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Economic diplomacy in the system of supporting Ukraine's foreign economic activity

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Abstract. The international environment is characterised by a dynamic nature, a steady trend towards quantitative growth and qualitative development, which necessitates a more cautious and balanced approach to the choice of foreign economic policy, given the complexity of the structure of the world economy, the system of international economic relations, regulation and management. The purpose of the article was to study the conditions for ensuring Ukraine's foreign economic activity through the influence of economic diplomacy and to identify tools for defending the country's national economic interests on the world stage. The methodological basis of the study was the tools of historical and logical approaches, analysis, statistical and graphical methods. The article examined the theoretical and conceptual foundations of economic diplomacy, namely: the essence and importance of economic diplomacy in international economic relations were characterised; economic diplomacy as an element of the system of management of the country's foreign economic activity was studied; the mechanism of achieving national competitiveness through economic diplomacy was outlined. The Ukrainian experience of functioning of the economic diplomacy mechanism was analysed, in particular: the analysis of economic diplomacy in the system of national economic security of Ukraine, the analysis of institutional support for the implementation of Ukraine's foreign economic potential. A new paradigm of economic diplomacy of Ukraine was also developed to ensure competitive advantages: the main prospects of economic diplomacy in the context of Ukraine's European integration course were identified, the possibility of increasing Ukraine's international competitiveness through economic diplomacy mechanisms was substantiated. The practical value of the research results lies in the fact that the formulated theoretical provisions, conclusions and recommendations can be used: in the scientific and research sphere for conducting further scientific research on strategic ways to increase the competitiveness of the national economy in modern economic conditions; in regulatory activities for developing regulatory legal acts and improving the legislation of Ukraine in the direction of diplomacy in the conditions of dynamic development of the international environment; in the educational process during the preparation of textbooks and teaching aids on international economic relations

Keywords: commercial diplomacy; economic security; economic interest; international cooperation; globalisation

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Introduction

Since 1991, Ukraine has undergone significant changes in public life, including the development and improvement of the diplomatic service. Geopolitical changes since the early 1990s, overcoming the bipolarity of international relations have created a favourable environment for the transition of Ukrainian diplomacy to a new level. In order to achieve efficiency and success in foreign economic activity, it is necessary to clearly understand, what the concept of "economic diplomacy" is. Therefore, the first step towards achieving a high level of competitiveness of any country was to focus on the conceptualisation of economic diplomacy.

Modern conditions for the development of the international environment are dynamic and constantly changing, which creates significant potential opportunities and poses a number of challenges for the use of economic diplomacy tools. It was during crises that new principles for regulating relations between countries were developed. They can help strengthen the overall international economic system. In addition, the number of integration associations and forums were increasing to meet growing economic needs. Another trend was the growing contradiction between economic superpowers, which required more and more decisive reforms in the international economic order, so the need for a new global order was important. This can be done by soft power, economic diplomacy, and will be the key not only to effective policy, but also to the modernisation of the global economic system. In addition, the role of the economy will increase due to dynamic trends in the development of international economic relations, and at the same time, the problems in the use of economic instruments will increase. Taking this fact into account, states should search for appropriate strategies for implementing economic diplomacy in order to maintain their relevance in the international arena.

The importance of this topic was due to the crisis in the internal political sphere, political instability, military aggression by Russia and a number of social problems that lead to the loss of Ukraine's status as a reliable partner on the world stage. Thus, the ability to establish contacts and find allies were particularly important in the global arena. Such contacts were based on the art of diplomacy, which involved the protection of national interests.

According to K. Flissak (2020), foreign economic activity (FEA) of the state, its authorised institutions and agencies, as well as export-import business activities and investment and innovation cooperation at the level of business entities required proper diplomatic support. As the practice of international relations has shown, there was no longer any diplomacy outside the economy in the modern world.

The authors N.M. Levchenko & L.V. Antonova (2020) noted that economic diplomacy is the most effective means of preventing threats and reducing national security vulnerabilities. By balancing economic diplomacy, states can gain a number of benefits, such as expanding markets for their own products through integration into the global market, protecting their own producers from the negative effects of foreign competition, ensuring quality imports into the country. U.W. Chohan (2021) considered economic diplomacy as a multilateral process that used economic means to achieve diplomatic goals and vice versa, through the joint creative engagement of international government managers and other important stakeholders.

As a result of the study, I. Ivashchuk *et al.* (2022) noted that economic diplomacy is a multilateral activity that is developing on a bilateral and multilateral basis in modern conditions, and also argued its importance in ensuring the strategic priorities of individual countries' development and their economic progress. The author O.M. Sharov (2019) concluded that economic diplomacy is a system of organisational and legal instruments and actions in the field of foreign economic policy, based on the coordinated interaction of state and non-state institutions to achieve the goals of sustainable development of the state and ensure its economic security, especially in the context of globalisation. Its main task was to achieve economic goals through diplomatic methods, even if economic instruments were used for this purpose. At the same time, diplomacy can use economic means (e.g., sanctions) to achieve non-economic goals, such as political or military, which also fall within the scope of economic diplomacy.

Scientist V.M. Ivanova (2022) noted that economic diplomacy is a complex category that includes individual components. Depending on the goals set, there were trade (commercial), financial, investment, energy, food, environmental and other areas. In addition, depending on external factors, one or another area of economic diplomacy may be more relevant in specific circumstances. Yu. Orlovska & M. Derkach (2024) argued that the organisation of economic diplomacy in each state has its own national characteristics, priorities and decision-making methods, but the main goal always remained the promotion of economic growth and protection of national economic interests in international economic relations. Given the modern trend towards accelerating national growth by attracting foreign direct investment, national actions were focused on promoting their country and sending a clear signal to potential investors that it worth investing in this particular country.

Studying diplomacy in a broad sense, as a symbiosis of theory and practice, it worth noting that it was a rather long intellectual evolution of an interdisciplinary nature regarding theoretical concepts, scientific definitions of practical art using politics, law, economics. Throughout the development of human history, diplomacy, as a state activity aimed at removing obstacles to international cooperation in the field of international relations, has been associated with the foreign policy of the state, officials

and institutions that implement it. Therefore, given the diversity of approaches, the measurement of this concept remains largely abstract, requiring a detailed study.

Materials and Methods

The study used both general scientific and specific methods of scientific knowledge, which provided objective results at the theoretical and empirical levels. In particular, the empirical method made it possible to collect factual information about the interaction of diplomatic agencies and analyse their impact on the development of the country's foreign economic activity. This method helped to form a practical understanding of the methods and means of economic diplomacy that can be used to achieve the priority goals of the national economy. The method of historical and logical analysis were used to determine the place and role of economic diplomacy in the structure of the country's foreign economic activity, ensuring and increasing its competitiveness, guaranteeing national economic security, forming new hypotheses and identifying areas for further research in the field of economic diplomacy.

The study used the theoretical method of analysing scientific approaches to the implementation of the state's foreign economic policy with the use of diplomatic instruments, in particular, the systemic approach, which allowed to consider the state's foreign economic policy as part of the global system of international economic relations, as well as to study the impact of globalisation, regionalisation and transnational corporations on economic diplomacy. The political economy approach helped to study the relationship between political and economic interests, as well as to investigate, how a state's economic interests affect its diplomatic initiatives and agreements. This made it possible to identify the main trends in the issues under study and to outline new proposals and hypotheses for further research in the context of Ukraine's European integration course.

The analytical method made it possible to break down complex problems into smaller parts for further research on current opportunities and threats to national economic security associated with the globalisation of the world economic system. The main data for the analysis were statistical indicators, in particular, the data from the Official website of the Office of the President of Ukraine (2020), Top 50 main exporters of Ukraine 2022 (2023), and the Official website of the State Statistics Service of Ukraine (2024). All these sources made it possible to understand the dynamics of Ukrainian economic and diplomatic work in the context of addressing the country's competitiveness, to identify opportunities and prospects for using economic diplomacy tools to develop the state's foreign economic activity. The statistical and graphical methods were used to empirically assess the status and identify structural changes in the foreign economic activity of the state under the influence of the transformation of the world order, and the extrapolation method was used to identify relatively new directions and aspects of economic and diplomatic efforts in the system of ensuring national competitiveness and national security.

Results and Discussion

In modern globalised world, in the context of the growing number of actors on the world stage, namely states, transnational companies (TNCs), international organisations, economic aspects play an increasingly important role in political affairs, leading to a shift in problem-solving methods from "immediate response" to "preventive response". Geo-economics was replacing geopolitics as the key goal of the main actors in the international arena, while economic power was becoming crucial in determining the rank of states in the world system.

From the point of view of public policy, economic factors were quite important, as they had a significant impact on foreign policy. Therefore, based on the importance of economic issues in a state's foreign policy, it can be concluded that in 2024 there was a correlation between traditional and economic diplomacy in international relations. It worth emphasising that economic diplomacy explored international economic issues to improve welfare and was key for most states. It most fully described the political and economic relationship in international activity, although in fact the interaction of economics and politics could not always be called economic diplomacy. Thus, economic diplomacy was a fairly natural process in international relations and the result of the ever-increasing role and importance of economic factors.

On the one hand, economic diplomacy had features inherent in commercial activities (e.g., digital calculations and analytical assessments, construction of econometric models that allow for a comprehensive assessment of the consequences of the measures under discussion), and on the other hand, it had features characteristic of traditional diplomacy, the effectiveness of which depended on an active position and flexibility in negotiations. This led to the conclusion that economic diplomacy is the art of maximising the benefits of international economic cooperation at minimum cost. The theory distinguished three stages of economic diplomacy development in the structure of a country's FEA (Fig. 1). It was also important to note that the beginning of the 20th century was characterised by the formation of a new quality of economic diplomacy. The economic component of the international community only in the period of 1970-1990 created conditions for the progressive acceleration of the global economic process: from direct service of current and partially prospective interests of national trade and other business sectors, to management of these processes at the national level, and through cooperation mechanisms at the international and global levels. Thus, the institution of diplomacy with economic goals represented the collected economic achievements by diplomatic means, regardless

of whether economic levers were used to achieve them (Hrushchynska, 2017). Diplomacy, as an integral part of foreign policy, was capable of using a number of methods and tools to achieve its goals (Fig. 2).

