can be divided into several types according to its functional, territorial and object dimensions. Each of these types performs specific tasks aimed at ensuring the stability of the financial system and the effective performance of the state's functions.

The first type of fiscal security is government fiscal security, which is defined as the ability of government to

[65] Подік І. І. Податкова безпека як складова частина економічної безпеки національної економіки. Східна Європа: економіка, бізнес та управління. 2016. № 2. С. 100–107

[66] Барановський О. І. Податкова безпека: сутнісний вимір. Збірник наукових праць Університету державної фіскальної служби України. Ірпінь, 2017. № 1. С. 7–24

ensure the necessary level of budget revenues to perform its functions. It includes mechanisms for formulating tax policy, administering taxes, combating tax evasion and preventing the informal economy. State tax security depends on the stability of the tax system, its adaptability to changes in the external environment and its ability to respond to challenges such as economic crises or external economic pressures.

The second type is regional tax security, which refers to ensuring the stability of tax revenues within individual administrative units. This type is particularly relevant for decentralised systems where local budgets are heavily dependent on tax revenues. Regional tax security ensures that local programmes such as infrastructure development, social support and healthcare can be financed. At the same time, the effective functioning of this type of tax security requires taking into account the specifics of the regions, such as the level of economic development, economic structure and social needs.

Business tax security, which reflects the degree to which businesses are protected from excessive tax burdens, legislative instability and corruption risks. It is important for businesses to have predictable tax policies and transparent and efficient tax administration. Corporate tax security is a key condition for stimulating investment, innovative development and increasing the competitiveness of the national economy. Violations of corporate tax security can lead to capital outflows abroad, reduced investment and the growth of the informal economy[67].

Tax security for individuals, which ensures that they are protected from excessive tax burdens, discrimination and

[67] Писаренко В. П. Корпоративний податковий менеджмент як основа забезпечення фінансової безпеки підприємства. 2018. URL: http://dspace.pdaa.edu.ua:8080/handle/123456789/1451

unfair distribution of tax liabilities. The tax system should be based on the principles of fairness and equality so that citizens are not overburdened financially. In addition, an important component of tax security for individuals is transparency in the use of tax resources, which helps to increase trust in government and encourages voluntary tax payments.

Tax security can be classified according to the object of protection. In this context, we distinguish between budgetary tax security, which focuses on ensuring the stability of state and local government revenues. It includes measures aimed at preventing tax evasion, combating the illegal use of tax benefits and ensuring that tax rates are in line with economic realities[68].

External tax security, which is related to the prevention of risks arising from international economic activity. This includes combating transnational tax evasion, optimising the use of double taxation treaties, and counteracting the use of offshore zones. In today's world of globalisation and digitalisation of the economy, external tax security is becoming increasingly important, as its violation can lead to significant losses for the budget and the country's economy as a whole[69].

An essential part of the tax security structure is internal tax security, which covers the protection of the economy from internal threats such as corruption in the tax authorities, the informal economy, low tax discipline and institutional weaknesses in the tax system. It aims to create transparent

[68] Голіков С. С. Податкова безпека у системі фінансової безпеки. Економіка та держава. 2015. № 11. С. 135–137

[69] Podik I. I. SAF-T як інструмент забезпечення податкової безпеки. Economics of the Information Society: Current Issues and Prospects for Development: Thesis of the International scientific and practical conference, December. Kyiv; Budapest; Vienna: International Academy of Information Science, 2018. С. 5–7

rules of the game for all economic actors and to ensure a level playing field.

Strategic tax security, which ensures the long-term sustainability of the tax system. It involves anticipating future challenges related to demographic change, the development of the digital economy and changes in international tax policy. Strategic tax security requires a proactive approach to tax policy-making in order to avoid financial crises and ensure sustainable economic development.

Strategic tax security, which ensures the long-term sustainability of the tax system. It involves anticipating future challenges related to demographic change, the development of the digital economy and changes in international tax policy. Strategic tax security requires a proactive approach to tax policy-making in order to avoid financial crises and ensure sustainable economic development[70]. Understanding the variety of types of tax security and their interrelationships is key to formulating an effective tax policy that takes into account both the short-term and long-term needs of society.

Modern tax security performs a set of tasks aimed at ensuring fair, efficient and reliable functioning of the tax system, which must be adapted to the challenges of the times and comply with international standards[71]. One of the key functions of tax security is the regulation of tax flows, which includes the control of tax collection and the efficient distribution of taxes according to the needs of the state budget. This helps to ensure stable funding for government programmes and services such as health, education,

[70] Мельник А. О., Колесник А. О. Податковий складник економічної безпеки підприємства. Науковий погляд: економіка та управління. 2020. № 1(67). С. 83–88. URL: http://212.1.86.13/jspui/handle/123456789/3950

[71] Павліченко В. М. Податкова безпека як складова економічної безпеки українських підприємств в умовах кризи. Вісник економіки транспорту і промисловості. 2015. № 49. С. 131-135

infrastructure, defence and social protection. At the same time, tax security acts as a stabiliser in the economy, helping to maintain macroeconomic balance by regulating the tax burden on businesses and individuals.

Ensuring the fairness of the tax system, which means an equal distribution of the tax burden between different categories of taxpayers. This involves combating tax offences, tax evasion and other types of financial crimes that damage public finances[72]. Для реалізації цього завдання податкові органи використовують сучасні технології, аналіз даних та міжнародну співпрацю для виявлення та запобігання незаконним фінансовим схемам.

Promoting economic growth by stimulating investment activity, supporting small and medium-sized businesses, and creating conditions for the development of innovations and technologies. This function involves establishing a favorable tax climate that promotes investment and job creation. In this context, tax security should be flexible and long-term oriented to ensure the country's economic competitiveness.[73].

In the current context of globalisation and intensification of integration processes in the international arena, the role of interstate cooperation in the formation of an effective tax security system is growing significantly. Countries are increasingly involved in joint initiatives aimed at establishing the exchange of tax information, unifying approaches to taxation and combating transnational tax offences. This format of cooperation is a tool to reduce global tax evasion risks, in particular through the use of automatic

[72] Цимбалюк І. О. Податкова безпека в системі фінансової безпеки держави. Стратегічне управління національним економічним розвитком: монографія: в 2 т. Донецьк: ДВНЗ «ДонНТ» 2013. Т. 2. С. 13–23

[73] Виклюк М. І., Гресик В. В. Податкова безпека: дуалістичність економічної природи трактування змісту основних характеристик. Інноваційна економіка. 2013. № 5. С. 242–246

data exchange mechanisms, the implementation of international BEPS (Base Erosion and Profit Shifting) standards, and the expansion of the double taxation treaty framework.

International tax cooperation allows not only to strengthen the control of cross-border financial flows, but also to ensure fair taxation of multinational companies, which often use aggressive tax planning and offshore jurisdictions to minimise their tax burden. In this context, it is particularly important to respect the principle of tax fairness, which implies a link between tax liabilities and real economic transactions that generate added value.

The function of ensuring transparency and accountability of the tax system deserves special attention, as it helps to increase tax discipline, strengthen public confidence in tax authorities and reduce corruption. Tax transparency is achieved through the publication of tax returns of large companies, the digitalisation of tax administration and improved control mechanisms. In turn, the increased accountability of tax institutions contributes to the formation of a long-term tax culture and ensures the stability of the financial system in the face of dynamic challenges in the global environment.

Transparency in tax processes, clarity of tax rules and timely informing citizens about changes in tax legislation are key factors in strengthening social trust and reducing the shadow economy[74]. In the context of rapid changes in the global economic environment, driven by digitalisation, the proliferation of cryptocurrencies, the development of financial technologies (fintech) and decentralised payment systems, tax security as a component of national economic

[74] Меліхова Т. О., Троян О. В. Аналіз впливу податкового навантаження на рівень податкової безпеки підприємства. Інвестиції: практика та досвід. 2017. № 20. С. 33–37

security is facing new challenges. In today's dynamic digital transformation of the economy, traditional tax control and administration tools are increasingly proving to be ineffective. The use of outdated approaches to the identification of taxable entities, collection and processing of information on the financial and business activities of taxpayers does not correspond to the level of development of digital business models and transnational financial flows. The growing popularity of e-commerce, virtual assets, the platform economy, and the expansion of services through digital channels make it much more difficult for fiscal authorities to identify taxable transactions, especially those that occur outside the jurisdiction of national tax systems.

The digital environment poses new challenges for public tax policy, particularly in terms of ensuring tax transparency, preventing transfer pricing, aggressive tax planning and tax evasion through cross-border digital structures. In this context, traditional forms of control, such as on-site inspections, analysis of paper-based financial statements and the use of fragmented databases, do not allow for an effective response to the new risks arising in the digital space.

Moreover, the active use of cryptocurrencies, e-wallets, smart contracts and other financial instruments based on blockchain technology facilitates the anonymity of participants in economic transactions and complicates the process of tracking cash flows.

In this regard, the need to modernise the tax administration system through the implementation of innovative technological solutions, such as blockchain, artificial intelligence, automated transaction monitoring systems and big data analytics, becomes particularly relevant. This not only makes it possible to increase the transparency

of tax processes, but also to respond promptly to identified threats and minimise tax losses to the budget. At the same time, the state should develop adaptive legal and institutional mechanisms to regulate new financial instruments, including cryptocurrencies, which create parallel economic environments outside the jurisdiction of national fiscal authorities. Clear regulatory frameworks for taxation of income generated in the digital sector will help reduce shadow financial flows and increase fiscal sustainability.

Ensuring tax security in the context of digital transformation also requires harmonising tax policy with the needs of the digital economy. This includes creating a favourable environment for innovative business development while ensuring a fair distribution of the tax burden. Thus, the effective integration of digital technologies into tax regulation is a critical condition for maintaining tax stability, ensuring macroeconomic balance and supporting sustainable economic development in the new realities of the globalised world[75].

In today's environment, the tax system plays a central role in the formation of government budgets, providing funding for key areas of public life such as health, education, social protection and defence[76]. However, modern states, including Ukraine, face a number of threats that weaken tax security and pose serious challenges to the functioning of the financial and economic system. These threats are multifaceted and cover political, economic, social and legal principles, which requires a comprehensive approach to their analysis and overcoming (Figure 3.2).

