

TRANSFORMATION OF MARKETING, FINANCE AND MANAGEMENT THROUGH INNOVATION AND DIGITALIZATION IN THE SYSTEM OF SUSTAINABLE DEVELOPMENT OF INTERNATIONAL ECONOMIC RELATIONS AND TRADE

Veronika Khudolei¹, Oksana Karpenko², Dmytro Khlynin³, Pavlo Hutsalo⁴, Serhii Serhiienko⁵, Oksana Brukh⁶, Tetiana Voronko-Nevidnycha⁷

¹ Prof., Higher Educational Institution “Academician Yuriy Bugay International Scientific and Technical University”, 3 Khersonsky Ln., Kyiv, Ukraine, Email address: veronika.khudolei@istu.edu.ua

² Prof., Higher Educational Institution “Academician Yuriy Bugay International Scientific and Technical University”, 3 Khersonsky Ln., Kyiv, Ukraine, Email address: o.karpenko@istu.edu.ua

³ PhD Student, Higher Educational Institution “Academician Yuriy Bugay International Scientific and Technical University”, 3 Khersonsky Ln., Kyiv, Ukraine, Email address: d.khlynin@istu.edu.ua

⁴ PhD Student, Higher Educational Institution “Academician Yuriy Bugay International Scientific and Technical University”, 3 Khersonsky Ln., Kyiv, Ukraine, Email address: p.hutsalo@istu.edu.ua

⁵ Assoc. Prof., Kherson State Agrarian and Economic University, 23 Stritenska St., Kherson, Ukraine, Email address: serhiienko_s@ksaeu.kherson.ua

⁶ Assoc. Prof., Lviv National University of Veterinary Medicine and Biotechnology named after S.Z. Gzytsky, 50 Pekarska St., Lviv, Ukraine, Email address: okci.bru@gmail.com

⁷ Prof., Poltava State Agrarian University, 1/3 Skovorody St., Poltava, Ukraine, Email address: tetiana.voronko-nevidnycha@pdau.edu.ua

Received 17 06 2026; Accepted 21 08 2026

Abstract

The article examines the transformation of marketing, finance and management through innovation and digitalization in the system of sustainable development of international economic relations and trade. The relevance of digital and innovative transformation of the economy in the context of globalization changes, increased international competition, investment instability and structural restructuring of world markets is substantiated. It is determined that the digitalization of international economic relations forms new mechanisms for the development of trade activities, financial management, e-commerce and information and communication interaction between business entities. The methodological basis of the study was the systemic, structural-dynamic, comparative and analytical approaches. The research used official statistical data from the State Statistics Service of Ukraine, the Ministry of Finance of Ukraine, the National Bank of Ukraine, international economic organizations and global rankings of competitiveness and innovative development. An integrated indicator of digital and innovative transformation of international economic relations and trade is proposed, which combines marketing, financial, trade, investment and digital parameters of economic development. The practical significance of the results obtained lies in the possibility of using the proposed analytical approach to assess the effectiveness of the digital transformation of the economy, improve the mechanisms of international economic integration and form development strategies for domestic trade enterprises in the digital economy.

Keywords: Digitalization, International Economic Relations, International Trade, E-Commerce, Innovation, Marketing, Finance, Management, Digital Transformation, Sustainable Development, Stock Market, Competitiveness, Information And Communication Technologies, Domestic Trade.

JEL Codes: F15, F63, O31, O33, M15, M31.

Introduction

The modern transformation of marketing, finance and management in the system of international economic relations is increasingly determined not only by the scale of foreign trade, investment activity or currency and financial stability, but also by the ability of economic entities to integrate digital technologies, innovative business models and principles of sustainable development into a single management system. For Ukraine, this problem is of particular relevance, since the openness of the economy, foreign trade dependence, investment instability, migration processes and digitalization of trade are developing under the influence of military, macroeconomic and globalization challenges. Despite the presence of a significant number of studies devoted to international trade, business digitalization, financial transformation and sustainable development, the complex relationship between marketing, financial and managerial changes in the context of digitalization of international economic relations remains insufficiently revealed. Most scientific works consider these areas fragmentarily: foreign trade indicators are analyzed separately, investment activity separately, and the development of e-commerce or digital infrastructure separately. At the same time, there is a lack of a holistic approach that allows combining macroeconomic indicators of economic openness, indicators of domestic trade development, the state of the stock market, investment flows and digital characteristics of enterprises within a single analytical logic. The scientific gap lies in the fact that the transformation of marketing, finance and management through innovation and digitalization is mainly described at the conceptual level, while the quantitative parameters of such transformation, its impact on the sustainability of international economic relations and practical mechanisms for assessing the effectiveness of digital changes in trade remain insufficiently substantiated. That is why it is relevant to form a research approach that combines statistical analysis, indicators of foreign economic activity, financial market parameters and indicators of digital activity of enterprises to

determine the depth and effectiveness of transformation processes.

Literature review

The issues of transformation of marketing, finance and management in the context of digitalization of international economic relations are actively studied by both Ukrainian and foreign scholars [1-25]. A significant part of modern research is devoted to the impact of digital technologies on the development of international trade, modernization of financial systems, changing models of enterprise management and ensuring sustainable economic development. In the works of foreign scholars, considerable attention is paid to the formation of the digital economy, the development of e-commerce, the integration of artificial intelligence into business processes and the transformation of global value chains [1-8]. Researchers note that the digitalization of international economic relations contributes to the acceleration of financial transactions, increased market transparency, the development of digital marketing and the formation of new models of enterprise management. At the same time, scholars focus on the growing dependence of economies on digital infrastructure, cyber risks, investment instability and asymmetry of access to digital resources between countries [9-15]. Ukrainian and some foreign scientists mainly study the problems of digital transformation of enterprises, development of electronic commerce, modernization of the financial sector, adaptation of business to globalization processes and ensuring competitiveness in the conditions of European integration. Considerable attention is paid to the development of innovative entrepreneurship, digitalization of management processes, formation of information and communication infrastructure, as well as improvement of mechanisms of international economic integration of Ukraine. A separate area of research is related to the study of the impact of digitalization on domestic and foreign trade [16-25].

Scientific works have proven that electronic commerce, cloud technologies, digital platforms and online communications significantly change the market structure, consumer behavior and mechanisms of interaction between subjects of international trade. At the same time, the issue of comprehensive assessment of the impact of digitalization on the transformation of marketing, financial and management processes in the system of international economic relations remains insufficiently studied. Despite significant scientific achievements, in modern research, insufficient attention has been paid to the formation of an integrated analytical approach to assessing the relationship between indicators of foreign economic activity, investment activity, the state of the stock market, the development of electronic trade and the digitalization of domestic trade enterprises. The issues of quantitative measurement of the effectiveness of the digital transformation of international economic relations in an unstable economic environment and structural global changes also remain insufficiently developed. This is precisely what determines the need for further research into transformational processes in the field of marketing, finance and management through innovation and digitalization in the system of sustainable development of international economic relations and trade.

The purpose of the article is a comprehensive study of the transformation of marketing, finance and management through innovation and digitalization in the system of sustainable development of international economic relations and trade by analyzing macroeconomic, foreign trade, investment, financial and digital indicators of the development of the economy of Ukraine, as well as identifying key trends, structural changes and the effectiveness of the digital transformation of domestic trade enterprises in modern globalization conditions.

Research methodologies

To assess the transformation of marketing, finance and management through innovation and digitalization in the system of sustainable development of international economic relations

and trade, we propose to involve a system of indicators that characterize the system of quantitative and qualitative indicators of the development of international economic relations and show the scale of involvement of the country's national economy in the global environment, as well as show the effectiveness of the state's foreign economic relations, taking into account the macro and micro levels. The information basis of the study was formed by official statistical data of the State Statistics Service of Ukraine, the Ministry of Finance of Ukraine, the National Bank of Ukraine, international economic organizations, as well as materials from international ratings of global competitiveness and innovative development. To ensure the reliability of the results, methods of generalization, systematization and comparative analysis of macroeconomic, foreign economic, financial and digital indicators for 2012–2025 were used. The assessment of the transformation of marketing, finance and management in the context of the digitalization of international economic relations was carried out through a system of indicators of economic openness, international trade, investment activity, the stock market, e-commerce and digital activity of wholesale and retail enterprises. A comprehensive approach to analysis made it possible to identify key trends in the digital transformation of the economy, structural changes in the field of international trade and the impact of innovation processes on the effectiveness of the functioning of domestic trade enterprises.

For a comprehensive assessment of the transformation of marketing, finance and management in the system of sustainable development of international economic relations and trade, it is advisable to form an integral indicator of digital and innovative transformation, which combines macroeconomic, financial, trade, investment and digital parameters of economic development.

The integral indicator of transformation is proposed to be defined as the cumulative impact of marketing, financial, digital and innovation components on the development of international economic relations and trade activities:

$$IDT = \alpha M + \beta F + \gamma D + \delta T + \theta I \quad (1)$$

where:

IDT – integral indicator of digital and innovative transformation of international economic relations and trade;

M – marketing indicators of the development of e-commerce and digital communications;

F – financial indicators of the functioning of the stock market and investment activity;

D – level of digitalization of enterprises and use of information and communication technologies;

T – indicators of international trade and openness of the economy;

I – innovative characteristics of the competitiveness of the economy;

$\alpha, \beta, \gamma, \delta, \theta$ – weighting factors of the influence of individual components.

To assess the impact of digitalization and innovation on economic development, it is also advisable to use the economic and mathematical model of the dependence of gross domestic product on key parameters of international economic integration:

$$GDPT = \beta_0 + \beta_1 DIGt + \beta_2 FDI t + \beta_3 EXPt + \beta_4 ICTt + \varepsilon t \quad (2)$$

where:

GDPT – gross domestic product;

DIGt – level of digitalization of the economy;

FDIt – volume of foreign direct investment;

EXPt – volume of exports of goods and services;

ICTt – level of use of information and communication technologies;

ε – random error of the model.

The proposed approach allows for a comprehensive assessment of the impact of digital transformation on the development of international economic relations, the effectiveness of trade activities and the financial stability of the economy in the context of globalization changes.

In order to deepen the analytical assessment of the transformation of marketing, finance and management through innovation and digitalization in the system of sustainable development of international economic relations

and trade, the following research hypotheses have been formulated.

Hypothesis H1 is that the increase in the level of digitalization of domestic trade enterprises has a positive effect on the effectiveness of international trade activities and export activity of the economy.

Hypothesis H2 assumes the existence of a direct relationship between the development of information and communication technologies, e-commerce and the financial performance of wholesale and retail enterprises.

Hypothesis H3 is based on the assumption that the activation of innovation processes, the development of the stock market and the growth of investment openness of the economy contribute to increasing the competitiveness of the state in the system of international economic relations.

Hypothesis H4 assumes that the digital transformation of marketing, financial and management processes forms long-term prerequisites for ensuring the sustainable development of international trade and increasing the adaptability of the economy to globalization challenges.

The hypotheses formed became the basis for further statistical analysis, assessing dynamic changes in indicators of international economic integration and determining the effectiveness of digital and innovative transformation of domestic trade enterprises.