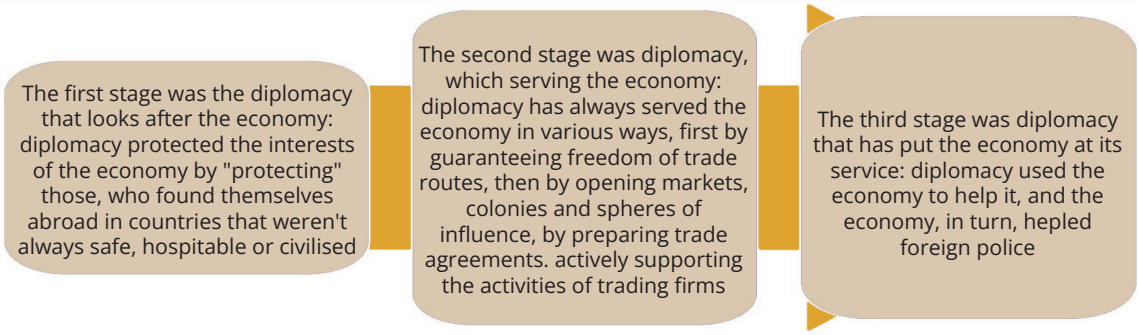

Figure 1. *Stages of development of economic diplomacy in the structure of foreign trade*
Source: *developed by the authors*

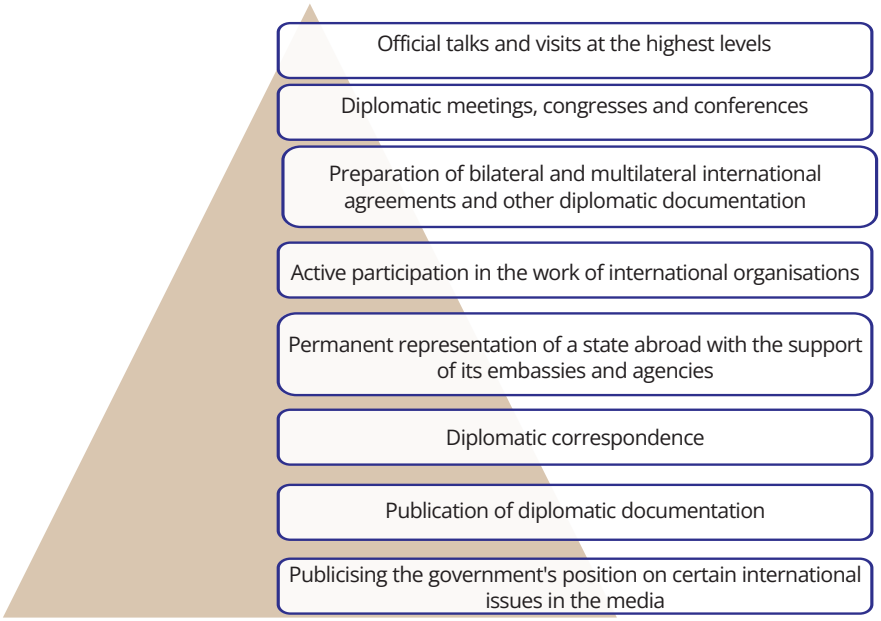

Figure 2. *Methods and tools of economic diplomacy*
Source: *developed by the authors based on Diplomatic Academy under the Ministry of Foreign Affairs of Ukraine (2020)*

Many factors contribute to the growing role of economic diplomacy in the modern system of foreign economic activity (Fedotova, 2019):

1. Internationalisation in all its manifestations and the growing interdependence of the world economic system, which can be traced at two levels global and regional.

2. Rapid expansion of the market relations zone, openness of national economies and their cooperation through trade and investment.

3. In the world economy, globalisation strengthens the role of economic diplomacy, combining the process of deepening the internationalisation of productive forces with the simultaneous attempts of transnational corporations to direct this process to achieve their own goals.

4. Foreign investments contribute to the development of international cooperation and cooperation with international organisations. This reduces the tendency for countries to become economically closed, and then openness of foreign activity becomes the norm.

5. The introduction of innovations in the economic sphere of the state and external openness contribute to the formation of a positive image of the state.

The institutional mechanism of economic diplomacy is a system of authorities for lobbying national economic interests in the international arena, state, semi-state and non-governmental organisations authorised to represent and promote the national interests of the state (Dedelyuk, 2017). Since economic diplomacy is a separate component of the system of international relations, specific standards and methods of economic diplomacy were used to ensure the international competitiveness of states as participants in this system. To increase the efficiency of economic diplomacy actors, clear rules have been defined that cover the principles of

cooperation, norms of behaviour, regulations, restrictions, sanctions, proactive measures, incentives, and levels of responsibility. These rules were enshrined in a number of international legal documents, including acts of the UN and its structural subdivisions, documents of international organisations, agreements between states and international organisations, as well as in the legal acts of states regulating the activities of diplomatic missions of Ukraine and other countries.

It is important to note that the status of economic diplomacy in the system of state functions was constantly growing, the list of functions was expanding, and the quality of work and professional staffing were improving. Such institutions were led by managers, who had unquestionable experience in diplomatic work and business management, and who had a good understanding of the goals, national objectives and role of business entities. Diplomats bear a key responsibility for the successful implementation of the state's economic strategy, as they effectively protect the interests of the country and its entrepreneurs on the global economic stage (Hrushchynska, 2017).

In modern environment, globalisation was facilitating a new stage in the development of the global economy, in which international economic relations were an important prerequisite for civilised cooperation between countries, but economic globalisation was a complex process. On the one hand, globalisation facilitated the integration of national economies, which makes it possible to increase their efficiency, accelerate market reforms and introduce new opportunities. At the same time, globalisation significantly limited the freedom of choice in implementing economic policy. National states were losing the ability to make full use of macroeconomic instruments such as export subsidies, import barriers, exchange rate regulation or central bank refinancing rates. In the context of the growing interdependence of national economies, states were forced to act within the established rules, taking into account the interests of other countries that may be affected by their economic decisions (Novakova & Pashyna, 2017).

The place and role of a state in the system of international economic relations depends on, how it was perceived by the global community. The potential of a particular country to participate in solving global problems, the competitiveness of the national economy, and investment attractiveness all form the international impression of the state. From the perspective of improving the country's competitiveness, the following elements of foreign policy can be distinguished, and the role and importance of economic diplomacy can be traced (Fig. 3).

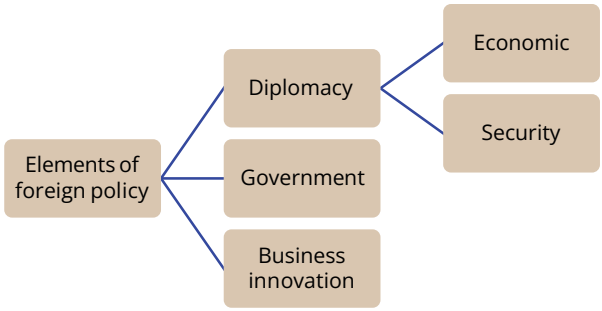

Figure 3. *Elements of foreign policy to improve the country's competitiveness*
Source: *developed by the authors based on E.I. Voinova (2018)*

Economic diplomacy, with its means and tools, as well as competitiveness, were integral in nature, as these areas were closely interconnected and require the combined efforts of all levels of government from central to local and the most efficient use of available state resources. One of the aspects of addressing these issues was political and diplomatic support for foreign economic activity of Ukrainian producers and exporters, in particular, facilitating their access to global markets for goods and resources, and increasing national competitiveness. Such functions were mostly assigned to economic units at diplomatic missions in host countries. As noted by V. Rokocha & O. Horbachuk (2019), depending on the situation, such actions may involve all official-level personnel: top government officials, ministries and institutions, as well as the unofficial level, which may be represented by the media, the diaspora, NGOs working together with Ukrainian economists, businessmen and lawyers. The effectiveness of such work depends on the coordinated actions of these levels of economic diplomacy.

The next aspect in the context of achieving the main objectives of economic diplomacy was a balanced, carefully planned and scientifically sound negotiation process at the highest level. Such negotiations can be conducted at both bilateral and multilateral levels. It is important to choose a negotiation strategy, which was a fundamental part of global diplomatic activity and a rational way to protect the national interests of each sovereign state. Diplomats and government officials at various levels of small and medium-sized countries directly involved in negotiations with foreign partners need to implement the best examples of such strategies, especially in relations with large countries and

powerful intergovernmental organisations in order to achieve economic security of the state (Vyhovska, 2023).

The study of economic security was driven by the need to examine events such as global economic crises, military conflicts and geopolitical instability, cyber threats, socio-economic inequality, assess the evident changes in the evolution of threats to economic security, and develop a coherent, consistent vision of the future. The variety of meanings that describe this concept was often the result of an understanding of contemporary reality rather than research in economic science. Reality showed that all people, sectors of the economy, states, and regions want to operate in a secure environment. People, who feel the lack of basic security in their families, at work, in the community, in their state, become socially irresponsible.

According to the Decree of the President of Ukraine No. 347/2021 (2021), the essence of national economic security (Fig. 4) was the ability of the country's economy to ensure sovereign development, maintain the stability of society and its institutions, and build sufficient defence capabilities, even in the face of adverse challenges and scenarios. This also included the ability of the Ukrainian state to protect its economic interests from internal and external threats. A key condition for achieving the highest level of economic security is Ukraine's transition to an intellectual and innovative development path.

Figure 4. *Place of national economic security in the hierarchy of economic security levels*
Source: *developed by the authors based on H.A. Ivashchenko (2017)*

One of the priority tools for ensuring economic security was economic diplomacy, as it was a factor that directly affects the realisation of national interests. Priority areas of economic diplomacy included export promotion through market diversification and attracting investment in strategic sectors of the economy.

Economic security was a guarantee of a country's independence, a state of stability and efficiency of society, and therefore economic security was one of the most important national priorities in many countries. After the Cold War, economic security changed its focus from geopolitical to geo-economic, from military superpower to economic superpower, from political and ideological competition to economic competition. John Stremlau, Doctor of Economic Sciences, Vice President of the Carter Center's Peace Program, noted in the early 1990s that "we are entering an era, where foreign policy and economic security are increasingly intertwined, and economic diplomacy is essential to addressing the challenges of our era" (Munteanu, 2015).

Although economic diplomacy as a direction of foreign policy activity has a long history, the concept of "economic diplomacy" has recently become part of the categorical apparatus of such sciences as international law and related disciplines. Many different definitions of this term can be found in scientific research. Most of them, presented in the works of foreign authors, cover the following aspects: facilitating access of national producers to foreign markets; attracting foreign direct investment into the national economy; influencing the formation of international rules to take into account national economic interests (Imbert, 2017).

Economic diplomacy was an integral part of the state's foreign policy activity, which was closely linked to the security sector, as its effectiveness affects the level of economic security of the country and the realisation of its national economic interests (Fig. 5). O.O. Petryshyn *et al.* (2023) noted that not only the foreign policy, but also the security vector determined the goals and objectives of economic diplomacy, as well as the set of forms, means and methods that it used to implement foreign economic and security policy.