Tax security of the state

[75] Андрущенко В. Л., Тучак Т. В. Податкова держава. Київ: Алерта, 2016. 304 с

[76] Глухова В. І., Скрипник Л. І. Стан податкової безпеки України та напрямки її зміцнення. Інтернаука. 2018. № 10. С. 15–17

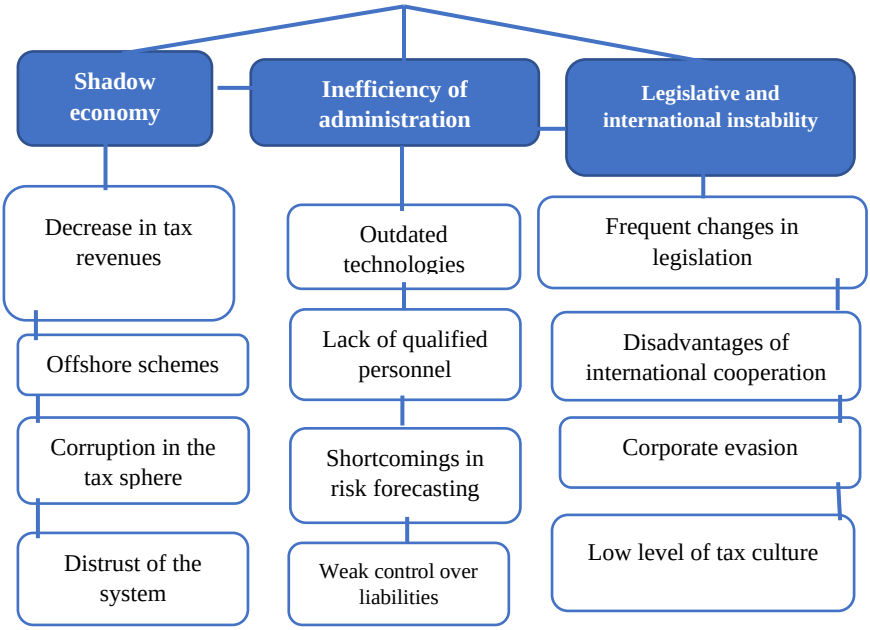


Fig.3.2 - Tax security of the state in the context of modern challenges*

** systematised by the authors according to 3, 7, 12, 16*

Among the main challenges faced by modern states, the problem of the shadow economy occupies a special place, as its spread negatively affects all principles of public administration, including tax security (Figure 2).

The shadow economy is a hidden but extremely powerful factor that contributes to the systemic deformation of economic processes, undermines the financial stability of the state and deepens social inequality [77]. In the global

[77] Вплив тіньової економіки на податкову безпеку країни: макро- та мікроекономічний рівень. URL :: https://pidruchniki.com/78203/finansi/vpliv_tinovoyi_ekonomiki_podatkovu_bezpeku_krayini_ makro-_mikroekonomichniy_riven

context, the shadow economy is a multidimensional phenomenon that can manifest itself in the form of illegal activities, unregistered businesses or the concealment of part of the income from taxation.

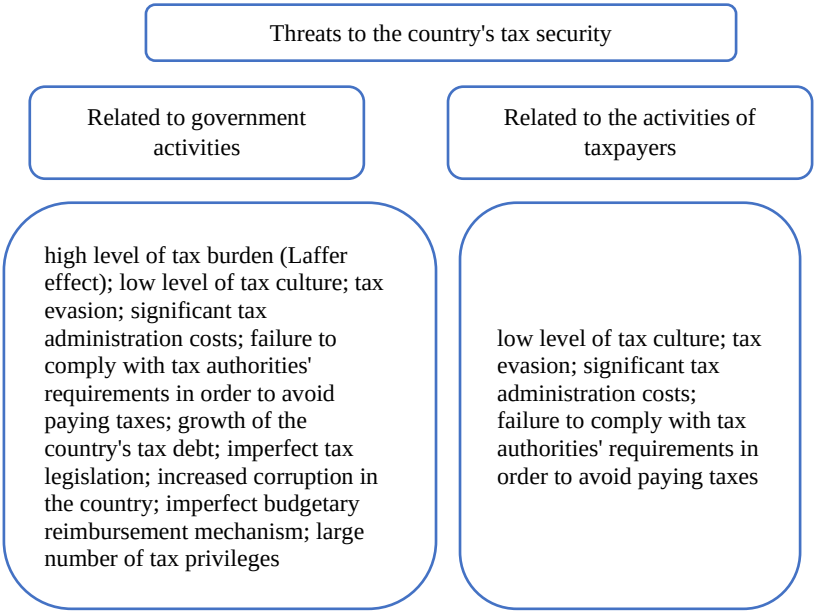


Fig. 3.3 - Threats to the country's tax security*

** compiled by the authors for 7, 12, 16*

However, in the case of Ukraine, this phenomenon is even more important due to specific socio-economic, political and institutional factors. One of the most destructive consequences of the shadow economy is a significant reduction in tax revenues to the state budget, which in turn leads to a decrease in funding for social programmes, infrastructure projects and other priority areas of state

policy[78]. In these conditions, the state's dependence on external borrowing increases, which increases the country's financial vulnerability and reduces the level of its economic sovereignty [79].

It is important to emphasise that the spread of the shadow economy in Ukraine is systemic and largely determined by the low level of institutional trust on the part of the population and business entities. This situation has developed against the backdrop of continued corrupt practices in public administration, non-transparent use of budgetary resources, lack of proper accountability of public authorities, and poor performance of public policy in key socio-economic areas.

Distrust in state institutions leads to a vicious cycle of dysfunctional behaviour, whereby citizens and businesses tend to ignore fiscal obligations, motivated by the belief that the collected taxes are being used inefficiently or illegally. In turn, the decline in tax revenues deepens fiscal imbalances, forcing the state to increase the fiscal burden or cut public spending, which in turn further increases social tensions and weakens the legitimacy of the tax system.

One of the characteristic features of the shadow economy is the active use of complex tax optimisation or tax evasion schemes by business entities. Such practices include manipulation of financial and accounting reports, understatement of actual sales of goods and services, use of transit or offshore companies to shift profits out of the

[78] Краус Н. М. Детермінанти тіньової економіки в інноваційних умовах господарювання: монографія. Полтава: Дивосвіт, 2014. 148 с. URL: https://core.ac.uk/download/pdf/300238899.pdf

[79] Петренко І. Податкові ризики, що впливають на економічну безпеку підприємства. Банкрутство & Ліквідація в Україні. 2019. URL: https://bankruptcy-ua.com/articles/10955

jurisdiction of Ukrainian fiscal authorities, and falsification of documents confirming expenses or business transactions.

The problem of using offshore jurisdictions, which allow companies to minimise their tax burden through intra-group transfer pricing, registration of legal entities outside Ukraine and transfer of assets to the shadow sector, is becoming particularly acute. Such actions significantly complicate control by the tax authorities and create conditions for budget imbalances and threats to the economic security of the state.

Effectively tackling the informal economy requires a comprehensive reform of the institutional environment, increased transparency of public spending, the introduction of modern fiscal control mechanisms and the creation of conditions for building trust between the state and society. Only under these conditions can the level of voluntary fiscal discipline and the size of the informal economy be increased and reduced.

These actions not only contribute to the further expansion of the informal economy, but also create unfair competitive advantages for those who engage in such practices, in violation of the principles of fair competition[80].

The problem of the informal economy is multifaceted and its solution requires a comprehensive approach, taking into account both the economic and social principles of the phenomenon[81]. On the one hand, the government should ensure that there is an effective tax system that is transparent, fair and understandable to taxpayers. This means simplifying

[80] Маршук, Л., Бурлака, М. (2022). Фінансова система України в умовах війни. *Економіка та суспільство*, (44). https://doi.org/10.32782/2524-0072/2022-44-26

[81] Приступа, Т., Чайковська, В. (2019). Тіньова економіка та її вплив на соціально-економічний розвиток країни. Приазовський економічний вісник, вип. 1(12). URL: http://pev.kpu.zp.ua/journals/2019/1_12_uk/11.pdf

tax administration, reducing the tax burden on small and medium-sized enterprises and introducing incentives for voluntary tax payment, such as tax relief, subsidies or co-financing programmes for investment projects. On the other hand, it is necessary to improve the mechanisms of government control over tax compliance, in particular by introducing modern technologies for monitoring, analysing and detecting infringements. In this context, digital platforms can play an important role by allowing for the automation of accounting and reporting processes, thereby reducing opportunities for manipulation.

In addition, the problem of the shadow economy cannot be solved without raising the level of legal culture of the population and creating awareness in society of the importance of paying taxes as a prerequisite for the country's sustainable development. This requires targeted information and awareness-raising activities, including the promotion of the principles of tax responsibility, increased transparency in the use of public funds, and active public involvement in the decision-making process. At the same time, the state should take measures to reduce corruption in the tax authorities, which is one of the key prerequisites for effective fight against the shadow economy[82]. The successful implementation of these measures could create the basis for increasing public trust in state institutions, which in turn would be an important step towards overcoming this negative phenomenon.

Ineffective tax administration is one of the main factors undermining the financial stability of the state and creating

[82] Краус, Н.М. (2014). Детермінанти тіньової економіки в інноваційних умовах господарювання: монографія. Полтава: Дивосвіт. 148 с

favourable conditions for tax fraud[83]. The problem of efficient functioning of the tax system is complex and includes not only economic and legal, but also technical and organisational aspects of the fiscal authorities' activities. In the case of Ukraine, this problem is particularly acute due to a number of systemic shortcomings caused by both institutional inertia and technological backwardness of tax administration procedures. Outdated mechanisms for accounting, tax reporting and control significantly limit the potential of the tax system to respond promptly to the challenges of digital transformation, which is taking place both globally and nationally. The lack of proper automation of key business processes in tax administration, such as taxpayer registration, declaration processing, monitoring of financial flows and auditing, not only increases the workload of fiscal authorities' staff, but also creates preconditions for subjective decisions, which in turn increases the risk of corruption. The fact that a significant part of the procedures is still in paper form makes it difficult to control the circulation of tax information, reduces the transparency of interaction between taxpayers and tax officials, and significantly increases administrative costs for both business and the state. The low level of digitalisation of fiscal processes causes not only technical difficulties in administration, but also significant financial costs to ensure the functioning of the system, which reduces its overall efficiency. In addition, in such conditions, the number of loopholes for abuse by unscrupulous business entities that use weaknesses in the control system to evade taxation or manipulate tax liabilities is growing. This undermines tax fairness and leads to a loss of budget revenues. Improving the

[83] Мельник М. І., Лещух І. В. Податковий контроль в Україні: проблеми та пріоритети підвищення ефективності : монографія. Львів : ДУ “Інститут регіональних досліджень ім. М. І. Долішнього НАН України”, 2015. 330 с

technical infrastructure and organisational framework of the tax authorities is a critical task to ensure the stability of the tax system in Ukraine. The transition to full digital interaction between tax authorities and taxpayers, the introduction of electronic document management, data mining, automated risk assessment and tax audit systems should be the priority areas of reform. Only under these conditions will it be possible to increase the transparency, efficiency and effectiveness of the tax administration, reduce the scope for abuse and restore confidence in the state's tax policy[84].