Results

The most common system that characterizes the system of international economic relations and trade are the following indicators: foreign trade turnover per capita; share of foreign trade turnover (FTR) in GDP; export quota; import quota; share of the country in world exports/imports, which shows the role of the country in global trade. According to public information from the State Statistics Service and the Ministry of Finance of Ukraine, we will calculate and form indicators of economic openness over the past fourteen years. According to the results of the calculation, we note an increase in foreign trade turnover per capita of 1.56 billion dollars or 64.14%. As for the

population of Ukraine, until 2022 this information was published in the Statistical Yearbook of Ukraine, and for the past 2023-2025, approximate data were published by the UN and the Institute of Demography of the NAS of Ukraine. The remaining indicators of the openness of the Ukrainian economy have been decreasing over

the recent period, only the country's share in world exports/imports has increased slightly by 0.01% [26-45]. A visualization of the indicators of the openness of the Ukrainian economy, export and import quotas, over the recent period of the study is presented in Fig. 1.

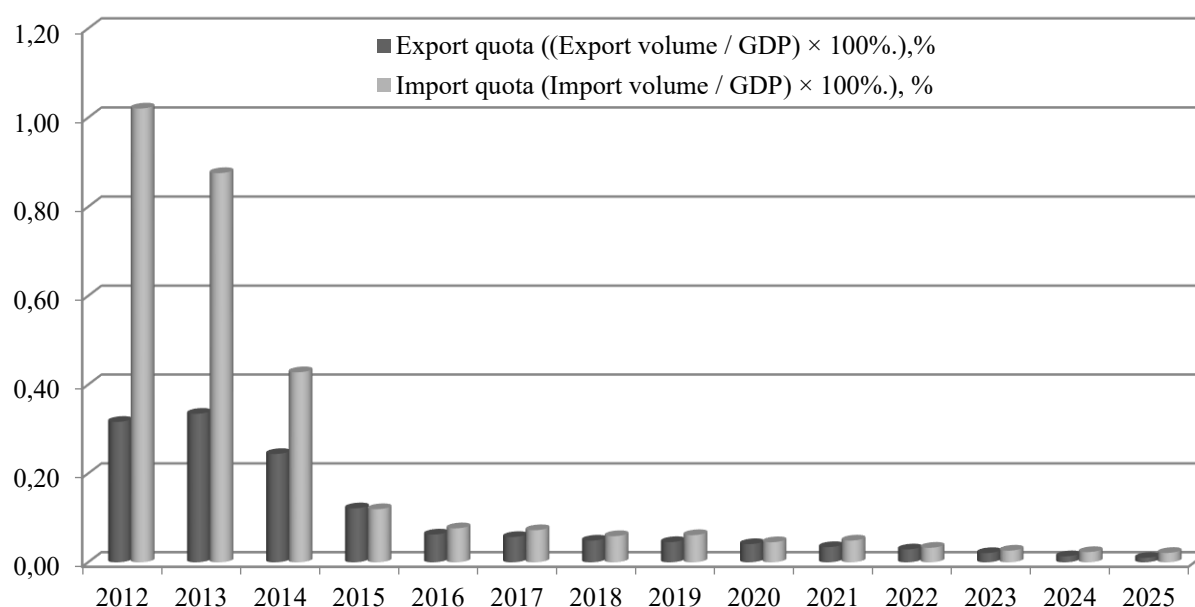


Figure 1. Dynamics of indicators of openness of the economy of Ukraine, export and import quotas 2012-2025

**Source: developed by the authors taking into account statistical sources [26-28].*

The following indicators of international economic relations are indicators of international trade, which include: absolute volume of exports and imports; trade balance; commodity and geographical structure of exports/imports. Absolute volume of exports and imports: the total value of goods and services over the last period increased by 14.35 billion dollars or 12.95%. The trade balance over the study period is negative, that is, imports of products, goods and services prevail, only in 2015 did exports of products

prevail over import operations. There is an increase in exports and imports over the last period by 53.98% and 0.24%, respectively. As for the import coverage ratio by exports, its value increased by 0.17 pp, the advantage of imports of products, goods and services. The commodity and geographical structure of exports/imports for the recent period is represented by China and Poland. The graphical dynamic series of the absolute volume of exports and imports for the recent period is presented in Fig. 2.

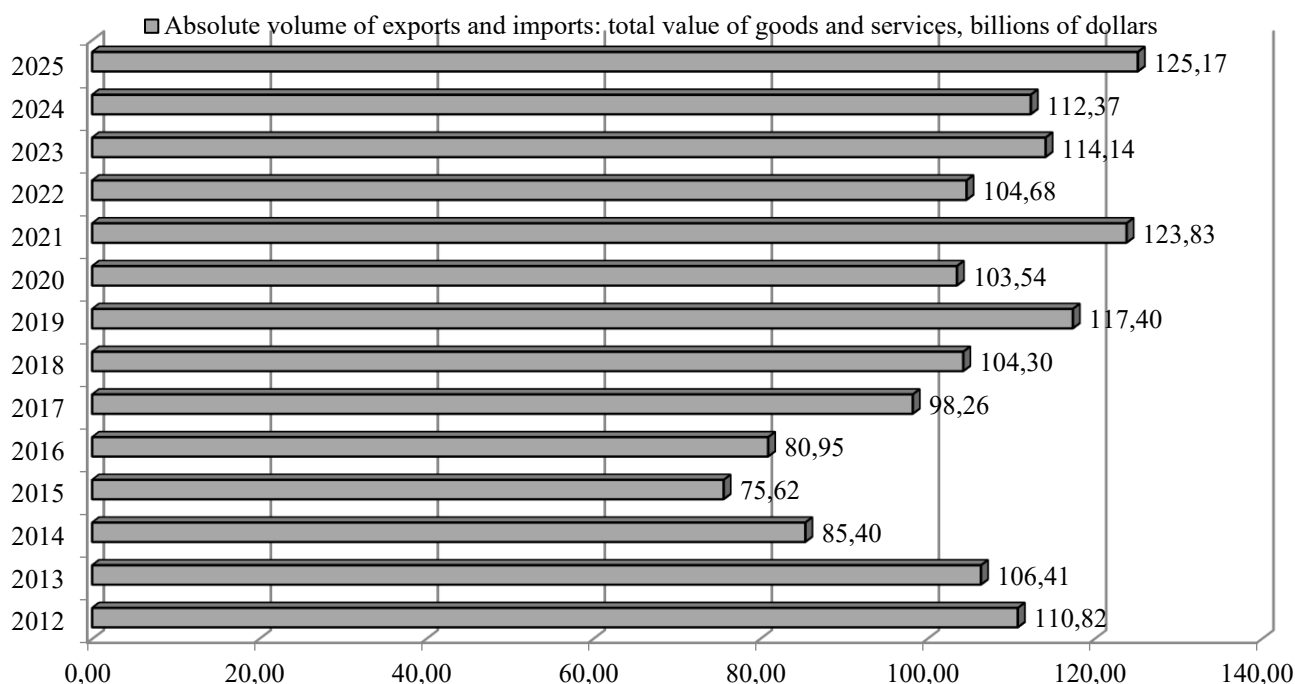


Figure 2. Dynamics of absolute volume of exports and imports, 2012-2025

*Source: developed by the authors taking into account statistical sources [26-28].

An illustration of total exports and imports over fourteen years is shown in Fig. 3.

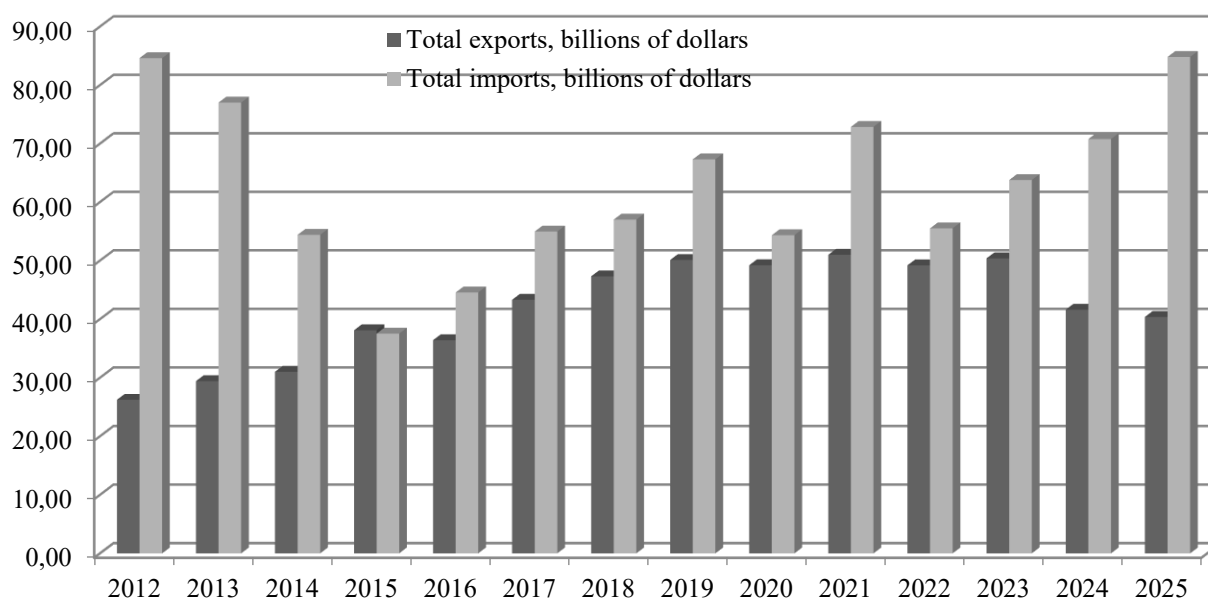


Figure 3. Dynamics of total exports and imports, 2012-2025

*Source: developed by the authors taking into account statistical sources [26-28].

The results obtained indicate the formation of an asymmetric model of foreign trade development of the Ukrainian economy, in which the rate of import dependence remains higher than the level of structural modernization of exports. Despite the growth in foreign trade volumes, the

predominance of the raw material component and the high sensitivity of the economy to global fluctuations create additional risks for ensuring long-term competitiveness in the system of international economic relations. The next group of indicators of international economic relations is

indicators of capital and investment flows, which include:

- foreign direct investment (FDI): the amount of investments made by foreign investors in the country's economy (inbound) and by national investors abroad (outbound);
- the amount of external debt: the amount of state and guaranteed debt to other states or MFIs.

We note a decrease in foreign investments by 5799 million USD. and 1102 million dollars, which is negative for the development and stability of the economy. The volume of external debt over the past fourteen years has increased by 128746.70 million dollars or 4.51 times, especially in the period 2022-2025, its largest

value in 2025 is 165405.50 million dollars. The volume of external debt over the study period also increased by 55.12%. Over the past period, there has been a decrease in the level of investment openness of the economy by 5.16 percentage points, the lowest values of the level in 2014, 2015, 2020 and 2022. The highest level of investment openness of the economy in 2012 was 6.47 percentage points, before economic and political upheavals.

The graphical dynamic series of foreign direct investment over the past fourteen years is presented in Fig. 4.