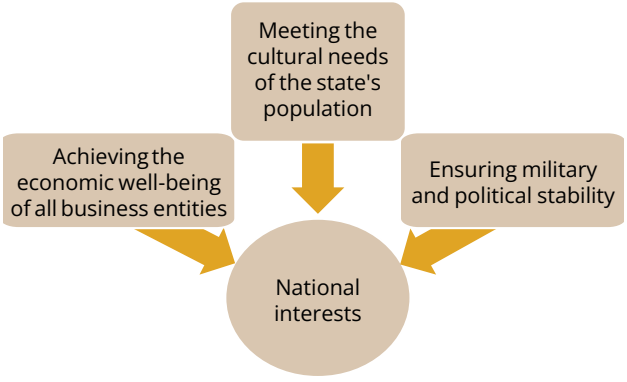

Figure 5. *Components of the state's national interests*
Source: *developed by the authors based on D. Palamarchuk (2020)*

It was worth noting that the main components of the national interests of the state determined the priorities of the country's development, its internal and foreign policy, as well as its overall strategic goals. The constituent elements that affected the economic security of the

state had a number of characteristics, namely, the economic well-being of all business entities involved ensuring economic independence through the development of a self-sufficient national economy, the development of education, healthcare and social security, strengthening competitive positions in global markets, and energy security. The cultural component took into account the preservation of historical and cultural values, raising the level of knowledge and competence of citizens, and supporting language, culture and traditions. Military and political stability meant protecting the country from external and internal threats, democratic development and state sovereignty, territorial integrity and military power. Each component was important for the stability and development of the state, and they were interconnected and complementary. Thus, the national interest was a generalisation of the interests of all members of a civilised society and included the economic national interest. In practice, national interests can be classified according to specific features (Fig. 6).

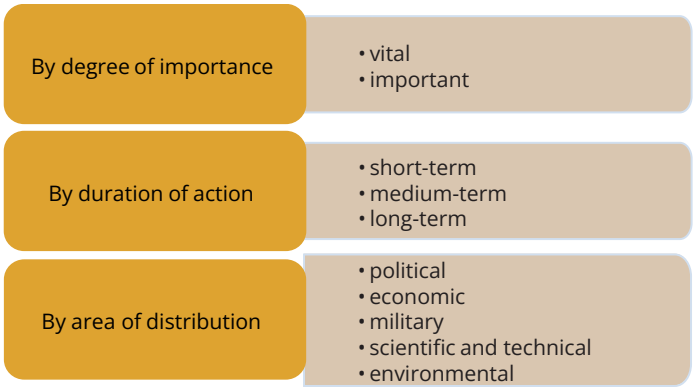

Figure 6. *Classification of national interests*
Source: *developed by the authors based on O. Mateta (2020)*

Economic interests in the structure of national interests constituted the economic component, which included a set of interests of business entities (national companies) in all the diversity of their interrelationships. N.S. Ivanova (2020) noted that economic security was a rather complex multifactorial concept that characterises the ability of the national economy to grow economically in order to meet the needs of the population and the state at a certain level; to counteract the destabilising effects of factors that pose a threat to the sustainable balanced development of the state; to ensure the competitiveness of the national economy in the world economic system.

According to the Decree of the President of Ukraine No. 347/2021 (2021), the economic security of Ukraine was a complex system, the structure of which was formed by such types of security as: financial and economic security; production security; foreign economic security; investment and innovation security; macroeconomic security. This approach determined the following tasks in the field of economic security: ensuring resilience against external and internal challenges and threats to the national economic interests of the state and the interests of its citizens; preserving and developing the country's economic power, taking into account the human-centred approach; guaranteeing national economic independence and the ability to protect national economic interests, including in the high-tech sector (Decree of the President of Ukraine No. 722/2019, 2019).

Most of the problems that Ukraine has faced since joining the World Trade Organisation (WTO) existed before, due to the inconsistency of internal and global economic development trends, the lack of modern high-tech infrastructure and market investment, and the inability and unwillingness of the national economy to integrate into the global economy. There were also other factors, such as the reform of the national public administration system. However, after Ukraine joined the WTO, these economic problems and risks became more significant. It is worth highlighting the key points of the consequences of this process. The first was the minimisation of protection of Ukrainian producers from competition from foreign companies in the internal market, reduction of tariffs, introduction of a moratorium on anti-dumping procedures and reduction of state budget revenues due to the reduction of import duties.

These problems were most prevalent in developing economies. However, certain problems still need to be addressed, such as the problems of integration with non-WTO countries, imports of outdated technologies that were no longer competitive or efficient in the countries of origin compared to the latest technologies, and the inability of the state to guarantee equal economic freedoms and rights to all economic entities in their financial and economic activities, including foreign investors. As for the Ukrainian economy, there may be a lack of a stable and unified strategy for economic and political development, "eternal reforms", a decline in production and demand for Ukrainian products on the world market, the decline of uncompetitive Ukrainian industries and business entities, a significant

increase in low-quality imported goods and counterfeit products on the national market, the inability of the authorities to create a favourable investment climate in the internal market due to economic and political instability. The structure of exports remained heavily weighted towards raw materials, which, in response to the economic crisis, led to a significant drop in demand for foreign raw materials and a negative trade balance. The liberalisation of its trade regime has resulted in limited ability of the state to regulate its foreign economic activity. Ukraine's main trading partners in 2023 were shown in Figure 7.

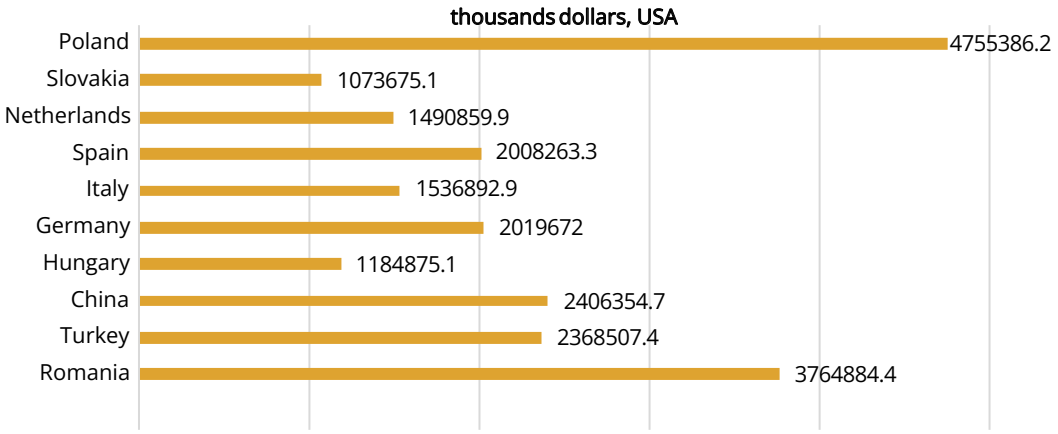

Figure 7. *Trade partners of Ukraine in 2023*
Source: *developed by the authors based on Top 50 main exporters of Ukraine 2022 (2023)*

It is worth noting that 2022 was a year of war, which posed complex challenges for business entities and required a quick response to the situation. However, businesses, having recovered from the stress of the invasion, began to resume exports in early April 2022 under new security and logistical conditions. Starting in August 2022, the Black Sea Grain Initiative was implemented, making it possible to restore more than half of exports. As internal demand declined, companies that had always focused only on the internal Ukrainian market began to look at the foreign market.

The foreign economic activity of enterprises and Ukrainian business structures should actively participate in the socio-economic development of the country and contribute to the enhancement of its international image. In this case, the integration of the national economy into the international economic system implied active positioning in modern scientific and technical cooperation and international division of labour, world trade and financial cooperation on the world stage with international partners on mutually beneficial terms. The key issue has always been the protection of own national economic interests. Such goals can be achieved with the support of a number of factors of managerial, organisational, operational, legal and financial origin. In such circumstances, an important place was given to new non-traditional instruments, methods of support and organisation of foreign economic activity, in particular through the full use of commercial diplomacy. In this context, Ukraine has significant untapped potential in international cooperation.

Since 2020, the dynamics of Ukraine's foreign economic activity has demonstrated the formation of new trends in foreign trade operations, as well as the emergence of issues related to ensuring stable positions in international markets. The regulation of foreign economic activity in Ukraine was carried out by both state authorities and non-state economic management structures, as well as by foreign economic operators themselves. The President of Ukraine, having the most important legal powers, played a key role in regulating economic processes in the country. Therefore, in accordance with the Basic Law of Ukraine, the President of Ukraine outlined the main vectors of foreign policy, in particular, economic policy, influenced the selection and location of personnel, and the formation of management structures in this area of activity (Platonova, 2020). It is worth noting that the formation and development of foreign economic activity took place within the institutional environment, which included a set of institutions and organisational and economic instruments aimed at creating conditions for the implementation of this type of activity.

The modern significance of foreign economic relations lay in their ability to help balance socio-economic development both at the level of the country and individual business entities. It is important to effectively balance exports and imports of goods. It is worth noting that balanced exports and imports may not always guarantee the effect of a foreign economic transaction, at least for one party. The balance of exports and imports in terms of currency for the partner countries does not exclude the possibility that one will make more profit and the other less. In such situations, it was advisable to use commercial diplomacy tools that support cooperation between partner countries and their business entities, based on mutual interests and maximum

consideration of the interests of the countries participating in foreign economic relations.

Ukraine's interest in foreign trade relations with partner countries should be characterised through the prism of the geographical structure of exports and imports. The main indicators of dynamics by regions of the world in the period from 1996 to 2023 were shown in Table 1. Russia's full-scale invasion of Ukraine in 2022 led to greater tensions in the financial market and higher prices for all types of goods and economic uncertainty, which led to an economic collapse. According to the Official website of the National Bank of Ukraine (2023), the main internal factor affecting the functioning of the Ukrainian economic system was the growing uncertainty about the scope, scale and duration of global economic turmoil caused by Russia's war against Ukraine. The armed aggression led to the largest economic decline since Ukraine's independence (1991-2024) (Rosola *et al.*, 2023).