In addition to technical problems, organisational shortcomings have a significant impact on the efficiency of tax administration. One of the key problems is the low level of qualification of tax officials, which complicates the process of introducing new technologies and reduces the overall productivity of the tax system. The lack of adequate funding for these bodies further exacerbates the problem, as insufficient resources limit the ability to train staff, modernise equipment and create an efficient tax collection infrastructure. At the same time, corruption in the tax authorities is a serious deterrent to the development of the tax system. Abuse of office, manipulation of databases and the creation of artificial barriers for taxpayers undermine trust in the tax authorities and encourage business entities to evade taxation. Thus, the organisational weakness of the tax service creates preconditions for abuse, which ultimately causes significant financial losses to the state and undermines its tax security.

Another important problem is the lack of modern analytical tools for assessing tax risks and predicting possible

[84] Докієнко, Л. (2022). Цифрова трансформація фінансів підприємства. *Підприємництво та інновації*, (22), 18-25. https://doi.org/10.37320/2415-3583/22.3

abuses [85]. In many countries around the world, the introduction of digital technologies and big data allows for the creation of sophisticated models to identify risky entities, analyse transactions and detect tax evasion schemes. In Ukraine, however, these processes are still at an early stage, which limits the state's ability to respond effectively to new challenges. The lack of integrated databases, insufficient information exchange between different government agencies, and limited access to international financial data significantly complicate the fight against tax violations. This allows business entities to use sophisticated tax evasion schemes, including transactions with offshore companies, fictitious contracts or fake reports. As a result, the state loses significant amounts of tax revenue that could be used to finance social programmes, develop infrastructure or support key sectors of the economy.

Ineffective tax administration also contributes to deepening distrust of the state on the part of businesses and citizens. Administration is the management, organisation, execution, supervision, and control through organisational and administrative activities (in the form of orders and instructions) of governing bodies. Administration of taxation processes is a set of measures aimed at ensuring compliance with legislative and regulatory acts. The object of administration is the process of reconciliation and repayment of tax liabilities of taxpayers. The purpose of the administration is to ensure repayment of tax liabilities of taxpayers by optimally intervening in their business activities through the application of legally established mechanisms and procedures. Tax administration is a set of legal, economic

[85] Петренко І. Податкові ризики, що впливають на економічну безпеку підприємства. Банкрутство & Ліквідація в Україні. 07.02.2019. URL: https://bankruptcy-ua.com/articles/10955

and financial measures taken by the state to form a taxation system, ensure timely and full payment of taxes and duties to meet the needs of society as a whole, and develop the country's economy by redistributing financial resources. Tax administration means a set of rules and regulations, methods, means and actions by which specially authorised state bodies carry out management activities in the tax area aimed at monitoring compliance with the legislation on taxes and fees, the correctness of their calculation and full payment, and bringing to justice violators of tax legislation[86]

When taxpayers face bureaucratic obstacles, long processing times or incompetent tax officials, they lose motivation to fulfil their tax obligations. In such circumstances, taxpayers begin to look for ways to minimise their tax burden, which only increases the shadow economy. Instead, an efficient and transparent tax system can become a powerful tool for increasing trust in the state. This implies not only improving technical and organisational factors of administration, but also introducing effective feedback mechanisms that will allow taxpayers to actively participate in the decision-making process and control the use of public funds[87].

The instability of tax legislation is one of the most significant factors undermining the effectiveness of the tax system, creating serious challenges for both government and business. Frequent changes in tax legislation, often without proper impact analysis or stakeholder input, create an environment of legal uncertainty that makes it difficult to

[86] Бандурка О. М., Понікаров В. Д., Попова С. М. Податкове право : навч. посіб. К. : Центр учбової літератури, 2012. 312 с.

[87] Лютий, І. О., Мєдвєдкова, Н. С. Сучасна парадигма фінансової політики держави та особливості її реалізації в умовах війни на території України. Фінанси України. 2023. № 6. с. 61 – 74.

meet tax obligations. This uncertainty forces companies to constantly adapt their financial strategies, which requires additional time and resources, creates chaos in tax accounting and increases the risk of errors. In such circumstances, taxpayers are faced with a sense of instability that complicates their economic activity, forcing them to seek ways to minimise risks and sometimes to evade their tax obligations. For the state, on the other hand, this means a loss of confidence on the part of the business community, as the absence of clear and stable rules of the game weakens the legitimacy of the tax system and reduces its ability to accumulate the necessary resources to achieve social and economic goals.

Insufficient clarity and comprehensibility of certain provisions of tax legislation creates significant difficulties in their application, both for taxpayers and tax authorities. When provisions of laws are worded ambiguously or leave room for different interpretations, this creates conflicts between participants in tax relations. Taxpayers are forced to seek clarification, file complaints or even engage in litigation, which consumes time, money and resources that could be used to develop their business or address other pressing issues. In turn, the tax authorities, acting in an ambiguous environment, may make decisions that are contrary to the interests of taxpayers or lack clear instructions for applying certain rules. This not only complicates the tax administration process, but also creates additional opportunities for corruption, as situations of legal uncertainty provide room for subjective interpretation of laws and manipulation by public officials[88].

[88] Єфименко Т. І. Управління державними фінансами в період воєнного стану та повоєнної відбудови України: науковий супровід трансформацій. Фінанси України. 2023. № 1. С. 7–25. URL: https://doi.org/10.33763/fi nukr2023.01.007

A particularly serious consequence of the instability of tax legislation is the complication of long-term planning processes both at the level of individual companies and at the level of the state as a whole. For businesses, clear and stable tax rules are a prerequisite for developing development strategies, investing in production, creating new jobs and expanding their market presence. When the rules change unexpectedly or become unpredictable, businesses are forced to refrain from risky investments, reduce production or withdraw capital from the country altogether. This has a negative impact on the investment climate, as potential investors consider legal uncertainty to be one of the biggest risks to their operations. Therefore, the instability of tax legislation directly hinders economic growth, reduces the competitiveness of the national economy and creates serious obstacles to Ukraine's integration into the global economy.

On the government side, constant changes in tax rules also complicate the budget planning process, leading to uneven distribution of resources and reduced efficiency of financial management. Uncertainty about future tax revenues forces the government to act in the short term, which negatively affects the implementation of long-term infrastructure projects, social programmes and other strategically important initiatives. In addition, this situation creates a vicious circle: insufficient budget revenues prompt the government to make changes to the tax system, often without proper preparation, which in turn only increases legal uncertainty and reduces trust in the tax authorities.

Shortcomings in the implementation of tax legislation are another important principle that exacerbates the problem of instability. Even when laws are clearly formulated, their implementation can be ineffective due to insufficient technical training of tax authorities, lack of modern

accounting and monitoring technologies, and lack of coordination between different government agencies. This creates the preconditions for the emergence of tax evasion schemes, when taxpayers use gaps in the legislation or its inefficient application to minimise their liabilities. In such circumstances, the state loses significant amounts of tax revenues, which undermines its ability to ensure financial stability and perform social functions.

Economic globalisation has become one of the key factors influencing the development of tax systems in the modern world, creating both new opportunities for international cooperation and significant threats to the tax security of states. On the one hand, globalisation opens up access to new markets, stimulates investment and facilitates the exchange of technology, ensuring economic growth. On the other hand, it complicates tax administration, as traditional tools for controlling business income and expenses become less effective in the face of blurred borders and the proliferation of transnational financial transactions. One of the most critical problems associated with globalisation is the growing use of transnational schemes by companies to optimise tax payments, which leads to the loss of significant amounts of tax revenue in the countries where these companies actually operate. In such circumstances, governments face serious challenges as they have to find a balance between creating a favourable business climate and ensuring fiscal stability[89].

One of the most common ways in which international companies minimise their tax liabilities is by shifting profits to low-tax or even tax-free jurisdictions. This process, known

[89] Луніна І. О. Потенціал публічних фінансів для забезпечення видатків воєнного періоду та поствоєнного відновлення України. Фінанси України. 2022. № 8. С. 7–26. URL: https://doi.org/10.33763/fi nukr2022.08.007

as tax planning, allows companies to reduce their tax costs without formally breaking the law. At the same time, such actions result in significant financial losses for the countries that are the main markets for these companies. Manipulation of pricing within a group of companies, in particular, so-called transfer pricing, is another tool for tax evasion. Under this practice, companies artificially underestimate or overestimate the prices of goods and services supplied between their divisions in different countries in order to shift profits to lower-tax jurisdictions. Such schemes not only reduce tax revenues, but also distort the competitive environment, as small and medium-sized enterprises that do not have access to such tools are at a much worse disadvantage.

The absence of effective international mechanisms to control such practices creates additional obstacles to ensuring tax security. Despite the existence of a number of international initiatives, such as the Base Erosion and Profit Shifting (BEPS) under the auspices of the Organisation for Economic Co-operation and Development (OECD), gaps in cooperation between countries still remain significant. This is especially true for the exchange of tax information, which is a key tool for detecting and combating transnational tax evasion schemes. The uneven level of participation of different countries in such initiatives, the lack of a single standard for data exchange and limited opportunities for developing countries to be involved in these processes make it difficult to implement global approaches to addressing the problem. At the same time, many countries, in particular low-tax jurisdictions, are not interested in changing the status quo, as their economies are largely dependent on revenues generated by their tax haven status.