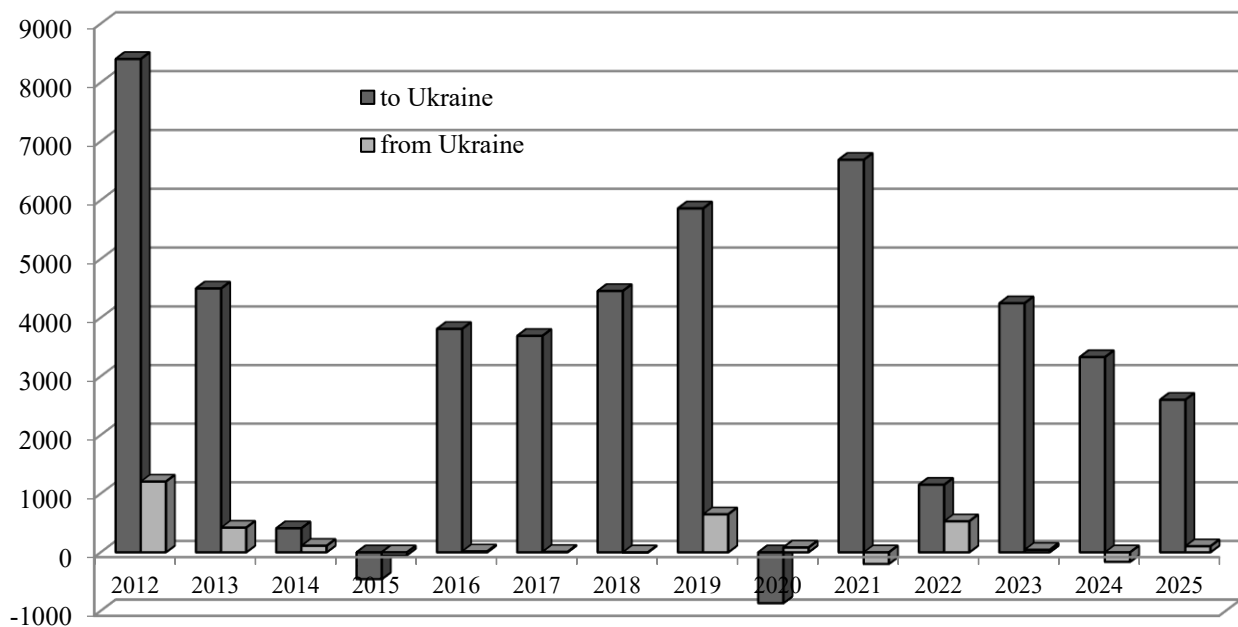


Figure 4. Foreign direct investment (FDI): the volume of investments made by foreign investors in the country's economy (inbound) and national investors abroad (outbound), 2012-2025

**Source: developed by the authors taking into account statistical sources [26-28].*

Indicators of international labor migration are characterized by the share of foreign workers in the total labor force and the volume of remittances from migrants (remittances). We note an increase in the amount of remittances by 355 million USD or 4.72%. The largest amount of remittances in 2021 was 14,019 million USD, and

the smallest in 2012 was 7,526 million USD. Perhaps a small flow of migrants, the dollar exchange rate and financial burden. An illustration of the dynamic series of remittances to Ukraine from abroad for the study period is presented in Fig. 5

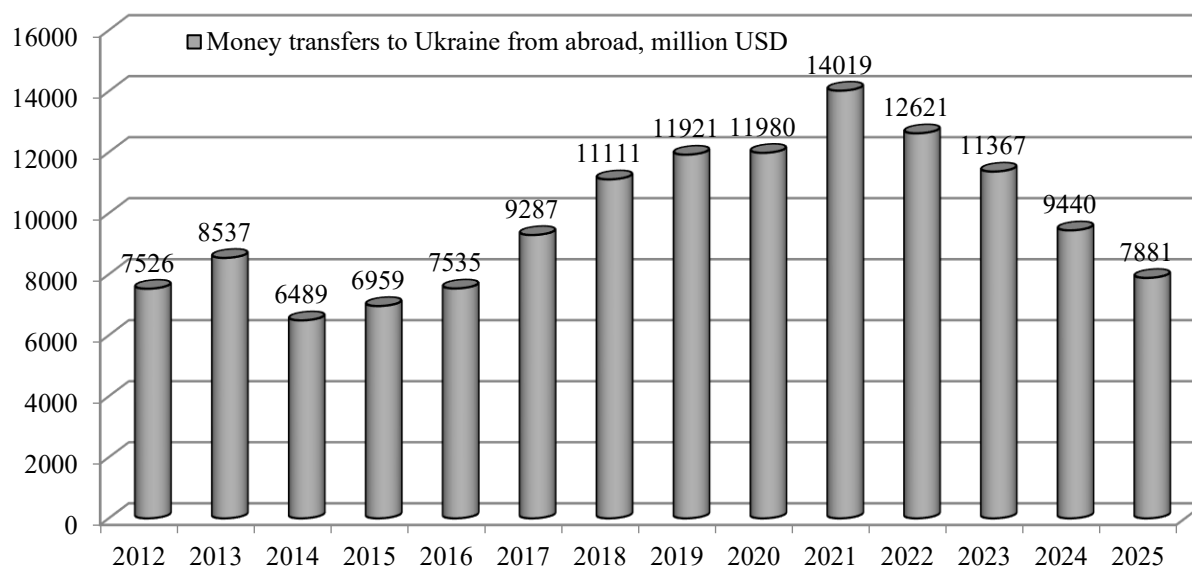


Figure 5. Dynamics of remittances to Ukraine from abroad, 2012-2025

*Source:[26-28].

Furthermore, it is necessary to determine the coefficients of innovative development: Global Competitiveness Index (GCI), Global Innovation Index (GII) and participation in international economic organizations and integration associations (WTO, EU). As we can see, there is an increase in the ranking by the Global Competitiveness Index (GCI) by 7 steps,

and by the Global Innovation Index (GII), on the contrary, a decrease in the rating by 3 steps. The graphical dynamic series of the Global Competitiveness Index (GCI) and the number of countries that participated in the ranking are presented in Fig. 6. It should be noted that due to the pandemic in 2020, the data of the Global Competitiveness Index (GCI) were not formed.

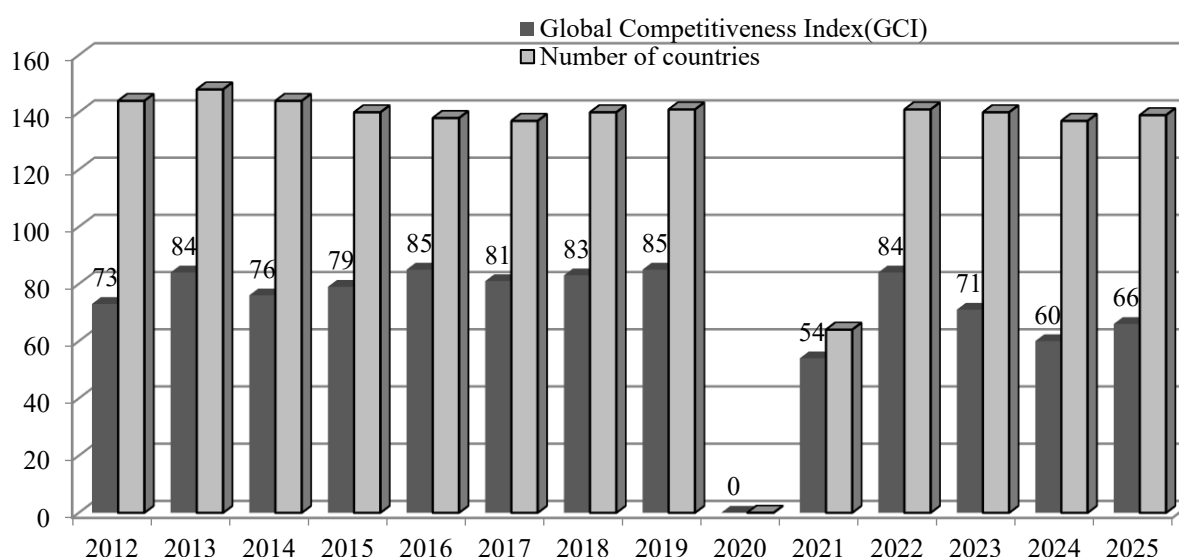


Figure 6. Dynamic series of the Global Competitiveness Index (GCI) and the number of countries participating in the ranking, 2012-2025

*Source: developed by the authors taking into account statistical sources [26-30].

An illustration of the comparison of the Global Competitiveness Index (GCI) and the Global Innovation Index (GII) over the last fourteen years is presented in Fig. 7.