Table 1. *The structure of Ukraine's international trade by geography, mln USD*

Indicators	1996	2006	2012	2016	2021	2023
Exports (total):	14400.8	38368	68830.4	36361.7	68072.3	60205.8
Europe	3456.9	12625.5	17424	13790.1	34213.6	24889.8
Asia	2894.2	8446.2	17681.1	11796.3	24762.1	8811.4
Africa	209.3	2373.7	5638.2	3865.1	5626.8	1677.9
America	598.3	2550.9	2607.7	735.2	3258.5	754.3
Australia and Oceania	20.1	17.9	50.9	18.3	73.9	21.3
Imports (total):	17603.4	45038.6	84717.6	39249.8	72843.1	61866.1
Europe	4655.6	16804.2	27569.6	18470.2	44327.7	35384.1
Asia	672.6	6143.7	17140.5	8920.5	22244.6	23296.9
Africa	141.5	413	851.3	553.9	1213.1	713.9
America	931	1465.3	4446.7	2594.8	4833.1	4046.5
Australia and Oceania	24.3	99.5	195.7	120.6	178.1	102.1

Source: *developed by the authors based on O. Zelinska (2024)*

Russia's full-scale military invasion of Ukraine has forced the international community to take appropriate response measures, including not only the use of economic and diplomatic means, such as financial and humanitarian aid to Ukraine as a victim, but also the development and implementation of a package of economic sanctions against the aggressor. All civilised countries had demonstrated the importance of applying the most effective methods of pressure on the aggressor state and its satellites that violate the basic principles of the international legal order. From a conceptual point of view, sanctions, as the main tool of economic diplomacy, perform one of three main functions: they send a clear signal to the aggressor that its international partners will not tolerate its actions; they have a deterrent effect, making it difficult for the aggressor state to achieve its goals; they force the aggressor to take concrete steps, such as a ceasefire and withdrawal of troops (Sharov, 2019).

Thus, in order to develop Ukraine's multilateral cooperation with international governmental and non-governmental organisations and countries of the international community, in particular to address military issues, each state needs a permanent representative abroad. According to official data published as of 17 March 2023, there were more than 90 diplomatic missions abroad, while as of 2024, Ukraine has no ambassador in 106 countries. It is worth noting that not all countries need diplomatic relations with Ukraine, as they have been severed with some states, while in others, the level of diplomatic missions was lower than that of embassies. For example, in some European countries, such as Belgium, Armenia, the Czech Republic, Georgia, Liechtenstein, Luxembourg, the Netherlands, Norway, Hungary and the Czech Republic, Ukraine has no ambassadors, but was represented by a chargé d'affaires. In Asia and Oceania, Ukraine has no ambassador in Afghanistan, Bangladesh, China, Bangladesh, India, Kazakhstan, Malaysia, Maldives, Philippines, Sri Lanka, Thailand, and Yemen. Ukraine has the worst diplomatic ties with African countries, and the President of Ukraine has set a goal of renewing relations with African states by 2023, identifying ten countries, where embassies will be opened. In the Middle East, Ukraine has no ambassadors in Iraq, Iran, Lebanon, and Oman. All countries in North America have Ukrainian ambassadors, while in South America there are no ambassadors in Bolivia, Brazil, Ecuador, Colombia, Paraguay, Chile, and Uruguay. Ukraine does not maintain diplomatic relations with Russia because of the war (In which countries does Ukraine not have an ambassador, 2023).

Economic issues have always been a key pillar of the European agenda, from its inception, in its internal dimension as well as in its external dimension since the origins of the European Economic Community, with the creation of the European single market and the adoption of a common external tariff and policy. From the earliest stages, joint industrial projects were adopted to compete on the global stage and to protect conscious European economic interests. However, the EU's economic diplomacy, despite the general principles and rules common to its member states, has its own

characteristics and specific features that should be taken into account, when implementing Ukraine's European integration aspirations.

A study of the content, functions, general characteristics, strategic goals and other aspects of the commercial diplomacy tools of Central and Western Europe has shown that the structure of the EU economic diplomacy model should include not only traditional elements, but also a classification of categories, areas of competence and levels of the process (Flissak, 2016). The author also noted that this was important given that the Ukrainian state was working on a strategic geopolitical vector of its development, namely, to become part of the democratic world, as a result, to establish high democratic principles and standards, and to promote democratic values in the context of strengthening its position and status as a subject (not an object) in geopolitics. In March 2019, the Constitution of Ukraine enshrined the European integration course, European identity, and determined the irreversibility of the civilisational choice of Ukraine and the Ukrainian people, as well as outlined the strategic course of the state to become a full member of the EU and NATO (Law of Ukraine No. 2680-VIII, 2019; Official website of the Office of the President of Ukraine, 2020)

With the start of Russia's full-scale military invasion in 2022, Ukraine set new goals in its relations with the EU to move closer to its key strategic objective, namely to receive a clear signal on its EU membership prospects. An important signal in this process was the EU Council meeting and the official statement of 11 March 2022, which stated that the EU Council had requested the European Commission to present its opinion on the EU accession applications of Georgia, Modova and Ukraine. As a result of this statement, new strategic goals were set for the "fast-track procedure" of Ukraine's integration into the EU. This refered to the procedure under, which the EU institutions will consider Ukraine's application on an expedited basis in order to grant Ukraine the status of a candidate country for EU membership in the near future with gradual steps towards the single European space (Statement by the EU Heads of State and Government at the Versailles..., 2022). In 2025, the agenda was constantly focused on bringing national legislation in line with the European legal framework, deepening the integration of national companies into the European market, introducing a visa-free regime and further sectoral integration. These measures will contribute to Ukraine's successful movement along the European path, implementation of the basic reforms envisaged by the Association Agreement between Ukraine, of the one part, and the European Union, the European Atomic Energy Community and their member states, of the other part No. 984_011 (2023), and implementation of the entire package of recommendations of the European Commission, which was a prerequisite for the start of negotiations on Ukraine's accession to the EU.

A number of obstacles impede the implementation of full-fledged diplomatic work, in particular in the field of economic diplomacy. The main obstacle in Ukraine was the insufficient pace of reforms and the unsatisfactory fight against corruption. Other negative factors included Russia's large-scale aggression and the unwillingness of EU member states to further integrate Ukraine. This situation created preconditions for Ukraine to remain a potential supplier of raw materials and cheap labour. This situation was not fatal, but, given the goals of European integration enshrined in the Constitution, it gave Ukraine a real chance to take its rightful place in the European economic system. Ukraine's successful integration into the European community, in terms of economic integration, was possible only if a set of actions is implemented, as shown in Figure 8.

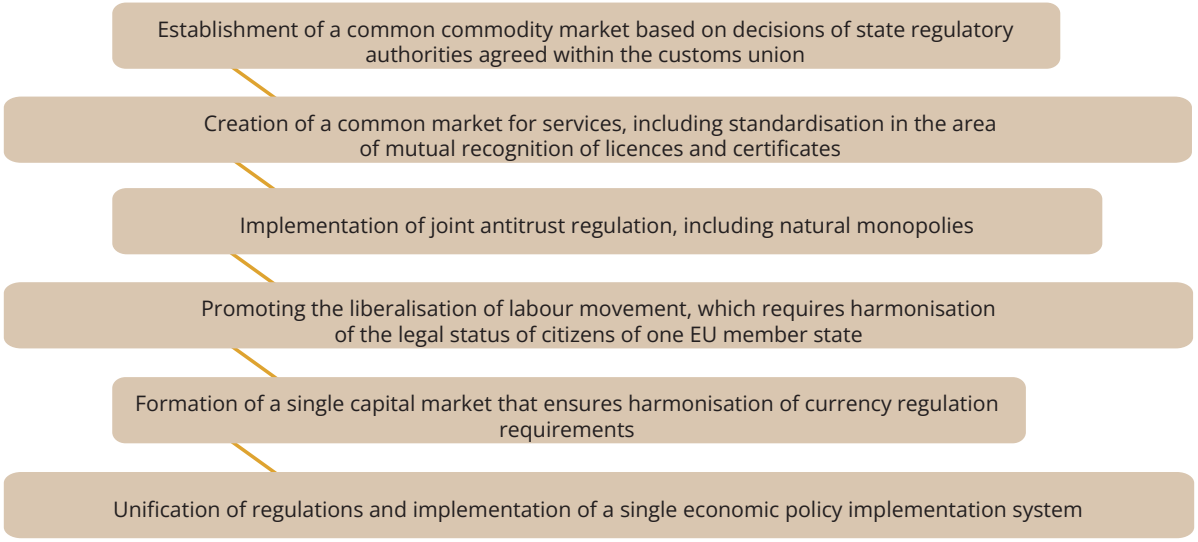

Figure 8. *Economic and diplomatic directions of Ukraine's activities to implement its european integration course*
Source: *developed by the authors based on M. Pashkov et al. (2022)*

The state of the market economy and its compatibility with Ukrainian realities and the principles of the EU economic system go beyond the scope of Ukraine's relations with the EU. First of all, it is worth considering the role of the state in economic processes. International experience has shown that this role cannot be replaced in the post-Soviet space by traditional direct economic administration and protection measures or complete non-interference by the state. All countries of the world were searching for a "golden mean", as evidenced by the growth of protectionism and economic nationalism (Sharov, 2019).

In the context of long-term economic policy, the competitiveness of the Ukrainian economy can be seen as the ability of Ukraine to produce goods and services in a free market that meet the requirements of international markets, while increasing the real incomes of its citizens. In general, competitiveness was defined as the ability of a country to create both internal and external conditions that allow businesses to produce products that can compete in global markets. Increased competition in international markets makes countries, including Ukraine, constantly look for new sales opportunities, improve equipment and technologies to produce quality goods, which allowed them to increase competitiveness and ensure economic growth.

In 2024, Ukrainian diplomacy was also at the epicentre of accumulating financial and economic resources to counter military aggression. Constructive interaction between countries required an awareness of global interdependence, existing threats and potential risks, the manifestations of which could either destroy the achievements of civilisation or promote peace, humanity, democracy and freedom.

In the context of addressing the issue of the impact of economic diplomacy on increasing the country's competitiveness, it was necessary: first, to determine the place and role of economic diplomacy in the system of ensuring the implementation of Ukraine's competitive advantages in world markets; second, to clarify the need to realise the expediency of applying modern mechanisms of economic diplomacy at the level of competent state authorities, which were entrusted with the relevant powers to influence the further development of foreign economic activity of both the state as a whole and its individual business entities; third, to disseminate and popularise this type of activity in the Ukrainian business environment in order to adequately perceive by all members of society the essence and potential opportunities of diplomatic support for business entities, as well as to establish close multilateral ties between business and authorised state institutions (Fig. 9).