For developing countries, including Ukraine, the effects of globalisation on taxation are particularly pronounced. On the one hand, such countries have significantly fewer resources to ensure effective tax control, which makes it difficult to combat transnational tax evasion schemes. On the other hand, the weakness of their institutions, the lack of modern technologies for analysing financial transactions and insufficient integration into global tax initiatives make them vulnerable to the influence of global corporations that exploit these gaps. In such circumstances, there is a risk of a 'tax vacuum', when most of the income of enterprises is transferred abroad, leaving the country with limited financial resources to perform its socio-economic functions.

At the same time, globalisation creates new opportunities for cooperation between countries in the field of taxation, which can be used to strengthen tax security. Increasing the transparency of financial transactions, creating effective mechanisms for the exchange of tax information, and developing common standards to combat transnational tax evasion schemes are all important steps towards solving the problem. For countries seeking to integrate into the global economy, participation in international initiatives aimed at increasing tax transparency and improving tax administration should be a priority. At the same time, it is necessary to strike a balance between the interests of the state and business, as excessively strict rules can hinder economic activity and discourage potential investors.

The socio-psychological factor of tax security is an extremely important factor that directly affects the stability of the tax system and the efficiency of its functioning[90]. In

[90] Варій М.Й. Психологічні основи економічної безпеки. Науковий вісник Львівського державного університету внутрішніх справ. 2009. Вип. 2. С. 1–16. URL: http://www.lvduvs. edu.ua/documents_pdf/visnyky/nvsp/02_2009/09vmjoeb.pdf

modern societies, taxes are the basis for financing public services and providing public goods. However, the low level of tax culture among the population and businesses casts doubt on the state's ability to fulfil these functions. In many countries, including Ukraine, citizens do not always understand the importance of paying taxes and do not feel responsible for doing so. This situation is shaped by many factors, including a lack of public awareness of the role of taxes, the spread of negative stereotypes about the tax system, and a low level of trust in government institutions. The tax culture, which should be formed from childhood through education, civic education and communication by the state, often remains on the fringes of public discourse, creating a favourable environment for the spread of unfair behaviour among taxpayers.

In Ukraine, the problem of the socio-psychological principle of tax security is particularly acute due to the long-standing crisis of trust in government agencies. Corruption scandals, lack of transparency in the use of budget funds and political instability have significantly reduced the level of public support for the tax system. Many citizens and entrepreneurs see taxes as a burden rather than an obligation, forcing them to look for ways to evade payment. In such conditions, a vicious circle is created: a low level of tax culture leads to a decrease in budget revenues, which limits the state's ability to provide quality public services, which in turn further undermines trust in government. The spread of this phenomenon has not only economic but also social consequences, as it deepens inequality in society. Those who pay their taxes honestly bear an additional financial burden due to the dishonest behaviour of others, creating a sense of injustice and mistrust in the system.

The tax culture of the population is shaped by many factors, among which communication between the state and society plays a significant role. Successful countries demonstrate that an effective tax system is based not only on strict control mechanisms, but also on building trust in the state, which ensures transparent and efficient use of tax funds. Citizens should understand that paying taxes is not only a duty, but also a contribution to the development of society. In Ukraine, insufficient attention is paid to information and education activities that could help improve the level of tax culture. Government agencies mostly focus on the administrative side of tax discipline, leaving aside the moral and ethical dimension of the issue. At the same time, the lack of an open dialogue with citizens on the importance of paying taxes increases the alienation between society and the state, making it difficult to combat tax evasion.

Particular attention should be paid to the impact of social norms and values on tax behaviour. In a society with a negative attitude towards the tax authorities and widespread tax avoidance, tax evasion is perceived as acceptable behaviour. This social context poses additional challenges to the development of tax discipline, as even those who are willing to fulfil their obligations may be influenced by negative stereotypes[91]. To change this situation, it is necessary to introduce programmes that promote a positive attitude towards the tax system. This may include not only educational campaigns, but also the creation of real-life examples of efficient use of tax funds that demonstrate the public benefit of paying taxes honestly.

[91] Сазонова Т. О., Єріна В. В. Роль психологічних методів управління у формуванні ефективної діяльності підприємства. Економічний форум. 2020. № 1. С. 103–109. DOI: https://doi.org/10.36910/6775-2308-8559- 2020-1-14

One of the key approaches to overcoming the problem of a low tax culture in society is the implementation of a systematic educational policy aimed at raising the level of financial awareness among citizens. Raising the level of financial and tax literacy of the population is seen as a strategic tool not only to ensure an appropriate level of fiscal discipline, but also to promote a responsible attitude towards fulfilling fiscal responsibilities.

In the current paradigm of economic development in the world's leading countries, considerable attention is paid to the development of financial and tax literacy as an important component of civic competence. In the practice of many economically developed countries, basic knowledge of the principles of the functioning of the market economy, the structure of the tax system and the role of taxes in ensuring sustainable financing of the public sector is integrated into the educational standards at the level of general secondary education. This approach makes it possible not only to impart basic economic knowledge, but also to develop a responsible attitude towards fulfilling tax obligations among young people.

In particular, in the European Union, the United States of America, Canada, Japan and Australia, economic and tax education is implemented through compulsory subjects taught at different levels of schooling. The curricula are designed to ensure that students understand the mechanisms of public finance, the functions of tax policy in the context of social welfare, and the importance of voluntary compliance with tax obligations as an element of the social contract between the citizen and the state.

The mastery of basic concepts such as tax fairness, fiscal responsibility, and budgetary balance by students forms the basis for the development of tax-conscious citizens in the

future, capable of assessing socially important economic processes and interacting responsibly with government institutions. Thus, the system of school tax education is not only a tool for the formation of intellectual capital, but also an effective means of improving the level of tax culture in the long term.

The application of this practice in Ukraine is still limited. Educational initiatives in the field of economics and taxation are usually presented in fragments and do not cover a wide range of students. This state of affairs does not allow for a systematic understanding of the importance of taxes in society, which reduces the effectiveness of the state tax policy in terms of its social acceptance and compliance.

At the same time, the widespread use of digital technologies is an important area for modernising the mechanisms of interaction between the state and taxpayers. The creation and development of electronic services, mobile applications, and interactive platforms for reporting and tax payment not only improves the efficiency of administration, but also ensures transparency of procedures, reduces corruption risks, and strengthens public trust in government institutions.

Thus, the combination of educational initiatives and digital tools for managing the tax system should be seen as a comprehensive strategy for improving the level of tax culture, which, in turn, is an important condition for strengthening the financial stability and economic security of the state.

The social and psychological factor of tax certainty includes the moral responsibility of business, which is an important element of any country's economy. Good faith compliance by companies with their tax obligations should become the norm, not the exception. To this end, the government should create favourable conditions for doing

business, including ensuring the stability of tax legislation and the transparency of tax procedures. At the same time, it is necessary to introduce incentive mechanisms for companies that demonstrate high tax discipline, such as a reduction in the tax burden or access to government support programmes. This approach will help to promote a culture of responsible business, which is an important component of tax certainty.

All these threats require effective and comprehensive measures to overcome them. In particular, it is necessary to strengthen tax discipline by enhancing control, improving tax administration and ensuring transparency in the use of budget funds. The state should create favourable conditions for honest business by reducing administrative pressure and at the same time increasing liability for violations of tax legislation. It is also important to develop international cooperation in the field of information exchange, combating offshore schemes and tax evasion. But the most important principle remains the formation of a tax culture through educational and information campaigns that will help every citizen understand the importance of taxes for the well-being of the entire country.

Thus, the tax security of the state is the basis of its economic stability, and ensuring it should be one of Ukraine's top priorities. Only by overcoming the existing threats and creating an efficient, transparent and fair tax system will the state be able to guarantee its economic prosperity and social justice in the long run.

4.2. FACTORS IN THE DEVELOPMENT OF PAYMENT CARD OPERATIONS AND TAX SECURITY AS DRIVERS OF UKRAINE'S POST-WAR ECONOMIC RECOVERY

Ukraine's post-war economic recovery requires a comprehensive approach that combines financial stabilization, the stimulation of economic activity, and the safeguarding of an adequate level of economic security. In this context, the development of payment card operations and the assurance of tax security emerge as interconnected factors capable of ensuring transparency in financial flows, reducing the size of the shadow economy, and improving management efficiency at both the macro and micro levels. [1-12, 22-25]

Payment cards are a key instrument of modern financial infrastructure, fostering the expansion of cashless payments, increasing access to financial services for the population and businesses, and enhancing the speed and convenience of transactions. Their development in the post-war period holds particular significance, as it allows for reduced costs associated with cash circulation, improved financial discipline, and the provision of additional data sources for monitoring economic processes. [1-12, 22-25]

At the same time, tax security - as a component of the state's economic security - ensures stable budget revenues, which are critically important for financing reconstruction projects, maintaining defense capacity, and supporting social programs. The integration of modern payment technologies into tax control enhances the fight against tax evasion, optimizes administration, and ensures transparency in economic activity.

Thus, studying the factors that influence the development of payment card operations in combination with

mechanisms for ensuring tax security is of particular scientific and practical importance. This research will help identify optimal ways to integrate financial innovations and tax instruments into Ukraine's post-war economic recovery strategy, contributing not only to rapid growth but also to increased resilience against future economic challenges. [1-12, 22-25, 44, 47]

Today, the bank offers a wide range of card products, including the leading international payment systems VISA International and MasterCard International. It issues cards for paying and transferring salaries to employees of corporate clients (salary cards), for paying pensions and other types of cash benefits (pension card), as well as for receiving targeted social benefits (social cards) and for accruing interest on deposits (deposit cards). [1-12, 22-25, 44, 47]

As the issuance of payment cards and the number of transactions conducted with them increases, security and risk management aspects become particularly important. In this regard, the banking institution has implemented a system for monitoring and detecting transactions that may have signs of fraud.

During the reporting year, the bank actively worked on improving the implementation of modern information technologies to strengthen its leading positions in the market, ensuring dynamic development, and creating competitive advantages compared to other banks in Ukraine.

Let's consider the interest rates on deposits and loans in the national currency, as well as the terms of using bank cards on November 11, 2023 (Table 4.1).