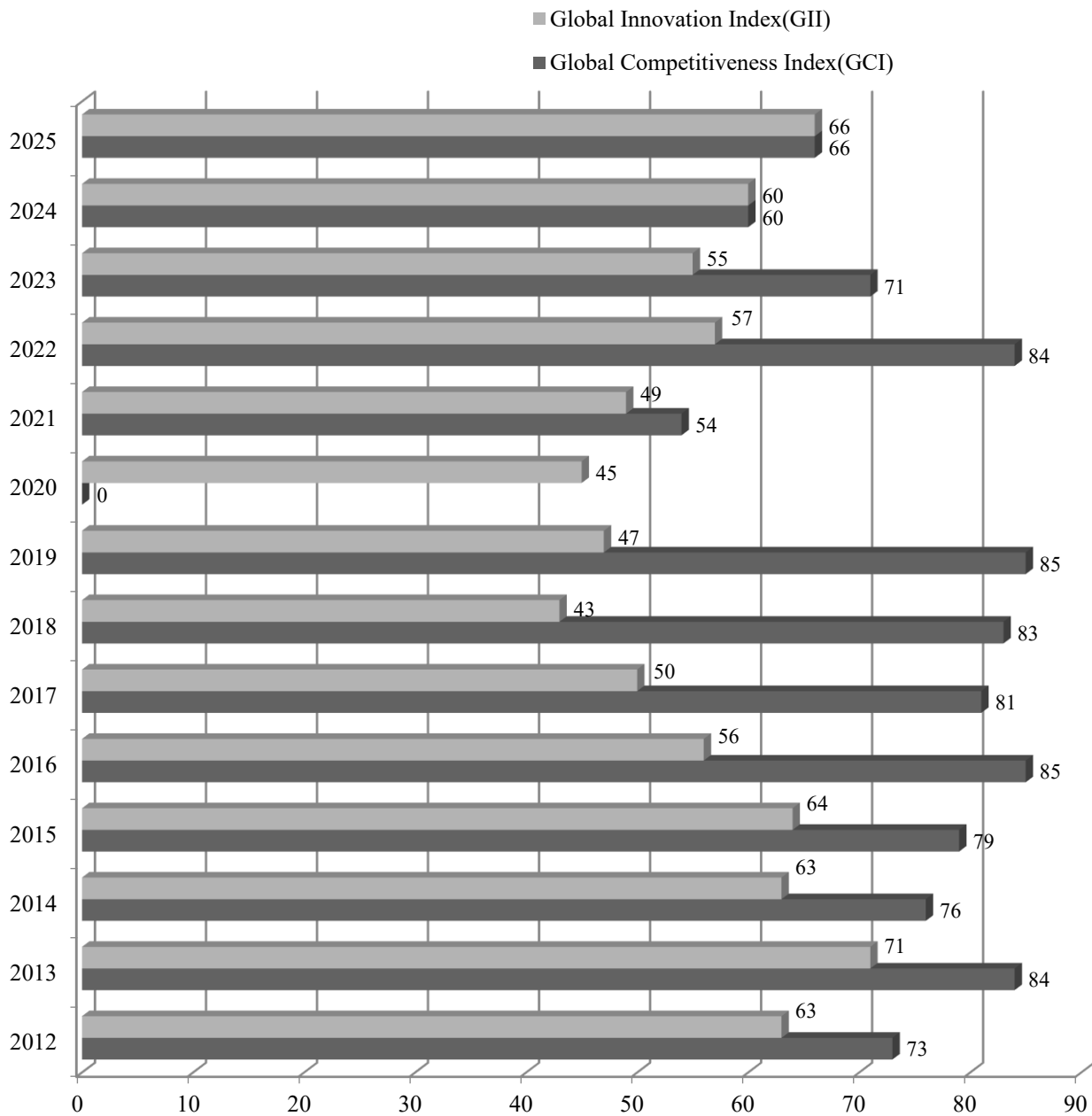


Figure 7. Dynamic series of international integration indicators, 2012-2025

**Source: developed by the authors taking into account statistical sources [26-30].*

The results obtained allow us to state that the indicators of international competitiveness, innovative development and digital integration form the basis of the integral indicator of digital and innovative transformation (IDT), proposed in the methodological block of the study. The growth of individual indicators of digital activity and international integration confirms the feasibility of using an integral approach to assessing transformation processes in the system of international economic relations and trade.

The deterioration of individual innovation and investment indicators indicates insufficient adaptability of the economy to modern digital transformations and global structural changes. At the same time, the gradual improvement of positions in international competitiveness rankings confirms the presence of potential for further integration of digital technologies into the system of international trade and financial and economic management.

At the end of this block of studying the indicators of the development of international economic relations, we will analyze the monetary and financial indicators, which include the foreign exchange reserves of the central bank and the exchange rate of the national currency. These indicators allow us to assess the effectiveness of foreign economic policy, the competitiveness of national goods in the world market and the country's dependence on external factors. We note the growth of the foreign exchange reserves of the central bank by 2.33 times, and the dollar exchange rate increased by 5.63 times, which is a dangerous pessimistic scenario for the economic

condition of the state, which is reflected in the credit rating and its characteristics.

If we consider the selected topic of research in the trade system, then we should study in detail the main analytical characteristics of the activities of this sector of the economy.

Figure 8 presents the indicators of gross product, gross domestic product of the wholesale and retail trade subsector and its share in total GDP over the past fourteen years. As we can see, the gross domestic product of wholesale and retail trade over the last period has increased by 2084399.22 million UAH. and its share in total GDP by 8.43%. The graphical dynamic series of the obtained indicators is shown in Fig. 8.

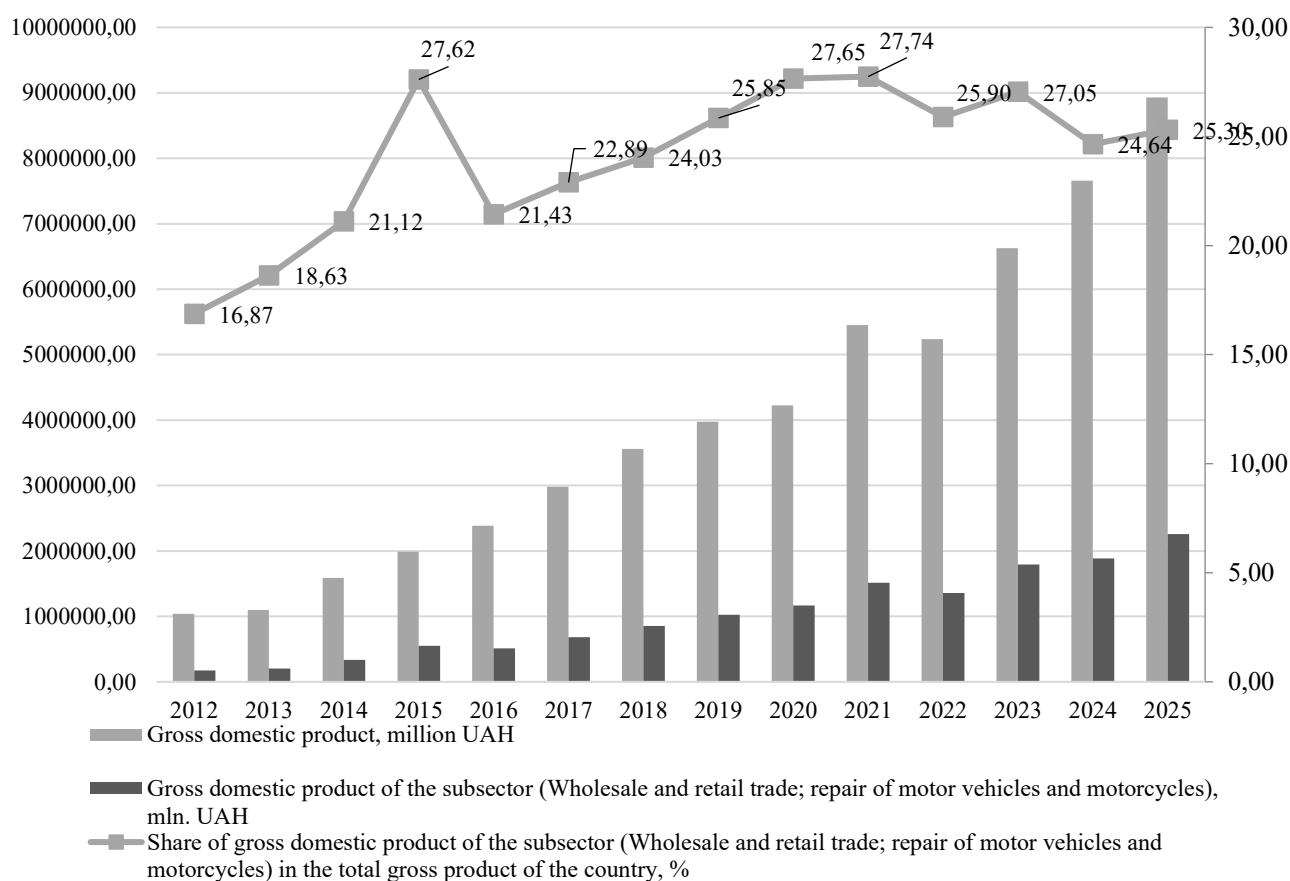


Figure 8. Dynamics of gross domestic product, gross domestic product of the sub-sector (Wholesale and retail trade; repair of motor vehicles and motorcycles) and its share in the total gross domestic product of Ukraine, 2012-2025

*Source: developed by the authors taking into account statistical sources [26-28].

The dynamics of exports of domestic trade enterprises and its share in total exports for the last period of the study are formed in Fig. 9. There is an increase in domestic trade exports by 4.88

billion dollars or 2.26 times, and the share in total exports increases by 6.91 pp. An illustration of the obtained indicators is shown in Fig. 9.

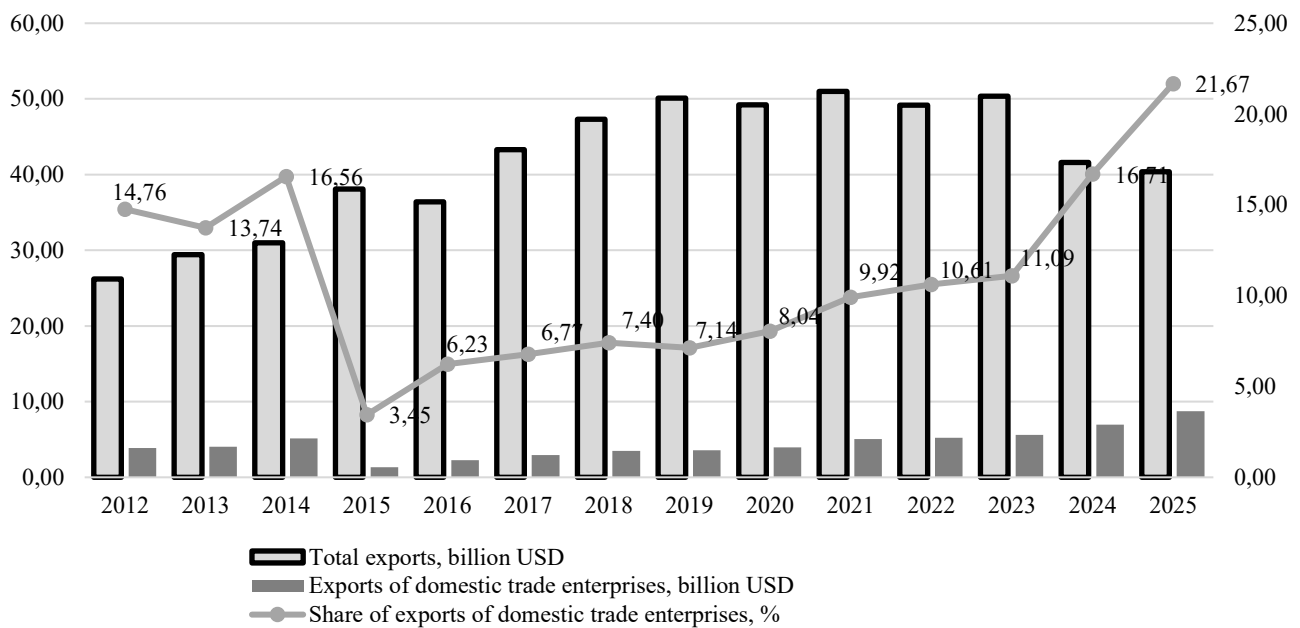


Figure 9. Dynamics of total exports, exports of domestic trade enterprises and their export share, 2012-2025

**Source: developed by the authors taking into account statistical sources [26-28].*

The result of this block of studying the selected topic is the formation and analysis of foreign economic activity of domestic trade enterprises for the last period of the study. We note the growth of imports of domestic trade

enterprises by 7.37 billion dollars or 2.54 times, the ratio of import coverage by exports for the specified period decreases by 0.09 pp. The visualization of the results is shown in Fig. 10.