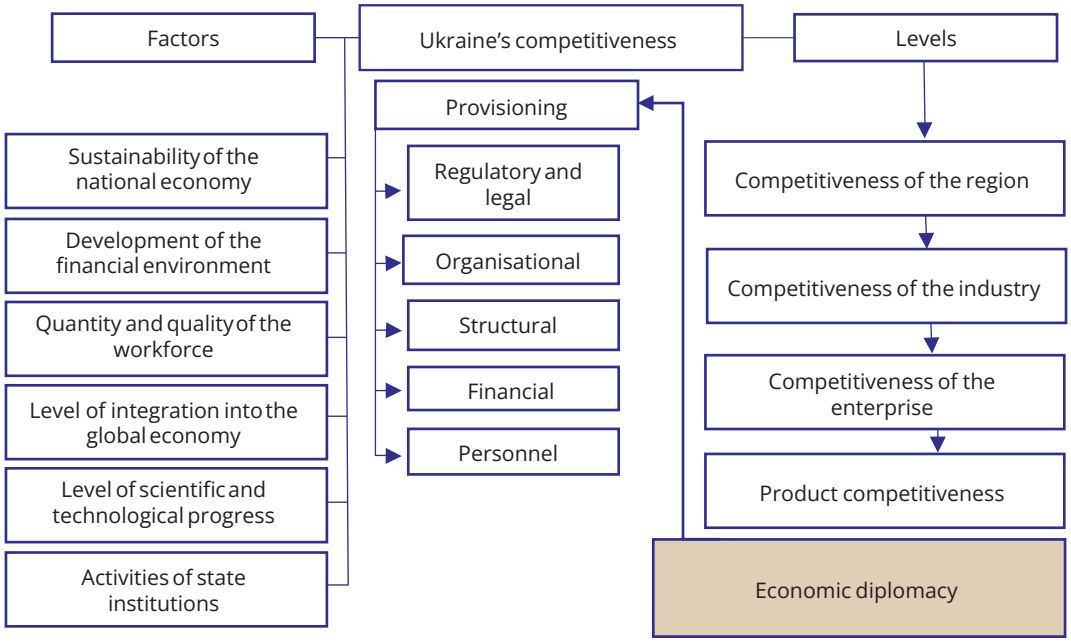

Figure 9. *The place of economic diplomacy in the system of ensuring Ukraine's competitiveness*
Source: developed by the authors

As shown in Figure 9, economic diplomacy was a key tool in the modern system of international economic relations, aimed at protecting the economic interests of the state, contributing to the sustainability of the national economy, attracting investment, developing the financial sector, promoting exports and strengthening the country's position in the global market. The role of economic diplomacy was important for Ukraine, which sought to strengthen its competitiveness in the global environment. Ukraine's economic diplomacy was a key component in ensuring its competitiveness in the international arena. Not only does it contributed to

economic growth, but it also helped to build a positive image of the country, attract investment, promote innovation and expand markets for national businesses. Effective economic diplomacy was one of the most important tools for Ukraine's integration into the global economic system.

Conclusions

The use of economic diplomacy tools in Ukraine is important as it will facilitate investment and trade activity of national enterprises trying to enter the markets of other countries. Economic diplomacy in modern realities was an effective mechanism for improving international partnership and developing public-private partnerships to achieve socio-economic development and growth, stimulate exports of goods and services to international markets and diversify export activities, develop a positive investment reputation for the country, and improve its tourist attractiveness. Therefore, developing a strategy to improve Ukraine's competitiveness, including economic diplomacy tools, is important because it will contribute to the development of the Ukrainian economy, including strengthening trade relations, attracting foreign direct investment and creating new jobs.

Improving the investment climate is one of the key ways to enhance Ukraine's prestige and competitiveness. Thus, the Ukrainian government should implement reforms aimed at making it easier to do business and ensuring the stability of the political and legal system. This must include simplifying business registration procedures, reducing bureaucratic barriers and protecting property rights. Studies had shown that comprehensive measures and active work of Ukrainian diplomatic services were needed to improve national competitiveness and create a positive image of Ukraine in the context of trade and economic relations with the EU. Improving the investment environment, actively promoting a positive image, supporting the development of trade relations with the EU, and implementing joint projects can help strengthen Ukraine's position in global markets and ensure sustainable economic growth.

Prospects for further research are to assess the impact of economic diplomacy tools on achieving the goals of increasing the competitiveness of the national economy. In the future, it is necessary to determine the role of economic and public diplomacy in Ukraine's economic growth and competitiveness in the post-war reconstruction period.

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None.

Conflict of Interest

None.

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Економічна дипломатія в системі забезпечення зовнішньоекономічної діяльності України

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Анотація. Міжнародне середовище характеризується динамічним характером, стійкою тенденцією до кількісного зростання та якісного розвитку, у зв'язку з чим з'являється потреба більш обережного та виваженого підходу до вибору зовнішньоекономічної політики, враховуючи складність структури світового господарства, системи міжнародних економічних відносин регулювання та управління. Метою статті було дослідження умов забезпечення зовнішньоекономічної діяльності України через вплив економічної дипломатії та визначення інструментів для відстоювання національних економічних інтересів країни на світовій арені. Методологічною базою дослідження став інструментарій історичного та логічного підходів, аналізу, статистичного та графічного методів. У статті було здійснено дослідження теоретико-концептуальних засад функціонування економічної дипломатії, а саме: охарактеризовано суть та значення економічної дипломатії в міжнародних економічних відносинах; досліджено економічну дипломатію як елемент системи управління зовнішньоекономічною діяльністю країни; окреслено механізм досягнення національної конкурентоспроможності засобами економічної дипломатії. Проведено аналіз українського досвіду функціонування механізму економічної дипломатії, зокрема: здійснено аналіз економічної дипломатії в системі національної економічної безпеки України, проведено аналіз інституційного забезпечення реалізації зовнішньоекономічного потенціалу України. Також здійснено розробку нової парадигми економічної дипломатії України для забезпечення конкурентних переваг: визначено головні перспективи економічної дипломатії в контексті євроінтеграційного курсу України, обґрунтовано можливість підвищення міжнародної конкурентоспроможності України через механізми економічної дипломатії. Практична цінність результатів дослідження полягає в тому, що сформульовані теоретичні положення, висновки та рекомендації можуть бути використані: у науково-дослідницькій сфері – для проведення подальших наукових досліджень питань стратегічних шляхів підвищення конкурентоспроможності національної економіки в сучасних умовах господарювання; у нормотворчій діяльності – для розроблення нормативно-правових актів і вдосконалення законодавства України у напрямку дипломатії в умовах динамічного розвитку міжнародного середовища; у навчальному процесі – під час підготовки підручників і навчально-методичних посібників з міжнародних економічних відносин

Ключові слова: комерційна дипломатія; економічна безпека; економічний інтерес; міжнародне співробітництво; глобалізація

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Integration of entrepreneurship and marketing research in modern business

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Abstract. Modern business involves running operations in line with contemporary changes and adapting accordingly. This study emphasised the importance of customer perspectives and needs, focusing on growth and sustainability amid competition. This article examined the role and impact of two key factors in business modernisation: entrepreneurship and market research. The research aimed to enhance understanding of modern business, the factors contributing to its evolution, and the significance of management and market research in benefiting companies. The application and importance of these two concepts in business promotion were explored. A survey was conducted both online and manually through Google Forms, employing a quantitative methodology. Data were collected from various demographic groups within the Kurdistan Region, covering different administrative positions and age groups ranging from under 25 to over 45. A total of 155 valid responses were obtained through simple random sampling. The data were analysed using the Statistical Package for the Social Sciences and examined through correlation and regression models. The findings indicated that both entrepreneurship and market research to be positively impact business. This suggested that Kurdish people recognise these two concepts as essential to business success. The research contributed novel insights in terms of topic focus and concept organisation, distinguishing it from previous studies and incorporating up-to-date information. Comparative analysis based on regional or economic indicators can provide a deeper understanding of how cultural and economic factors influence regional development and economic conditions

Keywords: business development; business organisation; market analysis; entrepreneurial development; regression

Introduction

Since the 1970s, business activity has grown dramatically. In the modern world, business plays a vital role across a wide range of industries, from small enterprises to large corporations, impacting economic growth, development, and society as a whole. Trade has driven an increase in products, services, capital, ideas, and skilled

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professionals globally, all with the aim of generating profit or driving societal change. Conversely, business is the coordinated effort of individuals to manufacture and provide goods and services to meet societal needs. A broad definition of business encompasses both for-profit and notforprofit organisations, such as hospitals, schools, and charities, as well as profit-driven businesses like corporations and banks. Enterprises operate across diverse sectors, including manufacturing, retail, finance, media, entertainment, transportation, and banking, as noted by D. Needle & J. Burns (2019) and N. Rollings (2021).

Businesses must adapt to their ever-changing environment to remain competitive. This requires many businesses and organisations to abandon outdated models and adopt new approaches. The business environment is often more important than the business itself. Traditional businesses cannot simply transform into modern businesses; they must implement varied management strategies to compete successfully in the marketplace. A business enters a complex environment, when it seeks to integrate into the contemporary economic landscape. According to M. Saunila (2016) and B. Kumar & A. Sharma (2022), modern business involved adapting to the current environment and implementing strategies for modernisation. These strategies included having a clear vision, adopting cutting-edge technologies, innovating, and reaching new customers through advanced competitive techniques.

Researcher S.A. Saeed (2017) noted that the modern world undergoes constant transitions, forcing institutions and corporations to meet ongoing performance demands, while simultaneously reducing costs and competing with emerging technologies. Entrepreneurship is a fundamental aspect of corporate organisations and a defining characteristic of modern business. D. Diandra & A. Azmy (2020) emphasised that if managerial expertise and entrepreneurial abilities were applied effectively to change and knowledge acquisition, it indicated that the firm was operating successfully. Although businesses constantly search for opportunities, the current business environment has made this even more pressing. Entrepreneurship serves as a means of discovering new prospects and markets, driving innovation within enterprises. L.E. Boone *et al.* (2019) pointed out that to capitalise on opportunities through creative thinking, modern business leaders must continuously identify gaps within their industry and the broader market.

S.A. Saeed & K.G. Aziz (2021) highlighted that organisational performance, alongside advancements in innovation, improved, when organisations adopted extensive technological implementation and demonstrated leadership in technical innovation. Entrepreneurship was a vital aspect of the business world. Businesses that encourage entrepreneurship were regarded as robust and proactive in driving change within their industry. However, the innovation process involved inherent risks and challenges. Thus, prudent entrepreneurs must have a plan in place to manage these risks effectively to prevent their business from failing instead of generating profit (Diandra & Azmy, 2020).

When conducted effectively, market research can significantly enhance business processes. Given the competitive nature of the business environment, every effort must be made to maximise business advantages. Conducting market research is among the most crucial aspects of business strategy, as it enables a deeper understanding of consumer behaviour. Without market research, businesses cannot operate effectively. Market research connects customers, buyers, and the general public with businesses by providing information that helps identify challenges and opportunities in marketing, develop and refine marketing strategies, and assess market performance. N.K. Malhotra *et al.* (2020) emphasised that customer needs were more easily met, and relationships with them were more effectively developed, when market research was employed to identify market shifts and the latest profitable consumer demands. It also helped identify opportunities to make more strategic decisions that enhance a company's competitive edge. This research aimed to establish the relationship between modern business practices, the techniques implemented, and the efficiency of business procedures in achieving the desired outcomes. One of the most important aspects of corporate success is entrepreneurship, which also drives innovation and cost control. It is an essential factor in helping modern organisations survive and thrive, particularly in a technologically advanced global environment. When executed efficiently, market research can assist businesses in understanding consumer demand and enhancing self-promotion, further reinforcing its necessity in business strategy. Consequently, a firm's performance depends on the interconnected roles of marketing research and entrepreneurship.