Considering the interest rates on deposits and loans in the national currency and the terms of using bank cards as of November 11, 2023 (Table 4.1), it is evident that JSB "Ukrgasbank" maintained competitive deposit offers, with

rates reaching up to 16.64%, which were among the highest in the market at the time. Loan rates, however, remained significantly higher, especially for consumer cash loans, reflecting the increased credit risk and inflationary pressures of 2023.

Table 4.1 - Interest rates on loans and deposits as of 11.11.2023

DEPOSITS		CREDITS	
Name	Interest rate	Name	Rate
"Ukrgasbank" - Deposit promotion	up to 16.64%	Consumer standard	from 14.4%
"Ukrgasbank" - Children's Deposit	up to 16.14%	Cash loan Personal loan*	from 30.21%
"Ukrgasbank" - Deposit with replenishment	up to 16.14%	Cash loan Personal loan	from 40.21%
"Ukrgasbank" - Deposit with choice of term	up to 16.14%	Credit-ready grace period (400 thousand)	from 42.77%

Source [35, 36, 38]

In 2024, the bank continued to gradually adjust interest rates in response to the monetary policy easing by the National Bank of Ukraine, as the key policy rate was reduced from its peak levels. Deposit rates in the second half of 2024 generally ranged from 12% to 14%, while consumer loan rates slightly decreased but remained above 25% for unsecured credit products. The implementation of digital security solutions, such as numberless cards and enhanced mobile application verification, further strengthened the bank's reputation as an innovator in secure retail banking.

By 2025, the interest rate environment continued to normalize, with deposits offered at 10–12% and most consumer loan rates stabilizing at 22–28%, depending on the

borrower's creditworthiness. This downward trend was supported by improved macroeconomic stability, a gradual decline in inflation, and stronger competition among banks for retail clients. The bank's strategy of combining attractive savings products with advanced card security features allowed it to maintain and even expand its customer base in both the deposit and credit markets.

Starting in October 2019, "Ukrgasbank" became the second bank in Ukraine and Europe to introduce the issuance of cards without a number, CVV2 code, and expiration date. The card number, expiration date, and CVV code are displayed only in the "Alfa Mobile Ukraine" mobile application, which, according to the bank, is a guarantee of the security of using the card.

In the "Card number and details" section, the user can view the full card number and expiration date. The CVV code appears only upon request after you enter the one-time SMS password. The Travel Credit Card and Platinum Black Debit Card were the first to receive the update. New cards without numbers are issued in accordance with current banking tariffs.

In general, the trends in the development of card transactions at JSB "Ukrgasbank" look promising. Every year, the bank increases the number of active cards and terminal devices. Thanks to new programs using payment cards, there is a positive growth in non-cash payments, which indicates active development of the payment market and the growing interest of users in non-cash transactions.

Table 4.2 summarizes the opinions of scientists about the impact of factors on the payment card market.

The functioning of the payment card market in Ukraine is driven by ever-increasing competition and the need to introduce new, high-quality banking products. The

market is characterized by high activity, the increase in transactions with the population, and the expansion of the range of services used by clients. However, the payment card market faces numerous internal and external challenges that can have both negative and positive consequences for its functioning.

Table 4.2 - The influence of factors on the development of payment card transactions from the perspective of scientists and practitioners

Author / group of authors	Influencing factors	Positive impact	Negative impact
O. Sokolska [46]	poor connection		+
	limited capabilities of authorization centers (weak and outdated software)		+
	lack of the unified approach to relations with agent banks		+
R. Kapralov [27]	increasing the level of environmental awareness of citizens and preserving the environment by reducing the environmental load	+	
T. Levytska [28]	legislative lack of regulation of payment card transactions	+	
	insufficient level of the infrastructure development of the payment card market;		+
	unfair competition regarding tariff policy by some banks		+

Source [35, 36, 38]

These approaches to classifying factors show that scientists have considered all aspects that affect the functioning of the payment card market, and their negative and positive impacts have been identified.

However, insufficient attention has been paid to studying factors that directly affect:

1. increasing the number and quality of payment card holders;
2. providing the payment card servicing infrastructure;
1. intensity of the payment card use;
2. secure working with the payment cards.

Therefore, I'd like to present my own classification of factors that influence the effectiveness of the development of banking transactions using payment cards (Appendix A).

Next, we will consider in more detail the impact of each group of factors on the functioning of the payment card market.

Factors contributing to the growth in the number of payment card holders and the improvement of their service include:

1. the level of public confidence in the financial sector;
2. financial literacy of the population and relations between issuers and cardholders;
3. income level of the population and its purchasing power.

The issue of trust in the financial sector is extremely important. In Ukraine, there is still significant distrust of customers, especially private individuals, in financial and credit institutions. The population continues to withdraw their savings from deposits. Everything that people cannot get in cash from banks, they withdraw in non-cash form - by paying for goods and services.

Many banks offer payment cards that are tied to deposits on which interest is automatically accrued. Typically, withdrawal restrictions are set only for cash withdrawals, while cashless payments have no restrictions, which is actively used by the population.

The level of financial literacy of the population also has a significant impact on the effective development of the payment card market in Ukraine. According to the results of the first nationwide sociological survey by the United States Agency for International Development (USAID) "Financial Literacy and Awareness in Ukraine", the majority of the population demonstrates a low level of financial literacy.

The pace of implementation of banking services in Ukraine remains slow, despite the efforts of managers and marketers.

Most citizens are limited to only basic financial services, as follows:

1. use of the bank account;
2. making payments through payment terminals;
3. payment of utility bills;
4. making payments through payment system terminals;
5. consumer credit and other services [29].

In this context, Ukrainians are not interested in receiving additional information about financial products.

This can be explained by several reasons, namely: insufficient funds for investment, low trust in banks and the state, as well as the lack of understanding of how to effectively use financial services, especially payment cards [27].

Instead, banking institutions are actively engaged in increasing the financial literacy of the population: they use advertising with useful information, attract consultants to work with clients, and implement other initiatives.

However, it should be emphasized that more and more people are recognizing the advantages of cashless payments, which are convenient, fast, and secure. Customers are starting

to use cards for their intended purpose - to pay for goods and services, not just to withdraw cash from ATMs.

This means that the grammatical state of the Finnish language has a positive effect on pronunciation. It will be important for potential cardholders to establish strong relationships with issuing banks, which will promote trust and efficiency in the use of financial services.

At the same time, the NBU receives numerous complaints from Ukrainian citizens regarding disputes between clients and banks that arise due to improper payment card transactions. Failure or non-fulfillment of contractual obligations by banks negatively affects public confidence in the banking system, which in turn leads to the decrease in non-cash payments and citizens' refusal to use payment cards [4]. Therefore, in accordance with the requirements of Chapter 9, Article 55 of the Law of Ukraine “On Banks and Banking Transactions”, banking institutions must take all possible measures to avoid conflicts of interest between their employees and clients.

Global and domestic trends affect the income and purchasing power of the population through fluctuations in prices and interest rates. During periods of economic growth, there is the decrease in unemployment, the decrease in inflation, and the increase in income, which in turn increases purchasing power (the ability to buy more goods and services) and it increases the likelihood of using payment cards in everyday life. On the contrary, during the economic recession, unemployment increases and the purchasing power of the population decreases, which negatively affects the use of payment cards [27].

Therefore, this factor is supported by the ability of current and potential customers to make payments for various

goods and services, which in turn has a positive impact on the activity of the payment card market.

Factors that affect the security of the payment card infrastructure include:

1. development of Internet technologies, e-commerce and online shopping;
2. creation of new payment platforms;
3. infrastructure for cashless payments and the introduction of contactless technologies;
4. the cost of terminal equipment and its maintenance;
5. competition;
6. legal framework and regulatory framework.

In general, the infrastructure of the payment card market in Ukraine (POS terminals, printers, and ATMs) is developing in parallel with the growth in the number of bank cards. Much of this infrastructure is concentrated in the highly developed regions of the country. At the same time, the regional imbalance in the distribution of infrastructure projects creates grounds for expecting the increase in the volume of non-cash retail payments and the introduction of self-service banking systems in the future as infrastructure in the regions gradually improves [30].

The development of Internet technologies, e-commerce, and online shopping contributes to the acceleration of transactions and the increase in the number of bank customers. However, the payment card market is undergoing these changes, and their speed depends on the willingness of banks to invest in information technology. Unfortunately, not all banks in Ukraine are ready to invest significant resources in innovation, which leads to the bankruptcy and liquidation of many domestic financial institutions.

However, it should be noted that the Internet development has significantly accelerated cooperation

between customers and banking institutions. Improvements in payment card processing equipment and the market infrastructure development are helping to accelerate cashless transactions, making them more convenient for consumers. This increases the attractiveness of using cards as a payment method and creates a customer-oriented service for banks.

For the financially literate consumer, convenience comes first, not cost. Some continue to stand in lines at bank branches to pay for utility bills, while others do it online, avoiding lines. Although this may involve some commission, it saves time and keeps you calm [4].

Today, self-service technologies for banking customers, known as alternative distribution channels, play the key role. Active implementation of these technologies in customer service practices will contribute to an increase in the share of non-cash payments, particularly in the retail segment. [30].

In today's environment, it is extremely important to ensure qualitative changes in the remote banking market so that customers can use banking services from anywhere in the world, regardless of the chosen communication channel. Global trends show that new payment platforms are becoming an increasingly popular service tool for most bank clients.

The development and active implementation of new payment platforms will allow us to improve their quality and reach a wider audience of customers. It should be noted that the increase in consumer demand, driven by the constant expansion of access to the Internet, mobile banking, and other technologies, stimulates the active development of new payment solutions [30].

We believe that the introduction of new payment platforms will help banks perform transactions more quickly and efficiently, simplify payments for the population, and

contribute to the expansion of banking services in regions with insufficient service infrastructure. Today, cashless payments are gaining popularity among Ukrainians - people are increasingly choosing cards for payments instead of using ATMs.

In 2024, the share of non-cash transactions in the total volume of card transactions reached a record 61%, and in terms of amounts - 30%. This represents growth of 17% and 13% respectively since the beginning of the year.

Today, every third hryvnia in Ukraine is spent non-cash. The growth in credit card use is due to several factors: increasing financial literacy among the population and the realization that a credit card is a universal and convenient way to pay in stores and online. In addition, the infrastructure of non-cash payments in Ukraine is actively developing: last year the number of merchant terminals increased by 8%, and the number of companies using acquiring increased by 17%.