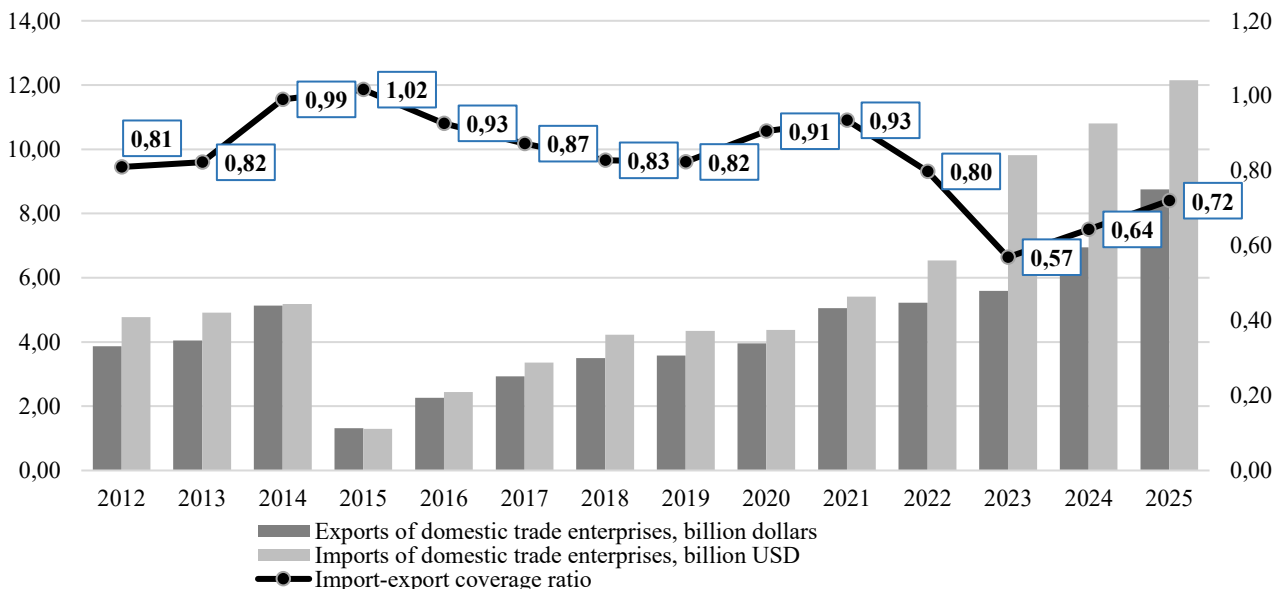


Figure 10. Dynamics of exports, imports of domestic trade enterprises and the ratio of import coverage by exports, 2012-2025

**Source: [26-28].*

The analysis conducted allows us to state that the development of domestic trade enterprises increasingly depends on the level of digitalization of business processes, the speed of adaptation to changes in the international market and the efficiency of using electronic communication and sales channels. It is digital tools that are gradually becoming one of the key factors in maintaining the competitiveness of the trade sector.

An important element of the activity of a business entity is resource potential, therefore the next thing we will characterize is the state of fixed assets, both state-owned and wholesale and retail enterprises over the last period of the study.

Analyzing the obtained statistical information on the resource potential of both state-owned and wholesale and retail enterprises, it should be noted that the cost of fixed assets increased by 18.09% and 63.98%, respectively. Although the cost of new fixed assets received during the year by wholesale and retail trade enterprises decreased during the study period by UAH 4,148 million or 8.83%, the degree of depreciation of fixed assets in this industry increased by 6.10%. A graphical dynamic series of the cost of new fixed assets received during the year by type of economic activity during the study period is presented in Fig. 11.

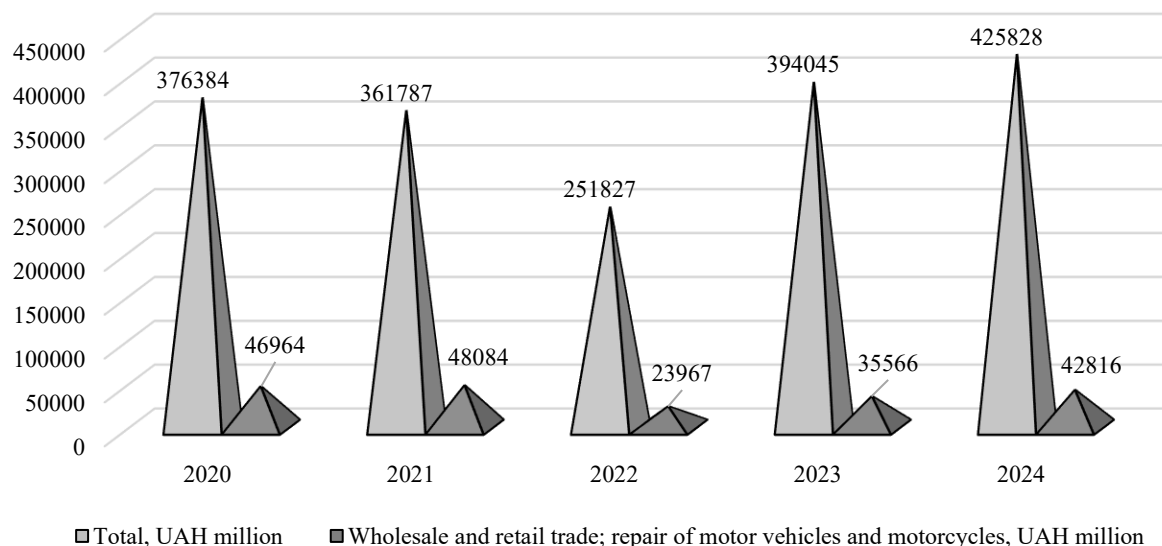


Figure 11. Dynamics of the cost of new fixed assets received per year, by type of economic activity, 2020-2024

**Source: developed by the authors taking into account statistical sources [26-27].*

Analyzing the obtained statistical data, we note an increase in the value of capital investments, but the share of capital investments in wholesale and retail trade in the total value of capital investments remains insignificant at

9.43% in 2025, although compared to 2015 it increased by 1.87 pp. A graphical representation of the obtained research results for the latest period is presented in Fig. 12.

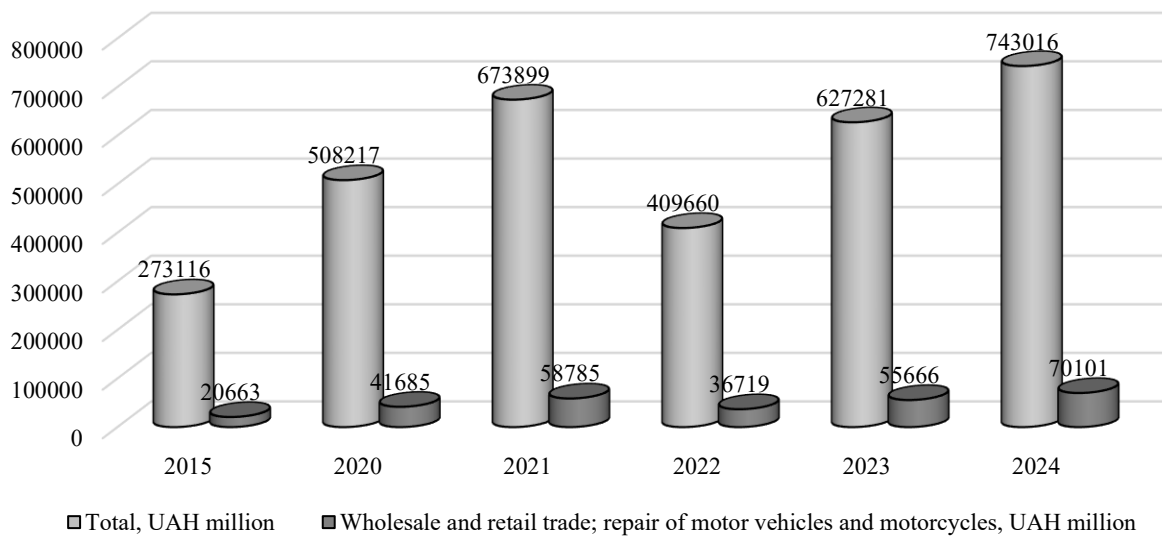


Figure 12. Dynamics of capital investments by type of economic activity, 2015, 2020-2024

**Source: developed by the authors taking into account statistical sources [26-27].*

As a generalization of the obtained statistical information, we form Fig. 13, where we show the key indicators and coefficients of the activities of domestic trade enterprises for the last period of the study. Characterizing the main analytical indicators and coefficients, we note an increase in the number of legal entities working in retail trade by 44.49%, the volume of retail trade turnover by almost 3 times, the consumer price index by 8.20 pp. As for the financial results of

activity, their values increased, in particular, Net profit (loss) by 2.30 times, and financial results by 6 times. The level of profitability of domestic trade enterprises increased by 23.26 pp. compared to 2012. And the absolute solvency (liquidity) ratio during the period decreased by 0.12 pp and is estimated at a normal level. Graphically obtained key indicators and ratios of domestic trade enterprises' activities for the study period are presented in the block Fig. 13, Fig. 14 and Fig. 15.

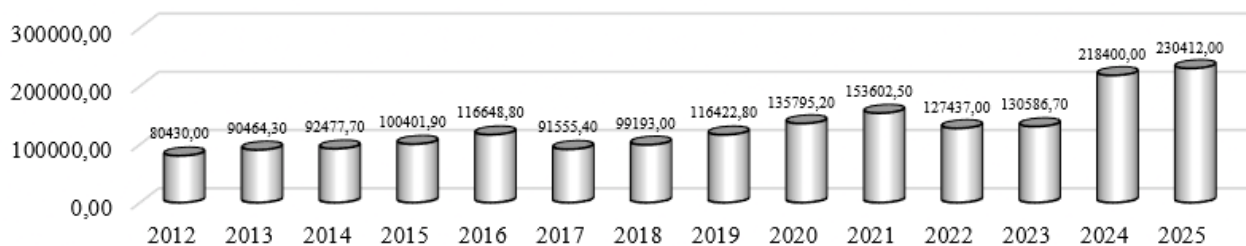


Figure 13. Dynamics of retail turnover, 2012-2025

**Source: developed by the authors taking into account statistical sources [26-27].*

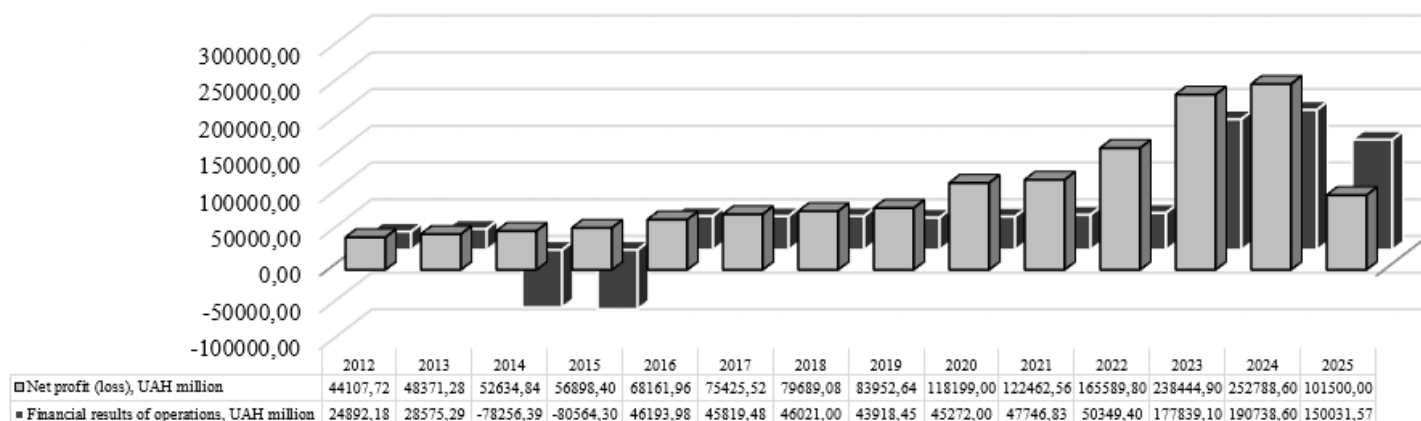


Figure 14. Dynamics of financial results of retail enterprises, 2012-2025

*Source: developed by the authors taking into account statistical sources [26-27].