The study aimed to explore the potential for integrating marketing research into decision-making to enhance productivity in modern businesses. The hypotheses of the study were: H1 – entrepreneurship has a significant positive impact on modern business; H2 – marketing research has a significant positive impact on modern business; H3 – entrepreneurship and marketing research together have a significant positive impact on modern business.

Literature Review

Business is fundamental to both economic expansion and transformation. Apart from generating revenue and engaging in buying and selling, it creates employment, produces goods, and provides services. As a result, modernising and adapting to contemporary circumstances is crucial. In its modern form, businesses operate within an increasingly complex environment. Numerous elements, including market research and entrepreneurship, influence modern business. This study examined

the significance and influence of these two concepts on business, as well as the application of scholars' findings regarding the relevance of these connections and the potential effects that each may have.

Technological advancements and globalisation have transformed the world into a closely connected global community, marked by significant growth in international trade and competition. Participation in the global economy poses many substantial challenges for organisations and industries worldwide. Entrepreneurship, a powerful economic force throughout history, empowers individuals to identify opportunities in situations that others perceive as insurmountable barriers. It serves as a major driver of transformation across various societal sectors and is widely recognised as a key indicator of business success and resilience (Pahuja & Sanjeev, 2015).

Entrepreneurship was interpreted in multiple ways, with some considering it a strategy for establishing a prosperous enterprise, while others regard it as a means of enhancing one's skills and mindset. However, the primary objective of entrepreneurship was to provide employment opportunities and foster economic expansion (Hessels & Naudé, 2018). According to W.J. Chang & M. Wyszomirski (2015), successful entrepreneurship required human resources, such as skilled employees and teams, alongside a combination of technical skills, including task execution to ensure quality and efficiency in production, management skills for overseeing public works, effective leadership and management capabilities, strategic planning, decision-making, and resource allocation. The discipline of entrepreneurship operated independently of other fields of study, while also contributing to various disciplines.

Every company has a unique vision and mission and employs various strategies to accomplish these objectives. Documentation is an integral aspect of business operations and a fundamental component of corporate life. Entrepreneurship is a hallmark of a thriving business, demonstrating proactive management and continuous efforts towards improvement. It is an essential element of the business world that contributes to corporate success. H. Barot (2015) noted that success stems from entrepreneurship and that establishing a new company required individuals to adopt a new way of thinking. Despite varying perspectives, entrepreneurship was generally defined in a singular manner.

Marketing research, first introduced in 1879, has evolved significantly since then. It originally focused on sampling, data collection, and analytical methodologies, aimed at measuring marketing phenomena and consumer attributes. The 1970s and 1980s marked the "golden age of consumer research", characterised by the rise of scientific methods and computing power. In the late 1990s and early 2000s, researchers became increasingly sought after for data interpretation and strategy creation. Modern consumers exert significant influence over business strategies, and as A. Zielińska (2016) and J. Velilla (2018) have noted, businesses must continuously analyse customer preferences and traits to shape brand and product development. Market research played a crucial role in identifying marketing opportunities, generating strategic actions, evaluating performance, and understanding the marketing process. P. Zaborek (2015) pointed out that it served as a bridge between marketers, consumers, customers, and the public, facilitating data definition, planning, supervision, performance evaluation, and result communication. Additionally, it is a systematic process that identifies and defines marketing opportunities and challenges, monitors and assesses marketing performance and activities, and reports findings and their implications to management. The author also noted that marketing research comprises multiple interrelated and sequential phases, including defining a research topic, designing a research methodology, collecting, analysing, and interpreting data, and presenting a final report to decisionmakers.

According to S. Al-Fairuz (2021), marketing managers benefit from the ability to precisely identify and define marketing opportunities and challenges, understand markets and customers, develop competitive marketing plans and activities, and track marketing performance. Identifying competitors was essential across various business processes, depending on the type of organisation. These processes included acquiring supplies for products, marketing, product design, and conducting market research for new products or markets (Virtanen, 2022). Following this, businesses should compare their objectives, strategies, strengths, and weaknesses with those of competitors. They must also ensured that rivals do not gain a competitive advantage or capture market share (Hollensen, 2020).

The information gathered from market research can be applied in decision-making and may be conducted by the company's market research department or an external organisation. Marketing research assists organisations in introducing new products, determining which features to offer, and identifying the distribution, advertising, and pricing strategies that best support the product. The market mechanism for resource allocation integrates supply and demand, facilitated by marketing research. This helps businesses identify market opportunities and risks that may not to be immediately apparent, as noted by P. Zaborek (2015).

Many people associate the term "business" with earning money or purchasing and selling goods and services. The term was broad and encompassed various business ventures. In addition to producing goods and services that people use, businesses also provide employment. While some companies manufacture tangible products, others offer services. A country's economy was driven by business, as it provided, how the standard of living improves. Commercial activity was fundamentally based on transactions between buyers and sellers (Boone *et al.*, 2019).

The literature review highlighted the importance of entrepreneurship and marketing research in business success. Entrepreneurship mitigates risks and fosters innovation, enabling modern businesses to survive and expand in the global technological era. Marketing research helps businesses analyse and respond to customer demand, ensuring strategic planning and execution. Both entrepreneurship and marketing research are essential for modern business success.

Materials and Methods

The approach used in this study involved conducting design research to determine the independent variables (entrepreneurship and marketing research) and dependent variable (modern business). A study of the impact of entrepreneurship and marketing research on the private sector was conducted in the Kurdistan region of Iraq. To ensure accurate research results and evaluate the hypotheses of this study, two data collection methods were used. The first approach involved reviewing academic articles and books by other researchers focused on the same topic. The second approach employed a structured questionnaire, which was identified as the most suitable tool to achieve the study's objectives. The collected data were then analysed using statistical software (SPSS). This study explored the importance of integrating entrepreneurship and marketing research in modern businesses for growth and success. Successful businesses can meet customer demands, adapt to change, and grow faster. However, a lack of trust and understanding among business owners hinders their effective implementation. The research focused on residents of the Kurdistan region aged 18 to 50, including company employees and managers, as well as individuals in related sectors.

The target population comprised employees of modern businesses in the Kurdistan region. This study was not limited to a single business or organisation; these employees were not restricted to a particular management level. The sampling method was random, and the selection was based on employee accessibility across various roles. The research model, along with the defined research hypotheses, was presented in Figure 1.

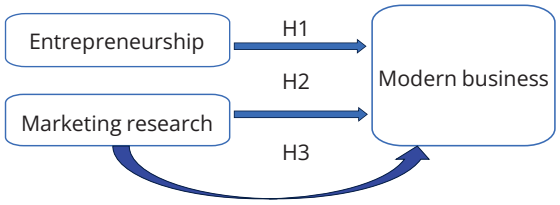

Figure 1. *Research model*
Source: *developed by the authors*

To achieve the objectives of the study and collect the data, the researcher designed a questionnaire. This consisted of a set of written questions that the staff of organisations were required to answer. The questionnaire included 21 statements categorised into four areas: entrepreneurship, marketing research, integration of entrepreneurial strategies, innovation, and market research in modern business, along with demographic information about the sample members (i.e. gender, age, level of education, and position) as shown in Table 1.

Table 1. *Structure and number of Google Form questions*

Number	Field	Number of statements
1	Entrepreneurship	7
2	Marketing research	7
3	Integration in modern business	7
4	Total	21

Source: *developed by the authors*

To obtain fundamental data from the participants, an organised questionnaire was used. The survey aimed to examine the role of entrepreneurship and marketing research in modern business, as well as gather demographic information from respondents, through 21 statements. It also employed random sampling (Table 2).

Table 2. *Google Form response scale*

Level	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Points	5	4	3	2	1

Source: *developed by the authors*

For the entrepreneurship section, responses were measured using a 5-point Likert rating scale, ranging from "strongly agree" (5) to "strongly disagree" (1). Higher scores indicated positive outcomes for subordinates, while lower scores reflected adverse consequences. The study was conducted following the standards set out in The Declaration of Helsinki (2013).

Results and Discussion

The results were obtained through a questionnaire, which enabled the collection of data via Google Forms, both physically and online. SPSS analysis was used to process the responses, which were organised into five tables to allow readers to easily understand the results and summarise the findings. Through these tables, the

data were analysed to comprehend the impact of entrepreneurship and market research on modern business. The questionnaire was initially expected to receive approximately 170 responses. However, due to concerns about the reliability of certain answers and instances of uncertainty, the final dataset was reduced to 155 valid responses.

The findings were also supported by similar research conducted by other scholars to examine the role of marketing research, entrepreneurship, and modern business success. It was found that firms must adapt to their changing environment, highlighting the importance of marketing research and entrepreneurship. Furthermore, performance measurement for innovation competence played a significant role in fostering innovation and business success in SMEs. The competitor analysis method, a crucial aspect of business strategy, was closely linked to marketing research and its function in identifying market opportunities and risks. By integrating these areas, this study provided insights into how marketing and entrepreneurship research affect current business performance and the role of these factors in achieving sustainable company growth and enhanced competitiveness. Table 3 presented the descriptive data of the participants in this research, categorised based on demographic questions.

Table 3. *Descriptive statistics for demographic question*

Variable	Category	No.	%
Gender	Male	74	47.7
	Female	81	52.3
Age	Bellow 25	69	44.5
	25-35	69	44.5
	36-45	14	0.9
	More than 45	3	1.9
Level of education	Below diploma	13	8.4
	Diploma	31	20.0
	Bachelor's	106	68.4
	Master's degree	4	2.6
	Doctorate	1	0.6
Position	Employee	116	74.8
	Manager	33	21.3
	General manager	6	3.9

Source: *developed by the authors*

In Table 3, the frequencies and proportions of responses were presented based on gender, age, level of education, and position. Regarding gender, the table showed that the majority of the participants had a relatively similar distribution, with female participants accounting for 57.3% and male participants for 47.7%. Additionally, the results indicated that 44.5% of the participants were aged below 25, while an equal proportion (44.5%) were aged 25-35. The age group 36-45 constituted 0.9% of the participants, while those aged over 45 accounted for 1.9% of the total. It was also evident that 68.4% of the participants held a bachelor's degree. Following this, 20% of participants held a diploma, 2.6% had a master's degree, 8.4% had below-diploma qualifications, and 0.6% had a doctorate. Furthermore, 74.8% of the participants held employee positions in organisations or modern businesses, while 21.3% were managers, and 3.9% were general managers. Table 4 presented the values of Cronbach's Alpha coefficient, which were calculated to assess the internal consistency of the measurement.