We share the opinion of the NABU employees that investments in the development of the card business infrastructure are extremely important. They will not only improve the quality of service to current customers, but also create a “reserve” to adapt to the growth trends of cashless transactions.

Thus, a modern feature of the payment card market is the growth and expansion of retail chains, which requires active cooperation between financial institutions and retail companies to install terminal equipment. It is also important to expand the network of cashless devices, especially in retail outlets, since not all consumers have the opportunity to use a payment card for payments.

In addition, owners of trading companies should be aware of changes in the country's legislation, in particular the Law of Ukraine “On Payment Systems and Money Transfers

in Ukraine" [18], which requires the mandatory installation of payment terminals and gives customers the right to choose the payment method. The choice of payment methods for a business mainly depends on its activities: the seller may need stationary or mobile terminal models that can function autonomously without connection to the power grid. This allows customers to quickly and conveniently pay anywhere, for example, at a table in a cafe or restaurant, or in the office. This aspect is also of great importance for passenger transportation services (taxi), delivery of goods, and invoicing directly to the customer's address.

Therefore, commercial and service companies, such as supermarkets, hypermarkets, gas stations, and fast food chains, are interested in installing payment terminals that support both traditional smart cards with a magnetic stripe and cards using contactless payment technologies (Visa payWave and MasterCard PayPass).

Since speed of customer service is a key priority for businesses, the implementation of contactless technologies is of particular interest. In a situation of constant changes in the payment card market, when consumers carefully monitor their spending and value time, cards with modern contactless technologies are the ideal solution for making payments in seconds with one touch.

The developed payment infrastructure also plays an important role: if a year ago it was difficult to find a terminal accepting contactless cards, today this is no longer a problem. Of course, this currently mainly concerns large cities, but undoubtedly this trend will spread to smaller settlements.

Therefore, retail companies need to actively cooperate with banking institutions to expand the network of POS terminals in their stores. When a consumer understands that he can easily pay with a card anywhere, he will choose

cashless payments and actively use a payment card for his transactions.

The intensity of payment card use is influenced by the following factors: public trust in the financial and credit sector, the level of financial literacy of citizens, the relationship between issuers and cardholders, as well as the income level and purchasing power of the population. Other important factors include as follows: the infrastructure of cashless payments and the introduction of contactless technologies, the legal framework and regulatory framework, loyalty programs, brand promotions and customer bonuses, as well as the tariff policy of banks.

The intensity of card use is influenced by the following factors: the relationship between issuers and cardholders, public trust in the financial sector, income level and purchasing power of citizens, as well as the infrastructure of cashless payments and the introduction of contactless technologies. In addition, the regulatory framework and legislation, the level of financial literacy of the population, the tariff policy of banks, as well as brand programs, loyalty programs and rewards for customers are important.

The number of transactions with payment cards issued by Ukrainian banks is growing every year, which indicates the growing popularity of cashless payments - a global trend.

The factors that affect the security of credit card payment processing include as follows: the level of financial literacy of the population, the legal framework and regulatory protection, as well as security systems.

Modern payment systems are of key importance for the economic and financial infrastructure of Ukraine. Their reliability and efficiency are critical for maintaining economic stability and ensuring financial security [3].

Thus, the activity of the payment card market is influenced by various groups of factors that are interconnected and interdependent. Establishing the strength and direction of their influence is important for effective functioning of this market. However, before starting the analysis, it is advisable to familiarize yourself with the international experience of the market to compare it with the domestic one.

In times of war, the main task of the National Bank of Ukraine and the financial system is to ensure the country's defense needs, the stable operation of financial markets, and the uninterrupted functioning of banks and payment infrastructure.

Despite the aggression and military actions in Ukraine, the National Bank of Ukraine has not imposed restrictions on non-cash payments. The electronic payment system (EPS) operated stably, and no restrictions were imposed on payments through POS terminals in stores. All Ukrainian banks remained connected to the SEP and continued to serve customers uninterruptedly in the usual mode.

Last year, approximately 363 million transactions totaling over UAH 133 trillion were executed through the Electronic Payment System (EPS), while in 2021 this figure was 446 million payments totaling over UAH 57 trillion. Military operations and a sharp drop in economic activity in the first months of the war led to the decrease in the number of transactions in the system by 18.6% compared to 2021. On average, during 2022, about 1.4 million payments worth approximately 515 billion hryvnias were processed daily in the SEP. At the same time, the system is capable of processing almost 10 times more transactions in one banking day than it was at that time [37].

From April 1, 2023, a new generation of the Electronic Payment System (EPS) was introduced, based on the international standard ISO 20022 and providing 24-hour operation. This is an important step for Ukraine's integration into the Single Euro Payments Area (SEPA) and the implementation of instant payments functionality in the country. The ISO 20022 standard standardizes payment documents, establishes uniform principles for their completion and processing, automates payment processes, and improves the quality of customer service. The 24-hour operation of the SEP ensures continuous execution of interbank payments and automatic transition between calendar days.

In particular, the banking system performs key tasks of the financial strategy, namely:

1. ensuring the timely movement of funds both within the country and abroad;
2. development and implementation of risk management methods;
3. accumulation of financial resources and their distribution among the entities of the national economy;
4. ensuring effective functioning of payment systems.

Since the start of hostilities in February 2022, the domestic banking system has been operating under conditions of increased uncertainty. Despite this, banks continue their activities, performing all functions, obligations, and adhering to established standards.

In 2022, the Central bank was actively engaged in the implementation of instant payments in Ukraine. This was an important step towards increasing financial accessibility and developing cashless payments in the country. Increased

competition has led to lower costs for consumers and improved service experiences.

During 2022, the NBU updated the concept of instant payments, taking into account technological aspects, namely: obtaining by Ukraine the status of candidate for EU membership, its course towards European integration, and growing consumer needs caused by the war. Given the interest of citizens in the earliest possible access to fast, cheap and 24-hour payments, the NBU decided to implement the instant payments system in Ukraine in two stages:

1. The first stage involves the implementation of functions that satisfy the basic needs of citizens, in particular the ability to make transfers between individuals and payments from individuals to enterprise accounts.

2. The second stage includes the implementation of all possible functions, covering all types of payments, additional services, and new mechanisms for conducting payment transactions.

We believe that the phased introduction of instant payments in Ukraine is extremely important in the current economic conditions. This can help solve a number of problems, including slowing down the movement of funds in the shadow sector, providing regulatory authorities with the opportunity to receive information about financial transactions and taking appropriate security measures. In addition, this will speed up settlements and reduce the cost of payment services, both in banking and non-banking institutions.

In 2022, the National Bank of Ukraine continued cooperation with European specialists within the framework of the EU Twinning project, the purpose of which was to “enhance the institutional and regulatory capacity of the National Bank to implement the Association Agreement

between Ukraine and the EU". Instant payments have also been integrated into the updated version of the Electronic Payments System of the National Bank of Ukraine, which is based on the international standard ISO 20022 and uses the SEPA instant transfer scheme.

According to the Resolution of the Administration of the National Bank of Ukraine dated March 3, 2023 No. 16 "On approval of the Instructions for conducting interbank payment transactions in Ukraine in the national currency", which comes into force on April 1, 2023:

1. new rules for conducting interbank settlement operations through the accounts of participants of the Electronic Payment System have been established;

2. procedures for submitting information on the inclusion or exclusion of SEP participants from the SEP Participants Directory have been updated;

3. changes have been made to the procedure for performing interbank payment transactions by the Bank and its branches in accordance with the consolidated correspondent account servicing model;

4. requirements for information and data on non-bank payment service providers that are subject to inclusion in the register of non-bank payment service providers have been defined;

5. the issue of conducting interbank payment transactions by SEP participants for non-bank payment service providers has been resolved;

6. conducting interbank payment transactions in the national currency through correspondent accounts opened by resident banks in other resident banks has been updated.

The payment services market is regulated in accordance with the Law of Ukraine "On Payment Services", adopted on June 30, 2021. This law establishes requirements for various

participants in payment systems that provide their services in Ukraine and is the main document that controls payment systems, having a significant impact on their activities [19].

The main advantages of regulating payment systems in Ukraine in accordance with the Law of Ukraine "On Payment Services" include:

1. Attracting investment. Creating a transparent and stable regulatory environment is a key factor in attracting investment in the payment services sector. This will contribute to the development of innovative payment technologies that will open up new opportunities for businesses and citizens. After victory, Ukraine will need significant investment to restore and stabilize the economy.

2. Cost reduction. The development of an efficient and competitive payment infrastructure can reduce the costs of payment transactions, which, in turn, will support business development and increase the competitiveness of the national economy.

3. Consumer protection. Establishing requirements for the reliability and security of payment infrastructure ensures the protection of consumer rights and reduces the risks of fraud and abuse in the field of payment services.

The strategy of the National Bank of Ukraine also provides for the development of various financial products and services, improvement of remote identification and verification processes, as well as protection of the rights of consumers of financial services. Within the framework of Strategic Direction II, which concerns digital transformations in the financial sector, the NBU aims to improve the quality and consistency of regulation and decision-making in the field of monetary circulation and payments, as well as support the development of monetary and payment infrastructure in Ukraine.

Experts predict that within a few years, the average amount of cash in the economy will decrease by almost 40%, while the infrastructure for accepting bank cards will increase by more than 66%. This means that on average there will be 15 payment institutions per 1,000 Ukrainians. By early 2025, every second company will be able to accept cashless payments [34].

Therefore, at the current stage, payment services play a key role in the strategic development of the National Bank of Ukraine and the banking system as a whole. Thanks to the execution of payment transactions, many urgent problems in the economic and political life of Ukraine can be solved. The introduction of new types of payment products and constant monitoring open up new opportunities for the development of the payment system and the use of the obtained data for more accurate forecasting of economic indicators.

A key factor in the successful development of a retail enterprise is acquiring, which means the ability to accept cards for payment for goods and services. The word “acquiring” in German is translated as “acquisition” and is used in banking to refer to a system that allows payment for goods and services without cash.

Since the introduction of this feature, the small piece of plastic that replaces “physical” money has become so popular that we can no longer imagine our lives without it. The importance of the introduction of acquiring can be compared to the invention of the mobile phone.