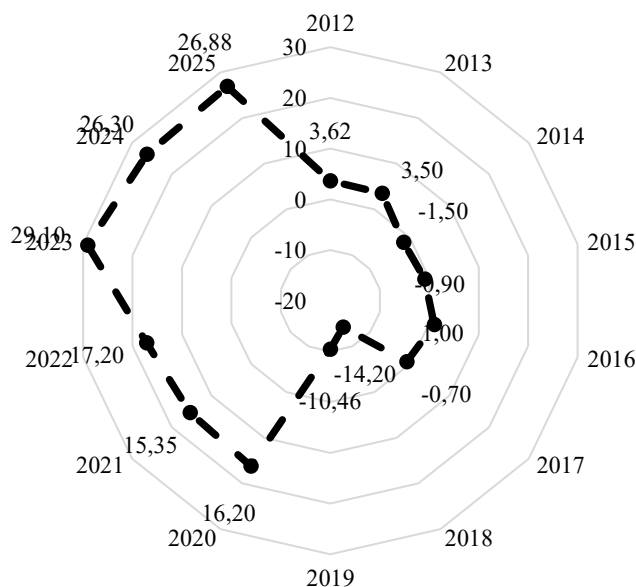


Figure 15. Dynamics of the level of profitability of domestic trade enterprises, 2012-2025

*Source: cited by the authors taking into account the source [26-27].

The analysis of the financial results of domestic trade enterprises confirms the formed hypothesis H2 regarding the existence of a direct relationship between the development of digital technologies, e-commerce and the effectiveness of the functioning of the trade sector. The growth of profitability and financial results of enterprises is accompanied by the intensification of the processes of digital transformation of business and the introduction of modern information and communication solutions.

The growth of financial results and profitability of domestic trade enterprises

indicates the intensification of the processes of structural adaptation of business to new economic conditions. At the same time, the instability of the macroeconomic environment, inflationary pressure and investment risks require the further implementation of digital management mechanisms and modern financial and analytical tools.

So, in general, we can conclude that domestic trade enterprises demonstrate positive performance results against the backdrop of a difficult economic and political situation. Regarding the implementation of digitalization in

the system of sustainable development of international economic relations and trade, we propose to analyze this process by studying the state of the stock market. We observe a rapid decrease in the number of stock exchanges over

the past nine years, their number has decreased by 4 legal entities. The graphical dynamic series of stock exchanges of Ukraine over the past nine years is presented in Fig. 16.

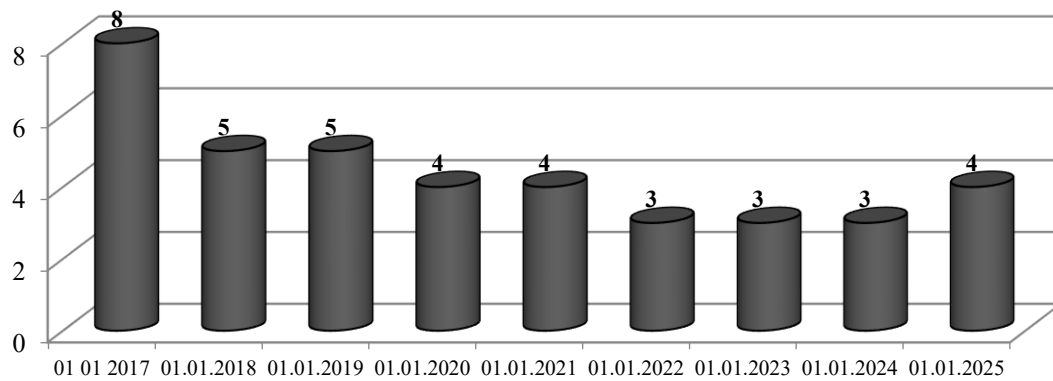


Figure 16. Dynamics of Ukrainian stock exchanges, 2017-2025

**Source: based on [26-33].*

Further, we analyze the trading volumes of the stock market and the GDP of Ukraine and their ratio over the past nine years. There is an increase in trading volumes on the stock market by

376.31 billion UAH. or 1.80 times compared to 2017. Accordingly, the gross

domestic product grew almost 3 times, as previously noted, and the ratio of trading volumes to GDP over this period decreased by 6.25 pp. Illustratively, the dynamic series of trading volumes of the stock market and the GDP of Ukraine over the past nine years is presented in Fig. 17.

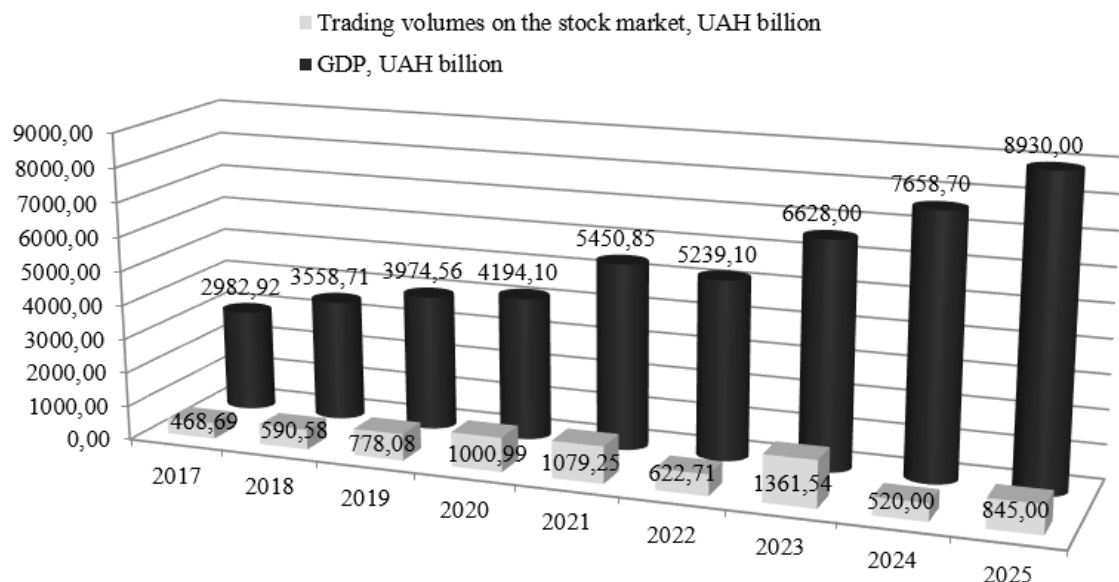


Figure 17. Dynamics of stock market trading volumes and GDP of Ukraine, 2017-2025

**Source: developed by the authors taking into account statistical sources [26-33].*

The following analysis is a dynamic series of securities market contract volumes for the latest period under study (Figure 18). According to the results of processing the presented public data, we

see an increase in the volume of securities market contracts for the latest period.

Trading volumes on the over-the-counter and exchange markets are graphically depicted in Fig. 18.

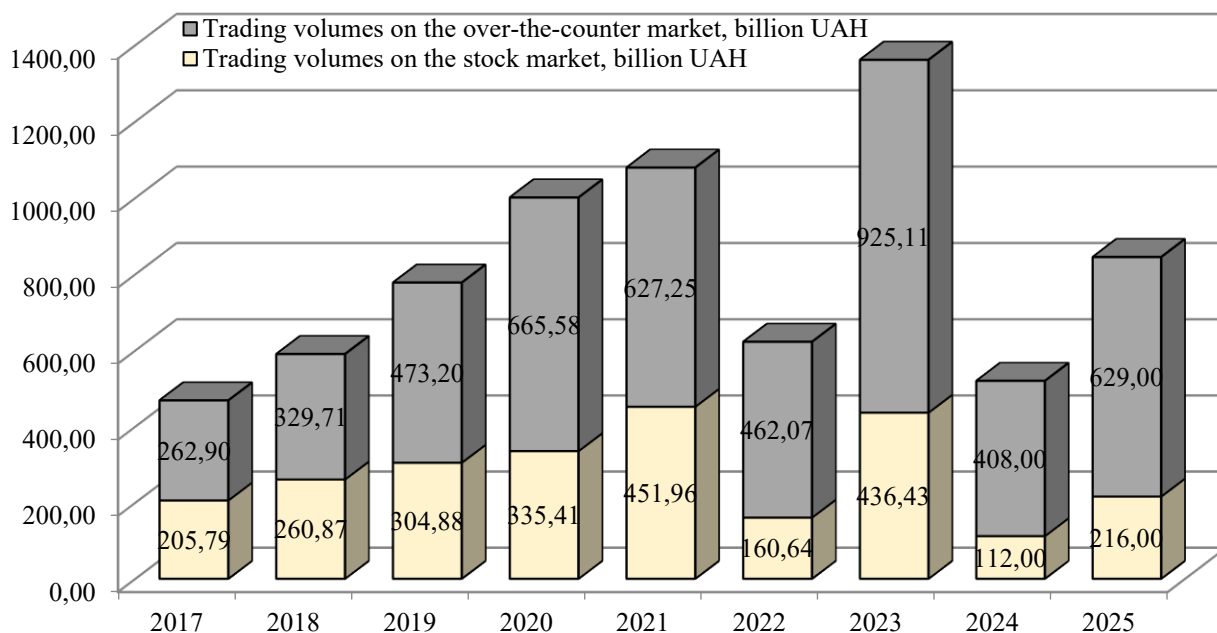


Figure 18. Trading volumes on the over-the-counter and exchange markets, 2017-2025

*Source: developed by the authors taking into account statistical sources [33].

The largest trading volume between participants in the organized market falls on JSC “PFTS Stock Exchange” on average over the last period of 49.50%, the smallest 4.47% on JSC

“Ukrainian Exchange”. Graphically, the structural distribution of trading volumes between participants in the organized market over the last period is presented in Fig. 19.

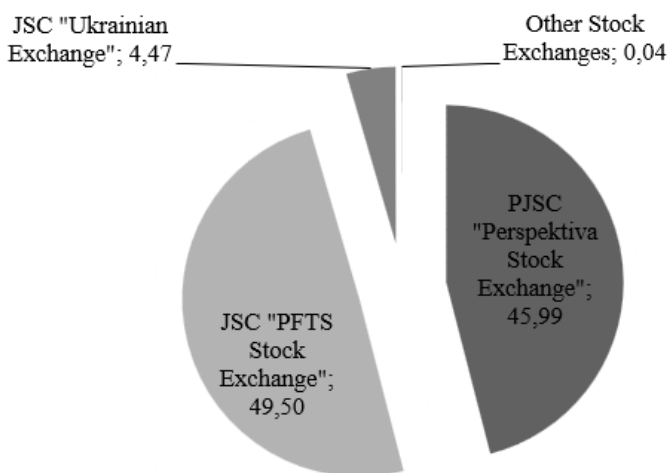


Figure 19. Structural distribution of trading volumes among participants in the organized market, 2017-2025

*Source: developed by the authors taking into account statistical sources [31-33].