Table 4. *Reliability of measurements for all variables*

	Entrepreneurship	Marketing research	All independent variable	Modern business	Independent variable and dependent variable
Number of questions	7	7	14	7	21
Cronbach's Alpha	.724	.640	.788	.827	.864

Source: *developed by the authors*

Cronbach's Alpha coefficients for the study variables were presented in Table 4. These values indicate how internally consistent the items are, essentially revealing the extent to which a set of items was related. The factors examined included entrepreneurship, marketing research, all independent variables, and modern business. The Cronbach's Alpha coefficients for marketing research and entrepreneurship were 0.640 and 0.724, respectively. The items used to measure modern business demonstrated very high reliability, as evidenced by a Cronbach's Alpha coefficient of 0.827. The total set of 21 items exhibited a high level of reliability

in measuring marketing research, modern business, and entrepreneurship, as the overall Cronbach's Alpha value was 0.864. The findings, summarised in Table 5, revealed a positive correlation between the variables, with marketing research and entrepreneurship showing a correlation coefficient of 0.260.

Table 5. *Correlation matrix between independent variables (entrepreneurship, marketing research) and dependent variable (modern business)*

Correlations			
	Entrepreneurship	**Marketing research**	**Modern business**
Entrepreneurship	1	.545**	.519**
Marketing research	.545**	1	.573**
Modern business	.519**	.573**	1

Note: ***. – correlation is significant at the 0.01 level (2-tailed)*
Source: *developed by the authors*

The correlation coefficient, which ranged from 0.519 to 0.573, indicated an indication that entrepreneurship and modern business success were positively related. This means that as the level of entrepreneurship increases, the success of modern business organisations also increases proportionally. Greater organisational effectiveness was also associated with the use of efficient marketing research methods, highlighting the importance of understanding customer needs and making informed business decisions. The relationship between marketing research and entrepreneurship in enhancing company success was demonstrated by the statistical likelihood that firms engaging in entrepreneurial activities also conduct marketing research. All correlations had $p < 0.01$, demonstrating the reliability of the relationships between the variables examined. Table 6 summarised the results of Pearson's correlation coefficient tests, which indicated that the relationship between the dependent variable (modern business) and the independent variable (entrepreneurship) were moderately positive.

Table 6. *Simple regression between the independent variable (entrepreneurship) and the dependent variable (modern business)*

	Coefficients			**Model summary**		**ANOVA**	
	B	T	P- value	R	R-square	F	P-value
(Constant)	1.929	6.991	.000	.519[a]	.270	54.549	.000[b]
Entrepreneurship	.541	7.520	.000				

Source: *developed by the authors*

When examining the role of entrepreneurship in modern business, it is essential to understand its predictive potential. Table 6 also included the ANOVA results, which assess the extent to which the explanatory variable (entrepreneurship) accounts for variations in the response variable (modern business). Based on the findings, the model was deemed appropriate, with $F = 54.549$ and $p = 0.000$. Table 6 presented the results of the estimated of the constant, slope, calculated t-value, and coefficient of determination (R-square). The regression coefficient (B) for entrepreneurship was .541, meaning that a one-unit increase in entrepreneurship would lead to a .541 unit increase in modern business. This coefficient explained the proportion of variation in the dependent variable that can be attributed to the independent variable and was equal to the square of the multiple correlation coefficient. The R-square value (0.270) indicated that entrepreneurship accounts for 27% of the variation in modern business, while the remaining 73% can be attributed to other factors. The findings in Table 7 further demonstrated a moderately positive relationship between the dependent variable (modern business) and the independent variable (marketing research), as indicated by Pearson's correlation results.

Table 7. *Simple regression between the independent variable (marketing research) and dependent variable (modern business)*

	Coefficients			**Model summary**		**ANOVA**	
	B	T	P- value	R	R-square	F	P-value
(Constant)	1.696	6.356	.000	.573[a]	.329	74.981	.000[b]
Marketing research	.620	8.659	.000				

Source: *developed by the authors*

This study should focus on understanding key aspects such as the predictive criteria and the impact of marketing research on modern business. Table 8 also included the ANOVA results, which assessed the adequacy of the explanatory variable – marketing research – in explaining the response variable, modern business. The

findings indicated that the model was appropriate, as the F-value was 74.981, with a corresponding p-value of 0.000. The constant value was 32, while the slope value was 0.4, indicating that the slope of the line of best fit was 0.4. The t-value was 2.66, and the coefficient of determination was 0.219, rounded to 0.22 (R-square). The regression coefficient (B) for the marketing research variable was 0.620, meaning that each unit increase in marketing research corresponded to a .620 increase in modern business. R-square represented denoted the percentage of the independent variable's effect on the dependent variable and was defined as the coefficient of determination in this study. According to the Rsquare value (.329), 32.9% of the variation in entrepreneurship was associated with modern business, while the remaining variation was attributed to other factors. The results in Table 8 demonstrated that all independent variables had a relatively high level of significance concerning the dependent variable, with a Pearson correlation coefficient of .624.

Table 8. *Multiple regression between independent variables (entrepreneurship, marketing research) and the dependent variable (modern business)*

	Coefficients			Model summary		ANOVA	
	B	T	P- value	R	R-square	F	P-value
(Constant)	1.172	4.061	.000	.624[a]	.390	48.571	.000[b]
Entrepreneurship	.307	3.899	.000				
Marketing research	.446	5.469	.000				

Source: *developed by the authors*

To illustrate the overall predictive potential and impact of entrepreneurship and marketing on modern business, it was imperative to understand the meaning of these concepts and their interrelationship. Table 8 also presented the ANOVA results, which assessed the fitness of the proposed model using two independent variables – entrepreneurship and marketing research – and the dependent variable, modern business. At the 95% confidence level, the null hypothesis was rejected, indicating that the model was appropriate; the F-value was 48.571, and the p-value was 0.000. The constant and slope values were contained in the first column of Table 8, while the t-value and R-square appeared in the second column. The findings indicated that entrepreneurship had a significant effect, with a regression coefficient (B) of 0.307, suggesting that each unit increase in entrepreneurship resulted in a 0.307 increase in modern business, particularly through contemporary social media. Similarly, the regression coefficient (B) for marketing research was 0.446, meaning that an increase in marketing research was associated with a 0.446-unit increase in modern business, facilitated by current marketing research strategies. The coefficient of determination (R^2) showed that, collectively, entrepreneurship and marketing research accounted for 39% of the variance in modern businesses. The remaining variation was attributed to other external factors. Table 9 summarised the hypothesis test results, including the standardised beta coefficient and t-value at a significance level of 0.05.

Table 9. *Hypothesis test results*

No.	Hypothesis	Beta coefficient	t-value	Results
H1	Entrepreneurship and modern business	.307	3.899	Accept
H2	Marketing research and modern business	.446	5.469	Accept
H3	Entrepreneurship and marketing research on modern business	0.624	7.123	Accept

Source: *developed by the authors*

The data validated the theoretical basis that entrepreneurship (H1), marketing research capabilities (H2) and their combined influence (H3) contribute to positive outcomes in modern business. The results of the regression analysis demonstrated that entrepreneurship enhances modern business performance, as the regression coefficient (B) was 0.541. D. Diandra & A. Azmy (2020) supported these findings, showing that entrepreneurial initiatives drive enterprise adaptation and innovation within organisational structures.

X. Lu & J. Wang (2024) highlighted that innovation is crucial for businesses seeking new opportunities and sustainable development. It was important to note that businesses that implement innovations were more likely to attract interest from stakeholders; they also capitalised on environmental changes and work to further their development and, ultimately, their survival in the marketplace. Innovative actions reshaped the competitive landscape, enabling organisations to recognise the opportunities that arise from advancement (Szuper & Wołoszyn, 2020).

The results indicated that marketing research positively influences business profitability, with a regression coefficient (B) of 0.620. These findings were supported by N.K. Malhotra *et al.* (2020), established that marketing research serves the dual purpose of understanding client needs and facilitating informed business decisions. According to P. Zaborek (2015), organisations can

identify market opportunities and threats through marketing research, demonstrating that well-conducted research enhances corporate competitiveness. Modern organisations experience a significant impact from the combination of entrepreneurship and marketing research, as evidenced by a Pearson correlation value of 0.624. Higher corporate effectiveness arose from the strategic integration of these domains. According to A. Ali *et al.* (2020), market-driven entrepreneurship leveraged marketing and entrepreneurial approaches to seize profitable opportunities. Sustained growth and competitive advantage depend on this essential integration. The study confirmed findings that align with existing literature on the crucial role of marketing and entrepreneurial research in modern companies. F. Haines (2017) argued that entrepreneurship has a lasting transformative impact across economic and social sectors. Product development and market strategy formulation rely heavily on marketing research, according to both L. Melander (2020) and S. Hollensen (2020).

Organisations operate in a volatile and unpredictable environment as they undergo modernisation. It was critical to understand their nature and, accordingly, implement comprehensive strategies that incorporate dynamic developments. Modern businesses must respond swiftly to environmental changes, particularly in light of intense competition and rising consumer expectations (Piekarczyk, 2016). The modern corporate world was highly complex. Technological advancements, competitive pressures, and growing customer awareness have compelled businesses to operate differently than in the past. It was essential for companies to consider trends and environmental changes in their strategic planning. H. Cengiz (2020) emphasised that companies that closely monitor their external environment were better equipped to identify opportunities and risks. By doing so, they can develop strategic responses to capitalise on opportunities and mitigate risks.

Competition was inevitable in the corporate world, particularly given the highly competitive nature of modern business. It was essential to monitor consumer trends and anticipate potential changes to respond effectively. Businesses must also manage changes within the corporate environment. In modern dynamic business landscape, organisations must adapt rapidly, while maintaining a strong workforce. Managers must be adaptable, offering flexible working hours and locations. As noted by L.E. Boone *et al.* (2019), flexibility and mobility represented the largest demographic shifts in the workforce. To succeed, leaders must possess vision, market insight, critical thinking skills, and data analysis capabilities. Additionally, businesses must consider social issues and their responsibilities to investors, consumers, employees, and society.