However, as with mobile phones, acquiring was quite primitive in the early stages of development. Cashiers used a special mechanical device known as an “imprinter” that allowed them to receive a slip — a paper “print” with the card information. This was inconvenient and unsafe, as this

device could not contact the bank to check the balance on the buyer's account.

However, when it came to purchasing an expensive item, the teller could call the bank to verify. Later, with the development of technology, a terminal appeared - a special electronic device that connects to the bank during a transaction.

Today, we shop with this technology. There are over 18 million retailers and service businesses around the world that accept payment cards. In Ukraine, acquiring is implemented only by resident legal entities that have signed an agreement with a payment organization [38].

According to the "Glossary of Terms Used in Payment and Settlement Systems", approved in March 2003 in Basel (Switzerland), an acquirer is defined as an organization (bank) that services the deposit accounts of card acceptors (merchants) and to which the card acceptor transfers data on transactions.

The acquirer is responsible for collecting transaction data and billing acceptors. So, an acquiring bank is a credit institution that settles payments with commercial enterprises or service providers for transactions performed using payment cards, and can also issue cash (funds) to payment card holders who are not clients of this bank.

This credit institution has the right to simultaneously issue bank cards, acquire payment cards and distribute them in accordance with internal rules developed by the acquiring bank in accordance with current legislation. Today, millions of organizations, businesses, and companies use acquiring not just for convenience. Giving customers the ability to pay for purchases by card allows an organization to reduce the risk of receiving counterfeit banknotes and save on cash collection costs.

Customers receive a convenient payment method and do not worry that the teller may make a mistake when calculating the change. Additionally, companies that accept credit cards typically increase their sales by 20-30% and attract new affluent customers. According to statistics, plastic card holders are more likely to make impulsive purchases and spend money more easily.

In the process of installing special equipment for payment cards, the bank also offers organizations a variety of banking services and the opportunity to participate in discount programs, etc.

In a broader sense, acquiring can be considered as a banking service that includes technological, settlement and information services for organizations in the field of payment transactions using payment cards on equipment provided by the bank [39].

To receive all the benefits of acquiring, you need to enter into an agreement with an acquiring bank that provides these services. The bank owns payment terminals and ATMs located in retail outlets, restaurants, and other establishments. This equipment includes payment terminals or pin pads, necessary to ensure card acceptance along with the cash registers of a retail organization.

Among the main types of acquiring, the following ones can be distinguished:

1. Trade acquiring. This type of transaction is carried out through special POS terminals that allow entrepreneurs to accept payments. The funds are credited to the entrepreneur's account, with the service provider withholding a certain amount, the amount of which is set by the financial institution. The level of interest rates and the abolition of limits on transactions depend on the company's turnover.

2. Mobile acquiring. This system is primarily aimed at mobile device users. It allows you to make payment transactions using smartphones, which eliminates the need to be tied to a specific place of trade. Mobile acquiring also allows you to equip all company employees with terminals, even those who work outside the office.

3. Internet acquiring. This type of acquiring involves accepting payments using payment cards over the Internet, using a specially designed web interface. It provides the ability to make payments in online stores and pay for various services (mobile communications, utilities, Internet, landline telephone communications, etc.).

This type of acquiring allows you to return goods and receive money in any online store. Online card payment does not require the use of special applications or additional equipment.

To carry out the transaction, you only need to have access to the Internet. The protection of personal data is guaranteed by an intermediary company that collects information and transfers it to the bank and the seller. E-commerce on a website allows you to activate many processes simultaneously, allowing the user to complete a purchase in just a few simple steps on a computer.

The greatest interest is usually aroused by a joint service between a merchant organization and a bank provided to cardholders, in particular merchant acquiring, but only if there is active interaction in this area.

Therefore, the enterprise that offers goods or services to customers must ensure the installation of card acceptance devices in its premises, accept plastic cards for payment on the basis of an acquiring agreement concluded with the bank, and also pay the bank a service fee specified in this agreement.

The bank is obliged to:

1. install acquiring equipment (terminals and other necessary equipment) on the territory of the organization;

2. train company employees to serve customers who are payment card holders;

3. ensure verification of sufficient funds on the card when performing transactions on merchant acquiring equipment;

4. pay the organization the amount paid using the card within the terms specified in the agreement;

5. provide the organization with all necessary consumables;

6. provide professional advice in case of difficulties when carrying out payment transactions with cards [26].

It is worth highlighting and justifying the main advantages of acquiring. First, the companies that accept bank cards to pay for goods and services look more prestigious and reliable in the eyes of customers. Using alternative calculation methods adds convenience, which has a positive impact on the image of the business. Customers can effortlessly pay for their purchases with cards in any available currency. In addition, acquiring helps attract new customers, as many people refuse to make purchases if the only payment method is cash.

Cashless payments help buyers and service users spend more money. According to statistics, the average check when paying by card is 30–40% higher than when paying in cash [50].

Typically, paying by bank card attracts more affluent consumers. Therefore, acquiring can be a means for a company to increase the share of solvent customers, which will contribute to an increase in revenue by 20–30%.

However, a noticeable increase in the use of bank cards for everyday purchases and weekend spending is also observed among the middle-income population. In addition, acquiring saves money because it eliminates the need to collect cash and completely eliminates the risk of receiving counterfeit bills. Banks offer their partners various benefits, including discount programs, discounts on banking services, and free training for company personnel.

Acquiring is a convenient service for both parties. The buyer can quickly make a payment at the time of purchase, and expenses are easily controlled with the receipt that the teller provides after the transaction is completed.

Acquiring allows store owners to increase sales and attract more customers, while completely eliminating the risk of accepting counterfeit bills.

Among the main advantages for both parties to the agreement, the following aspects can be noted:

1. ensuring security of the funds storage;
2. attracting new customers;
3. reducing collection costs;
4. improving the company's reputation;
5. reducing the time for calculating income.

Among the disadvantages is the commission that the acquiring bank charges for each transaction [50].

The average acquiring fee in Ukraine in recent years is approximately 2.2% for cards of other banks and 1% for cards of the acquiring bank. This interest is charged on each transaction through the terminal, and it is the companies where the terminals are installed that pay it to the bank. There are no other acquiring costs for companies.

To determine the profitability and feasibility of connecting this service, it is necessary to compare the

merchant's profit (income) with the frequency of using plastic cards during purchases.

Despite its popularity worldwide, acquiring in Ukraine is still in its development stage. However, recently it has become one of the most important and most developed areas of the card business in the country. The total number of bank cards issued has already exceeded the population, indicating a coverage ratio of more than one. For comparison, in developed countries of Europe and the USA this figure is twice, and in some cases even four times higher. An important factor in the development of acquiring remains the general level of financial and banking literacy of the population.

Over the past decades, the popularity of cashless payments has grown significantly, and more and more people are choosing this payment method. Today, a bank card is considered a convenient tool for daily financial management and obtaining credit resources provided by banks. It is also beneficial for companies to simplify the process of paying for goods and services, as well as to ensure quick transfer of funds to a bank account.

Unfortunately, experts believe that the development of acquiring in Ukraine is slow. 15 years ago, the ratio of non-cash and cash payments in retail chains was 97% to 3%. Now analysts report that these figures have changed by 85% (of which about 70% is cash withdrawals from bank cards) and 15%. Progress is obvious, although it is happening very slowly.

Therefore, the task of increasing the number of opportunities for card payments for goods and services remains as relevant as it was 15 years ago. In developed countries, this issue has already been resolved, while for Ukraine this practice has not yet become the norm.

Thus, it is obvious that any organization that is not taking advantage of acquiring and wants to grow its business and increase sales should seriously consider implementing cashless payment devices.

In general, payment cards are modern financial instruments that simplify economic exchanges, making them more convenient, fast, and economical. The second half of the 20th century was an era of rapid growth in cashless payments around the world, in particular thanks to bank cards.

National cashless payment systems operate successfully in many countries. In France, this is the "Système Bancaire" system, in Belgium – "Bancontact", in Portugal – "Multibanco" and "Dancard", in Austria, it is "Quick" and "Bankomat", in Spain, it is "Tarjeta 6000" and "Sistema 4B", in Great Britain, it is "Switch", and in Norway, it is "Bankkort", etc. [45, p. 55].

Despite the growing importance of payment cards to the global economy, their level of adoption varies significantly across countries. According to the Bank for International Settlements, in 2022, the highest number of payment cards per capita was registered in Korea (4.95), the United States (3.69), and Singapore (3.42), while the lowest was registered in India (0.21) and Saudi Arabia (0.44) [48].

According to the European Central Bank, in 2023, the highest use of bank cards in the European Union will be in Finland, the Netherlands, France and Luxembourg, while the lowest penetration will be observed in Greece and Italy.

In 2022, the highest average transaction costs made using bank cards (in US dollars, annual data) were recorded in China (317.7), Singapore (200.4) and Switzerland (145.8). The lowest rates were found in Brazil (45.1), Mexico (52.6) and South Africa (54.7). In comparison, the average cost of a

transaction was 56.7 in the US, 68.4 in Canada, 59.5 - in Sweden, 87.4 - in Australia, 56.0 - in India, and 52.6 - in Mexico.

Payment systems play the role of key coordinators in the functioning of two-party payment card markets. They set general rules for the participants of their network, organize the interaction between them, manage brands, develop new products, and much more. Some of the rules defined by payment systems are set out in agreements between issuing banks and cardholders, as well as between acquirers and merchant companies [48].

There are usually at least four basic rules by which markets of payment system operate [57].

Rule 1: Acquiring must be accompanied by card issuance (acquiring is not possible without card issuance). A credit institution that provides acquiring services must also issue cards. This rule helps maintain balance in the two-party market by ensuring a balance between the number of issuers and buyers.

Rule 2: All bank cards must be serviced (all cards are recognized). This rule obliges commercial and service companies to accept all types of cards and brands of payment systems without any exceptions.

Rule 3: No additional fees (no additional charges). This rule prohibits commercial and service companies from establishing differentiated pricing policies depending on the cost of servicing different payment methods.

Rule 4: The duality/exclusivity rule allows a bank to simultaneously issue credit cards of two payment systems — Visa and MasterCard. However, there may be restrictions on issuing credit cards from other payment systems, including AmEx and Discover.