The largest share of financial assets in exchange trading is held by Government Bonds of Ukraine on average for the period under study, 95.80 %, the smallest share is held by investment

certificates, 0.03 %. Visualization of the structural distribution of the volume of exchange trading in financial assets for the last studied years is presented in Fig. 20.

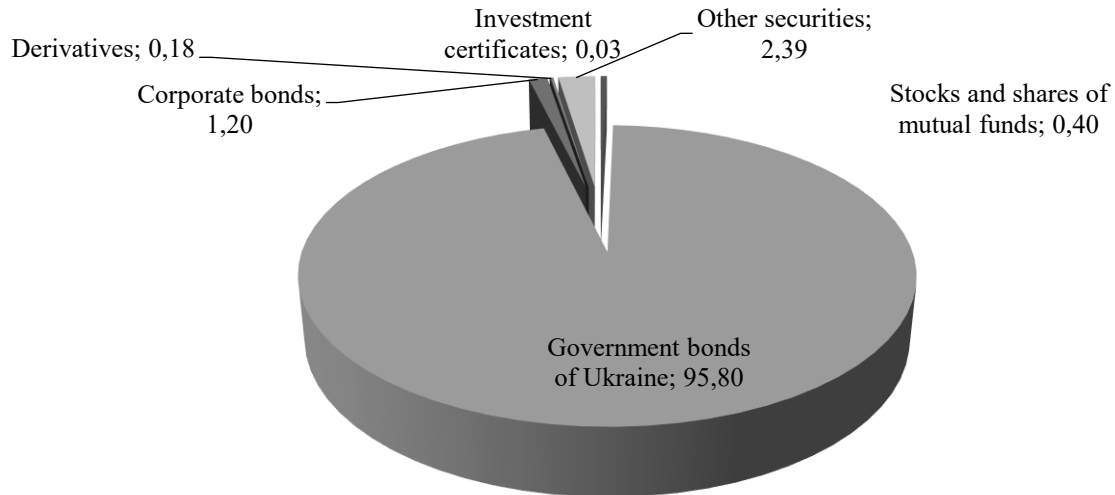


Figure 20. Structural distribution of the volume of stock exchange trading in financial assets, 2017-2025

**Source: developed by the authors taking into account statistical sources [32-33].*

At the end of this block of study, based on statistical information, we will analyze the use of information and communication technologies and electronic commerce at wholesale and retail enterprises over the recent period. We note the growth in the use of information and

communication technologies by wholesale and retail enterprises by categories: have access to the Internet by 27.99%, have a website by 8.90% and enterprises that purchase cloud computing services by 53.06%. The graphically processed and formed information is presented in Fig. 21.

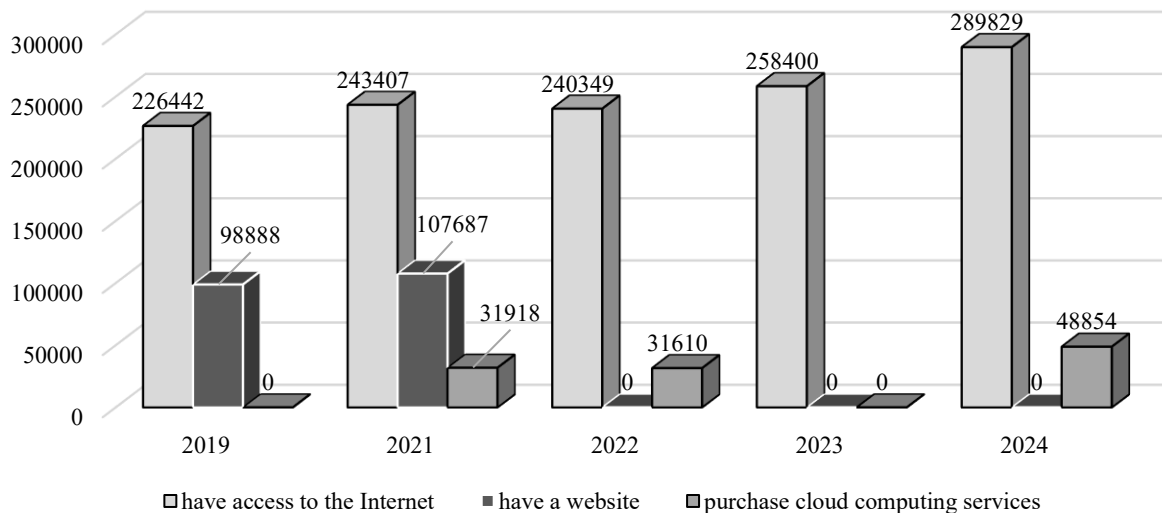


Figure 21. Dynamics of the use of information and communication technologies at wholesale and retail enterprises, 2019, 2021-2024

**Source: developed by the authors taking into account statistical sources [32-33].*

We note an increase in the number of enterprises that carried out electronic commerce by almost 2.5 times, and the volume of products sold (goods, services) from electronic commerce

increased by 14256 million UAH during the specified period. The visualization of the results is shown in Fig. 22.

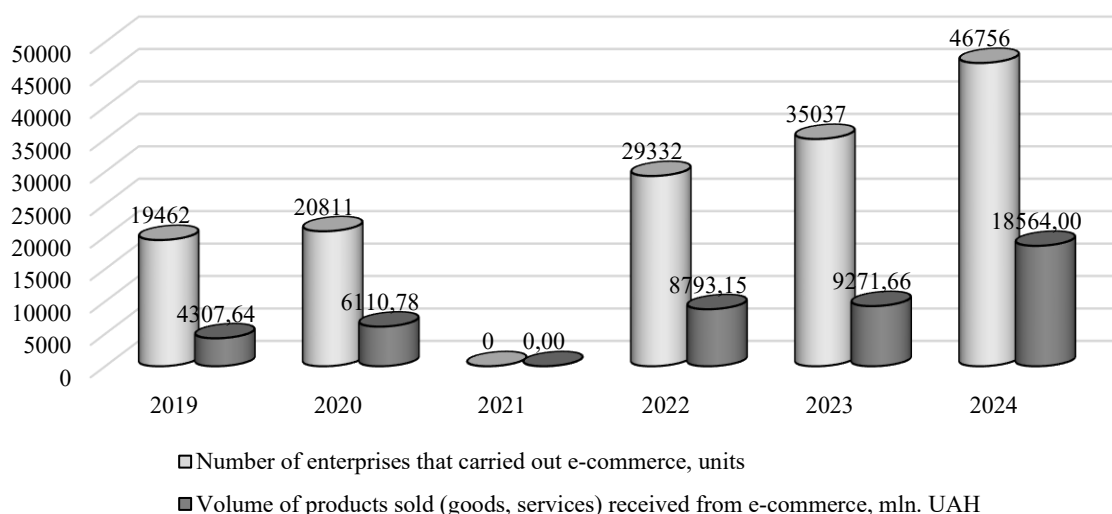


Figure 22. Dynamics of the number of enterprises that carried out e-commerce and the volume of products sold (goods, services) received from e-commerce at wholesale and retail enterprises, 2019, 2021-2024

**Source: developed by the authors taking into account statistical sources [26-27].*

The results obtained confirm the formed research hypotheses regarding the positive impact of digitalization and e-commerce on the development of domestic trade enterprises. The increased use of information and communication technologies, cloud services and electronic platforms contributes to the transformation of marketing, financial and management processes, forming a new model for the development of international economic relations in the digital economy.

The results of the analysis confirm the hypotheses H1 and H4, formed in the methodological block of the study. The active growth of e-commerce, the use of cloud technologies and digital platforms indicates the strengthening of the impact of digitalization on the transformation of marketing, financial and management processes in the field of international trade. This allows us to state the formation of a new digital model for the development of domestic trade enterprises in the context of global economic transformation.

Conclusions

The study found that the transformation of marketing, finance and management through innovation and digitalization is becoming one of the key factors in the development of international

economic relations and trade activities in the context of global economic instability. Digital technologies, e-commerce, information and communication systems and innovative financial instruments form a new architecture of international economic interaction, changing the mechanisms of enterprise management, the structure of international trade and the principles of competition in the global market. The analysis made it possible to establish that during the period under study, contradictory transformation processes took place in the economy of Ukraine. On the one hand, there was an increase in foreign trade turnover, the activation of e-commerce, the spread of digital platforms, an increase in the use of information and communication technologies and an improvement in certain indicators of international competitiveness. On the other hand, structural imbalances associated with the import dependence of the economy, the instability of investment processes, the high level of external debt and the uneven digital modernization of individual sectors of the economy persist.

The feasibility of using an integral indicator of the digital-innovative transformation of international economic relations and trade is substantiated, which allows for a comprehensive assessment of the relationship between marketing, financial, investment, trade and digital parameters

of economic development. The formed research hypotheses confirmed the significant impact of digitalization, e-commerce and information and communication technologies on the effectiveness of the functioning of domestic trade enterprises and the development of international trade activities.

It is proven that the digital transformation of domestic trade enterprises contributes to increasing their level of competitiveness, adaptability and financial performance. The increased use of electronic platforms, digital sales channels, cloud technologies and modern information systems creates the prerequisites for the modernization of the trade sector and its integration into the global digital economic space.

The practical significance of the results obtained lies in the possibility of using the proposed analytical approach when forming a state policy of digital development, improving mechanisms of international economic integration, supporting digital modernization of enterprises and ensuring sustainable development of trade activities. Prospects for further research should be associated with the development of econometric models for predicting the digital transformation of international trade, assessing the impact of artificial intelligence on financial and management processes and studying the mechanisms for forming the digital competitiveness of enterprises in the global economic environment.