These rules are mainly implemented by international payment systems, while national payment systems use them much less frequently. The rules established by international payment systems in bank card markets have attracted the attention of the public, as well as administrative and judicial authorities in many countries. In addition, some states have already taken measures to regulate them. For example, after an investigation in the early 2000s, the European Commission concluded that the rule requiring acquiring to be accompanied by card issuance did not pose a threat to competition.

However, in the mid-2000s it was banned, and since 2005 Visa and MasterCard have stopped using it in the EU [48].

However, in practice, most credit organizations, in addition to issuing cards, voluntarily provide acquiring services. This usually obliges commercial and service companies to work with all products and brands of the payment system, which is typical for international payment systems that offer a wide selection of products and brands. In contrast, national payment systems usually have a limited range of products and therefore do not feel this need.

The no-surcharge rule is one of the most debated. It attracts the attention of society and regulatory authorities as it is considered a source of potential social tension. According to this rule, trade and service enterprises are limited in their market freedoms, as they cannot differentiate prices for products and services depending on the fact that different payment methods require different costs.

However, the issue of what costs a trade and service enterprise bears is, in practice, quite complicated.

In India, it was found that the cost of a retail debit card transaction to a bank is ten times lower than the cost incurred by a consumer when withdrawing cash at a bank counter.

Meanwhile, retail and service companies in the US claim that processing credit card transactions costs them six times more than cash and twice as much as transactions using a PIN-debit card [51].

According to the study conducted in Austria, companies in retail and service sectors can make cash payments cheaper, but only if the amount does not exceed $100. However, when it comes to the average value of retail purchases ($100 to $500), processing debit cards through the national EFTPOS payment system turns out to be significantly less costly than processing cash and credit cards.

There is a generally accepted view that the inability of retail and service enterprises to differentiate prices leads to general increase in prices. In this situation, companies are assumed to share the costs of accepting and processing non-cash payments among all consumers, regardless of whether they pay with credit cards or cash [51].

The discussed rule is in effect in Canada, the United States, Denmark, Mexico, and Sweden. However, it does not apply in Australia, the United Kingdom, the Netherlands, and Spain (for MasterCard), where commercial and service companies are allowed to set different prices depending on the payment method [57].

At the initiative of the European System of Central Banks, a study of the central banks of 27 European countries was conducted. It turned out that 14 of them have a rule prohibiting the charging of additional fees, while in 13 countries this rule does not apply. In countries where this rule has been introduced, there are no restrictions on the amount of fees, but commercial and service companies are obliged to inform consumers about these fees [48].

In many countries, the application of this rule is limited to certain market segments or types of businesses. For

example, in countries where surcharges are prohibited, airlines and small businesses often have the right to impose surcharges on consumers who pay for purchases with bank cards. These practices are more common in online sales, while they are less common in offline sales.

In this context, it is important to pay attention to the Australian experience. In 2015, companies in the trade and service sectors were allowed to set different prices depending on the payment method. According to research, from 2017 to 2023, approximately 30% of retail companies began charging additional fees to customers who pay for goods with credit cards. This practice is used much more often by large trading companies — up to 47%.

At the same time, you can notice the corresponding reaction of consumers. According to the study conducted by the Reserve Bank of Australia, almost half of credit card holders indicated that they avoid using credit cards for payments if additional fees are charged [48]. In these cases, they either move to another store or choose a different payment method, including a debit card or cash.

In 2023, the Reserve Bank of Australia, together with its Payments Board, conducted a series of consultations on changing regulatory practices that allow commercial and service companies to charge additional fees. This happened due to two key circumstances.

First, there was a suspicion that possible setting different prices led to their unjustified increase. It is difficult to control what retailers and service companies base their prices on whether they are based on credit card processing costs or on a higher basis. This pricing practice is most common in certain segments where it is easier to implement, for example, in the field of online sales.

Second, there is evidence that trade and service enterprises apply the same markups for cards of different payment systems, regardless of the costs associated with these cards. This phenomenon arises because businesses tend to follow simple approaches to pricing.

In this regard, the Payment Systems Oversight Authority initiated a discussion to allow payment systems to control the upper limits of merchant markups. This also involves encouraging acquirers to provide merchants with recommendations on differentiating markups depending on the type and category of payment cards [54].

A trade concession is the amount that trade and service enterprises pay for acquiring services. It can be calculated as a percentage of the value of the transaction, a fixed amount, or a combination of both (fixed amount + percentage). The structure of a merchant concession usually consists of an acquirer's service fee, an interchange fee that the acquirer transfers to issuers, and a fee that payment card issuers and acquirers pay to the payment system operator for authorization.

Governments of many countries are seeking to increase the use of cashless payments for various reasons. Controlling financial flows in this area is simpler, they are more dynamic, and paying with a debit card is much cheaper than cash payments. Comprehensive measures are being taken to expand the network of payment card acceptance in retail, encourage buyers to use them, and improve the mechanisms of the market itself.

*Conclusions***.** In today's digital economy, payment cards have gained special importance as a key tool for cashless payments, combining convenience, security, and user identification. Despite the lack of the unified approach to defining the term “payment card” in Ukrainian scientific

literature, most researchers consider it as a means of making non-cash payments that unites two markets - consumers and merchants who accept cards. This two-party market structure highlights the importance of payment cards as an element of interaction between financial institutions and end users.

Payment systems in Ukraine are represented by both international and domestic operators that operate based on banking and non-banking structures. They are classified by money transfer methods, architecture (centralized and decentralized), participation conditions, and type of settlement gross or net. The main elements of the payment infrastructure, as scientists indicate, include payment entities, the regulatory framework, technical infrastructure, accounting and settlement models, as well as information security - all of these components ensure the effective functioning of the system.

Legal regulation of activities with payment cards in Ukraine is carried out by a number of legislative acts, in particular the laws "On the National Bank of Ukraine" and "On Payment Systems and Funds Transfer in Ukraine". These regulations establish the procedure for the circulation of electronic payment instruments, requirements for market participants, and consumer protection standards. It is worth highlighting the Law of Ukraine "On Payment Services", which provides a transparent regulatory environment, promoting the development of innovations in the field of financial technologies, especially in wartime conditions, when the stability of the financial infrastructure is critically important.

In 2024–2025, the role of legal regulation in this sector has grown due to the rapid expansion of cashless payments, the integration of Ukrainian payment systems with European standards, and the need to counter cyber threats.

The National Bank of Ukraine continues to adapt domestic legislation to the requirements of the EU Payment Services Directive (PSD2), ensuring stronger authentication procedures and broader access for non-bank payment service providers. Additionally, there is a focus on protecting user data, expanding the use of tokenization technologies, and enhancing financial inclusion for the population in remote regions.

These measures not only maintain the resilience of the banking system under martial law but also lay the groundwork for post-war economic recovery through the modernization of the national payment infrastructure.

The development of the payment card market in Ukraine is taking place against the backdrop of growing demand for digital financial services. Contactless cards and Internet banking services have become widely used, which indicates effective adaptation of banks to changes in consumer behavior. At the same time, the problem of the dominance of cash payments remains relevant, especially among the older generation, which requires further popularization of financial literacy and digital services.

A separate role in the development of cashless payments is played by acquiring - both a technological and economic instrument that contributes to increasing sales volumes, reducing the risks of cash transactions, and increasing the prestige of enterprises. Retail, mobile, and online acquiring provide broad accessibility for consumers and adaptability to modern conditions.

The analysis of international experience shows that effective construction of the payment card market is possible only under the condition of systematic regulation of relations between issuing banks, acquirers and trading enterprises. Using best European practices (including the experience of

France, Belgium, and Portugal) will allow Ukraine to integrate into the EU's common payment space, strengthen the competitiveness of domestic banks, and ensure the availability of financial services at the national level.

Prospects for 2025–2026. In 2025, the development of payment card operations in Ukraine continues to play a key role in transforming the financial system, promoting the acceleration of economic digitalization and the expansion of cashless payments. At the same time, the integration of modern payment technologies into tax security systems enhances the transparency of financial flows, reduces the shadow economy, and strengthens budget discipline, all of which are critically important for the country’s post-war recovery process.

Positive shifts in the development of payment infrastructure and improvements in tax control indicate the formation of a stable platform to ensure the economic security of the state. However, challenges remain related to cyber threats, the need to harmonize legislation with European standards, and the development of domestic payment systems that reduce dependence on external operators.

Looking ahead to 2025–2026, a priority task remains strengthening the legal regulation and technical foundation of payment operations, including the implementation of biometric identification, the development of digital wallets, and mobile banking services. Special attention should be given to supporting national payment instruments capable of providing financial autonomy amid geopolitical instability.

In the field of tax security, active implementation of innovative monitoring and analytics mechanisms is expected, which will allow more effective counteraction to tax evasion and financial crimes. This will contribute not only to

replenishing the state budget but also to increasing business and public trust in the financial system.

Thus, the synergy of developing payment card operations and strengthening tax security throughout 2025–2026 will become one of the decisive catalysts for Ukraine's sustainable economic recovery.

The integration of advanced payment technologies with robust fiscal oversight will not only enhance the transparency of financial flows but also reduce the risks of tax evasion, increase budget revenues, and stimulate consumer confidence in the banking system.

This balance between innovation and security will serve as a foundation for stable macroeconomic growth, facilitating the gradual restoration of business activity and attracting both domestic and foreign investment. Moreover, the alignment of Ukraine's payment infrastructure with European Union standards will accelerate its integration into the global economy, ensuring competitiveness in international markets.

Factors in the Development of Payment Card Operations and Tax Security as Drivers of Ukraine's Post-War Economic Recovery:

1. Technological modernisation of payment infrastructure and the introduction of innovative financial products.

2. Strengthening cybersecurity to protect payment transactions from fraud and cyber threats.

3. Harmonisation of legislation with EU requirements to facilitate international cooperation and cross-border payments.

4. Improved tax administration through digital monitoring tools and real-time transaction tracking.

5. Expansion of financial inclusion, ensuring access to modern payment services for rural and underserved regions.

6. Partnership between the state and private sector to develop a sustainable, resilient financial ecosystem.

The synergy between the development of payment card operations and the strengthening of tax security in 2025–2026 will act as a powerful driver of Ukraine's post-war economic recovery. By combining technological innovation with effective fiscal control, the country can ensure financial transparency, increase budget revenues, and enhance investor and consumer confidence, creating a solid basis for sustainable growth and integration into the global economy.

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