References

- Aranchiy, V., Ganushchak-Efimenko, L., Khrystenko, L., Shkoda, M., Hnatenko, I., & Fastovets, N. (2022). Modeling of integrated assessment of the effectiveness of management of the financial position of business entities. *Financial and Credit Activity Problems of Theory and Practice*, 1(42), 259-270.
- Bakhmat, N., Voropayeva, T., Artamoshchenko, V., Kubitskyi, S., & Ivanov, D. (2022). Quality Management in Higher Education in Terms of Sustainable Development. *International Journal for Quality Research*, 16(4), 1107-1120. <http://dx.doi.org/10.24874/IJQR16.04-10>
- Bilan, Y., Zos-Kior, M., Nitsenko, V., Sinelnikau, U., & Ilin, V. (2017). Projecting the social component of the efficient management of land resources. *Journal of Security and Sustainability*, 7(2), 287-300.
- Bosniuk, V., Ostopolets, I., Svitlychna, N., Miroshnichenko, O., Tsipan, T., & Kubitskyi, S. (2021). Social Content of Psychological Specialists' Professional Activity. *Postmodern Openings*, 12(1), 01-20. <https://doi.org/10.18662/po/12.1/242>
- Brazhnyk, L. V. (2024). Stock market of Ukraine: Current state, problems, and prospects. *Efektivna ekonomika*, 5. <https://doi.org/10.32702/2307-2105.2024.5.35>
- Elfaki, K. E., & Ahmed, E. M. (2024). Digital technology adoption and globalization innovation implications on Asian Pacific green sustainable economic growth. *Journal of Open Innovation: Technology, Market, and Complexity*, 10(1), 100221. <https://doi.org/10.1016/j.joitmc.2024.100221>
- First Stock Trading System. (2025). *Stock indices. Parameters of the PFTS stock index*. <https://pfts.ua/trade-info/indexes/shares-indexes>
- Gryshchenko, I., Ganushchak-Efimenko, L., Hnatenko, I., & Rebilas, R. (2023). Management of environment design of the development of innovative entrepreneurship at integrated structures under the conditions of post-war reconstruction. *Financial & Credit Activity: Problems of Theory & Practice*, 5(52), 341-352. <https://doi.org/10.55643/fcaptp.5.52.2023.4199>
- Hao, X., Li, Y., Ren, S., Wu, H., & Hao, Y. (2023). The role of digitalization on green economic growth: Does industrial structure optimization and green innovation matter?. *Journal of environmental management*, 325, 116504. <https://doi.org/10.1016/j.jenvman.2022.116504>
- Hnatenko, I., Bebeko, S., Ievseitseva, O., Kvita, H., & Zos-Kior, M. (2024). Market analysis of the renewable energy market of Ukraine in the context of changes in financial and economic processes. *Financial and credit activity: problems of theory and practice*. Volume 5 (58), 446-459. <https://doi.org/10.55643/fcaptp.5.58.2024.4576>
- Hnatenko, I., Kuksa, I., Naumenko, I., Baldyk, D., & Rubezhanska, V. (2020). Infrastructure of innovation enterprise: features of formation and regulation in modern market conditions. *Management Theory and Studies for Rural Business and Infrastructure Development*, 42(1), 97-104. <https://doi.org/10.15544/mts.2020.10>
- Huang, C., Wang, C., Rani, T., & Rehman, S. A. U. (2026). Digitalization's role in shaping climate change, renewable energy, and technological innovation for achieving sustainable development in top Asian countries. *Energy & Environment*, 37(3), 1262-1283. <https://doi.org/10.1177/0958305X241258799>
- Hung, N. T. (2023). Green investment, financial development, digitalization and economic sustainability in Vietnam: Evidence from a quantile-on-quantile regression and wavelet coherence. *Technological Forecasting and Social Change*, 186, 122185. <https://doi.org/10.1016/j.techfore.2022.122185>

- Kubitskyi, S., Shorobur, I., Yevdokymova, N., Vlasiuk, T., & Shevchuk, L. (2023). Development of higher education institutions in the current conditions. *Cadernos de Educação Tecnologia e Sociedade*, 16(se2), 119-128. <https://doi.org/10.14571/brajets.v16.nse2.119-128>
- Kuzmynchuk, N. V., Kutsenko, T. M., Terovanesova, O. Yu., & Trykoza, K. S. (2022). Strategic management of public involvement in investment processes on stock exchanges. *Efektivna ekonomika*, 7. <https://nayka.com.ua/index.php/ee/article/view/148>
- Luo, S., Yimamu, N., Li, Y., Wu, H., Irfan, M., & Hao, Y. (2023). Digitalization and sustainable development: How could digital economy development improve green innovation in China?. *Business strategy and the environment*, 32(4), 1847-1871. <https://doi.org/10.1002/bse.3223>
- Mazur, N., Khrystenko, L., Pásztorová, J., Zos-Kior, M., Hnatenko, I., Puzyrova, P., & Rubezhanska, V. (2021). Improvement of Controlling in the Financial Management of Enterprises. *TEM Journal: Technology, Education, Management, Informatics*, 10(4), 1605-1609. <https://doi.org/10.18421/TEM104-15>
- Ministry of Finance of Ukraine. (2025). *Credit ratings: current ratings, general information, historical changes*. <https://mof.gov.ua/uk/kreditnij-rejting-potochni-rejtingi-zagalna-informacija-istorichni-zmini>
- Ministry of Finance of Ukraine. (2025). *Official website of the Ministry of Finance of Ukraine*. <https://mof.gov.ua/en/>
- Mykhailichenko, M., Lozhachevska, O., Smagin, V., Krasnoshtan, O., Zos-Kior, M., & Hnatenko, I. (2021). Competitive strategies of personnel management in business processes of agricultural enterprises focused on digitalization. *Management Theory and Studies for Rural Business and Infrastructure Development*, 43(3), 403-414. <https://ejournals.vdu.lt/index.php/mtsrbid/article/view/2519>
- National Securities and Stock Market Commission. (2025). *Analytical data on stock market development*. <https://www.nssmc.gov.ua/news/insights/>
- Ozturk, I., Alqassimi, O., & Ullah, S. (2024). Digitalization and SMEs development in the context of sustainable development: A China perspective. *Heliyon*, 10(6). [https://www.cell.com/heliyon/fulltext/S2405-8440\(24\)03967-7](https://www.cell.com/heliyon/fulltext/S2405-8440(24)03967-7)
- Plakhonik, O., Syladii, I., Kubitskyi, S., Koycheva, T., & Krulko, L. (2024). Formation of an effective management system in the educational space of higher education institutions. *Amazonia Investiga*, 13(74), 344-360.
- Popadynets, I. R., Havadzyn, N. O., Markiv, M. M., & Hryhorska, N. O. (2023). Prospects for the development of the Ukrainian stock market in the post-war period. *Topical Issues in Modern Science*, 4(10), 44-55. [https://doi.org/10.52058/2786-6300-2023-4\(10\)-44-55](https://doi.org/10.52058/2786-6300-2023-4(10)-44-55)
- Prokopenko, O., Martyn, O., Bilyk, O., Vivcharuk, O., Zos-Kior, M., & Hnatenko, I. (2021). Models of State Clusterisation Management, Marketing and Labour Market Management in Conditions of Globalization, Risk of Bankruptcy and Services Market Development. *International journal of computer science and network security: IJCSNS*, 21(12), 228-234. <https://doi.org/10.22937/IJCSNS.2021.21.12.34>
- Prylipko, S., Vasyliieva, N., Kovalova, O., Kulayets, M., Bilous, Y., & Hnatenko, I. (2021). Modeling of Regional Management of Innovation Activity: Personnel Policy, Financial and Credit and Foreign Economic Activity. *International Journal of Computer Science & Network Security*, 21(11), 43-48. <https://doi.org/10.22937/ijcsns.2021.21.11.6>
- Purdenko, O., Artyushok, K., Riazanova, N., Babaiev, I., Kononenko, A., Lepeyko, T., & Zos-Kior, M. (2023). Financial management of innovative eco-entrepreneurship. *Management Theory and Studies for Rural Business and Infrastructure Development*, 45(2), 152-165. <https://doi.org/10.15544/mts.2023.16>
- Results for Development. (2018). *Launch of the Global Innovation Index 2018*. <https://r4d.org/events/launch-of-the-global-innovation-index-2018/>
- Semenov, A., Kuksa, I., Hnatenko, I., Sazonova, T., Babiy, L., & Rubezhanska, V. (2021). Management of Energy and Resource-Saving Innovation Projects at Agri-Food Enterprises. *TEM Journal: Technology, Education, Management, Informatics*, 10(2), 751-756. <https://doi.org/10.18421/TEM102-32>
- Shahzad, U., & Muhammad, S. (2025). Digital pathways to sustainability: The role of Europe-Central Asia region's digitalization, trade, and geography maximizing sustainable development in China. *Journal of Environmental Management*, 394, 127341. <https://doi.org/10.1016/j.jenvman.2025.127341>
- Shelenko, D. I., Shpykuliak, O. H., & Horbatiuk, O. V. (2024). Functioning of derivative financial instruments in the development of exchange trade: Theoretical and evolutionary aspect. *Entrepreneurship and Trade*, 41, 118-125. <https://doi.org/10.32782/2522-1256-2024-41-15>
- Shumilova, I., Kubitskyi, S., Bazeliuk, V., Rudyk, Y., Hrechanyk, N., & Rozhnova, T. (2023). The System of Forming the emotional and ethical Competence of the Future education Manager in the conditions of transformational changes. *Ad Alta-Journal of Interdisciplinary Research*, 13(2), 82-89.
- State Statistics Service of Ukraine. (2023). *Statistical Yearbook of Ukraine for 2023* (I. Ye. Verner, Ed.). Derzhstat.
- State Statistics Service of Ukraine. (2024). *Statistical Yearbook of Ukraine for 2024* (I. Ye. Verner, Ed.). Derzhstat.
- Su, C. W., Yue, P., Hou, X., & Dördüncü, H. (2023). Sustainable development through digital innovation: A new era for natural resource extraction and trade. *Resources Policy*, 85, 103920. <https://doi.org/10.1016/j.resourpol.2023.103920>

- Ukrainian Chamber of Commerce and Industry. (2025). *Annual reporting*. <https://uccr.org.ua/about/shcorichnazvitnist>
- Ukrainian Chamber of Commerce and Industry. (2025). *Business barometer*. <https://uccr.org.ua/barometr-bisnesu>
- Voznyuk, A., Kubitskyi, S., Balanovska, T., Dorofeyev, O., & Chip, L. (2022). Synergetic simulation of managing processes in educational sphere in the context of temporary self-ruled managerial target teams application. *Financial and Credit Activity Problems of Theory and Practice*, 3(44), 317–327. <https://doi.org/10.55643/fcaptp.3.44.2022.3749>
- West Ukrainian National University. (2025). *World of Finance*. <https://sf.wunu.edu.ua/index.php/wof/article/view/1861>
- World Bank. (2025). *Global Competitiveness Index (WEF GCI)*. https://data360.worldbank.org/en/dataset/WEF_GCI
- Yang, W., Chen, Q., Guo, Q., & Huang, X. (2022). Towards sustainable development: how digitalization, technological innovation, and green economic development interact with each other. *International Journal of Environmental Research and Public Health*, 19(19), 12273. <https://doi.org/10.3390/ijerph191912273>
- Yin, S., Liu, L., & Mahmood, T. (2024). New trends in sustainable development for industry 5.0: digital green innovation economy. *Green and Low-Carbon Economy*, 2(4), 269–276. <https://doi.org/10.47852/bonviewGLCE32021584>
- Zadoia, A. O., Mahdich, A. S., & Zadoia, O. A. (2022). *International economic relations: Study guide* (Part 1). Alfred Nobel University.
- Zhang, H. (2025). *Topic 7.25* [PDF]. https://eco-science.net/wp-content/uploads/2025/07/7.25._topic_Zhang-Heng-34-38.pdf
- Zhyvko, Z., Morhachov, I., Zhelikhovska, M., Artiukh-Pasiuta, O., Hnatenko, I., Skripnik, V., & Yanechko, S. (2024). The Influence of the US Stock Market on the Institutional Security Strategy of the Management of Innovative Development. *Management Theory and Studies for Rural Business and Infrastructure Development*, 46(1), 104–111. <https://doi.org/10.22937/IJCSNS.2024.24.11.11>