T. Baker & F. Welter (2018) highlighted that, given the significance of entrepreneurship in the modern world, academics have sought to expand and deepen their understanding of the field. First and foremost, entrepreneurship was recognised as a fundamental strategy for reducing unemployment and increasing the number of entrepreneurs establishing new businesses. Because entrepreneurs develop and compete, they contribute to a nation's economic environment and help reduce unemployment in many countries. Given the importance of entrepreneurship, researchers have focused on this phenomenon and examined the factors that influence an individual's decision to become an entrepreneur (SendraPons *et al.*, 2021). A. Ali *et al.* (2020) explained that market-driven entrepreneurship integrated both marketing and entrepreneurial principles, focusing on market opportunities. Y.H. Al-Mamary & M. Alshallaqi (2022) stated that entrepreneurship involved taking risks, managing uncertainty and instability, and prioritising financial gains. O.J. Nwokebuife *et al.* (2021) noted that many individuals struggle to become successful entrepreneurs due to the inherent risks associated with the sector. Innovation is crucial for effective management processes, as it enables organisations to adapt and progress. Sustainable innovation is vital for industrial success and long-term growth. It supports the development of new strategies to enhance existing products or services, ensuring businesses' long-term viability and performance. Innovations are distinct from other concepts and can provide both short- and long-term benefits to a company. The principles of creativity involve generating and applying ideas, transforming them into specific organisational components such as products or processes.

Conclusions

The study confirmed the enhanced and beneficial role of entrepreneurship and marketing research in modern business success. The findings demonstrated that both factors are essential for the development and effectiveness of contemporary organisations. One of the most critical areas in business was entrepreneurship, as it enabled companies to respond to changes in the environment and anticipate future trends. Marketing research played a crucial role in business organisations by serving multiple purposes, such as helping companies understand consumer needs and preferences, identifying market trends, and formulating effective marketing strategies to enhance customer satisfaction. The integration of entrepreneurship and marketing research led to improved business outcomes. Organisations that successfully incorporate these two elements are better positioned to achieve sustained growth and maintain a competitive advantage. Future research should examine additional factors that might influence the application of entrepreneurship and marketing research, including organisational culture, leadership, and technological advancements. Furthermore, analysing the influence of these processes across various sectors could reveal industry-specific best practices and challenges. The findings of this study aligned with previous research in

the field, demonstrating, how the combination of entrepreneurship and marketing research contributes to enhanced business performance.

Future research should further investigate areas such as corporate culture, leadership theories, and technological developments that impact the effectiveness of marketing and entrepreneurship research. Additionally, comparative studies across different industries could help identify sector-specific challenges and best practices.

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Conflict of Interest

None.

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Інтеграція підприємництва та маркетингових досліджень у сучасному бізнесі

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Анотація. Сучасний бізнес передбачає ведення операцій відповідно до сучасних змін та адаптацію до них. Це дослідження підкреслило важливість урахування поглядів і потреб клієнтів, зосереджуючись на зростанні та стійкості в умовах конкуренції. У статті розглянуто роль і вплив двох ключових факторів у модернізації бізнесу: підприємництва та маркетингових досліджень. Дослідження було спрямоване на покращення розуміння сучасного бізнесу, чинників, що сприяють його розвитку, а також важливості менеджменту та маркетингових досліджень для підприємств. Було досліджено застосування та значення цих двох концепцій у просуванні бізнесу. Опитування проводилося як онлайн, так і вручну через Google Forms, використовуючи кількісний методологічний підхід. Дані були зібрані від різних демографічних груп у регіоні Курдистан, охоплюючи різні адміністративні посади та вікові категорії від 25 років і молодше до 45 років і старше. Всього було отримано 155 валідних відповідей методом простого випадкового відбору. Аналіз даних здійснювався за допомогою пакета статистичного аналізу соціальних наук із використанням кореляційних і регресійних моделей. Результати показали, що як підприємництво, так і маркетингові дослідження позитивно впливають на бізнес. Це засвідчило про те, що курдський народ визнає ці дві концепції як ключові для успіху бізнесу. Дослідження запропонувало нові висновки завдяки унікальному фокусуванню теми та організації концепцій, що відрізняє його від попередніх робіт та включає актуальну інформацію. Порівняльний аналіз на основі регіональних або економічних показників може надати глибше розуміння того, як культурні та економічні фактори впливають на регіональний розвиток та економічні умови

Ключові слова: розвиток бізнесу; організація бізнесу; аналіз ринку; розвиток підприємництва; регресійний аналіз

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Features of the development of the modern digital technology market

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Abstract. The modern digital technology market is transforming under the influence of external externalities and internal dynamics of its development. The purpose of the article was to substantiate scientific and practical recommendations on the peculiarities of Ukraine's integration into the global digital technology market and to develop proposals for intensifying these processes. The study used logical, retrospective analysis, the dialectical method, synthesis, classification, grouping and generalisation of data, tabular and graphical methods, the method of scientific abstraction and explication, quantitative and qualitative comparison. The article examined the theoretical foundations of the global digital technology market, namely, the theoretical aspects of the modern service market and its structural elements, methodological approaches to the integration of countries into the global digital technology market. Based on an assessment of the research of leading scholars, it was formed the structure of the modern digital technology market, the structural elements of which are software and hardware, network technologies and telecommunications, Internet services, IT education and training, media and entertainment, social networks and communications, e-commerce, security information technologies, IT consulting and services. Was identified the rapid dynamics of the global IT services market, in particular, in 2016 its volume was USD 0.87 trillion, and in 2024 it will reach USD 1.36 trillion, which is 1.56 times more. Was assessed the role of Ukraine in the global digital technology market, analysed the trends and structure of the global market development, and studied the level of development

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of the Ukrainian digital technology market in the context of globalisation. It is determined that the growth rate of the IT services market in 2016-2021 was quite significant and increased from USD 306.4 million in 2016 to USD 477 million in 2021. The article described the institutional support for the development of the Ukrainian digital technology market in modern conditions and identified the priority areas for Ukraine's integration into the global digital technology market. The practical significance of the study is to identify trends, structure and dynamics of the modern digital technology market in Ukraine and the world, and to focus on developing a system of measures to promote the development of the information and communication technology market

Keywords: informatisation; innovations; global market of information and telecommunication technologies; telecommunications and Internet services; software; global digital competitiveness

Introduction

The digital technologies (DT) market is having a profound impact on society, changing the way of communication, education, work and play, and understanding these changes is important for shaping policies that address the needs of the information society. DTs play a key role in the globalisation of the economy, as they allow enterprises and organisations to do business internationally, and facilitate interaction and information exchange between countries. In addition, the study of the global DT market allows to track innovations and technological trends that are key to ensuring the competitiveness of national and international economies, the transformation of society, and the digitalisation of enterprises. For businesses, it is important to understand how to use digital signage to optimise business processes, attract customers and ensure innovative development. The growing use of technology also requires attention to cybersecurity and personal information protection.

The development of DT requires international cooperation, including the exchange of experience, standards and resources, and the study of the global DT market helps to understand and support this cooperation. A separate area of interest is the growth of the Internet of Things, where the study of the global market for digital signage allows to understand the impact of these technologies on various industries and opens up new opportunities for data collection and processing. In particular, the IoT market determines consumer trends, such as the use of mobile applications, online shopping, streaming services. The study of the global digital signage market is necessary to identify and address the challenges and opportunities arising from the rapid development of technology and its impact on various aspects of society and the economy, which makes this study relevant and sets new tasks in this area.

A large number of Ukrainian and foreign scholars have studied the global transformations of the global digital technology market. Noteworthy, the works of such scholars as O.V. Baula & O.M. Liutak (2022), who focused on the impact of information and communication technologies on increasing the international competitiveness of the world's leading countries. Researchers A.P. Hrinko *et al.* (2022) emphasised that in the modern economy, the digital revolution is taking place at an extremely high speed and volume. This created additional opportunities to ensure and support economic development based on sustainable growth. I. Makarchuk & I. Fedulova (2023), based on the use of analytical tools, proved that the revolutionary development of the economy and society depends on information technology. Accordingly, Ukraine needs to gain a foothold in the global digital economy, especially in the context of limited resources, availability of qualified personnel in this segment, and the ability to increase its competitiveness. D. Rodrigues *et al.* (2023) focused on the sectoral aspects of the development of the digital technology market from the perspective of its impact on the automotive sector, the socialisation of production processes, and their place in ensuring sustainable growth of market players. Describing the developments in this area, the work of J.C. Acosta-Prado & A.A. Tafur-Mendoza (2024) was highlighted, which proved the relationship between DT and sustainable efficiency, which were to take into account not only economic results, but also social impact and environmental care.

Digital technologies play a special role in the public sector. V.P. Camngca *et al.* (2024), focused on this aspect, in particular in developing countries, identified the main problems such as the lack of DT training, digital technologies in the implementation of construction projects, appropriate resources, including financial, and software subscriptions. These problems have led to outsourcing of project specialists, the use of unlicensed software, and a negative impact on all officials, including DT professionals, who change the country and worsen the situation in their country.

Authors M. Albinowski & P. Lewandowski (2024) focused on the relationship between the impact of DT and robots, in particular, and the increase in the share of young and elderly women in certain sectors. The authors' analytical research proved that in the period from 2010 to 2018, the growth of DT capital played a greater role in changes in the results of the intra-sectoral labour market of demographic groups than the introduction of robots.

The work of B. Behera *et al.* (2024) substantiated the direct and indirect effects of DT on the economic growth of developing countries. The main focus was on the

interaction with institutional quality, research and development expenditures, and foreign direct investment. The authors proved that the interaction of DT with financial development and research expenditures is favourable for economic growth. The researchers demonstrated that in order to ensure sustainable growth, transition economies need to increase spending on R&D (research and development) and on DT services, enhance the digitalisation of the financial sector, strengthen institutional quality, and stimulate a favourable investment climate. In turn, R. Law *et al.* (2024) tried to test theoretical postulates in practice and formulate the specifics of using digital technologies in the hospitality sector.

Despite a significant number of developments in this area, foreign and Ukrainian works on the peculiarities of Ukraine's integration into the global digital technology market have not been sufficiently studied due to significant changes and trends in global economic processes. The purpose of the study was to assess the structure of the digital technology market, its features and trends, and its potential, to identify recommendations on the specifics of Ukraine's integration into the global digital technology market and to increase the dynamics of relevant processes from the point of view of ensuring Ukraine's competitiveness.

Materials and Methods

In the course of the study, a number of scientific methods were used, which made it possible to draw reasonable conclusions and identify relevant trends in the development of the global and national digital technology market. The application of logical analysis of scientific works on the structure of the elements of the digital technology market made it possible to systematise these elements and conduct an in-depth analysis of their analytical content. The dialectical method identified the key theses of researchers on the impact of the digital technology market on micro-, meso- and macro-level actors, the formation of their interaction at different stages of evolution, taking into account sustainable development and other external influences. The methods of analysis and synthesis made it possible to study the dynamics of Ukraine's digital competitiveness rating by structural elements, to identify trends in the growth of the IT market and institutional tools for regulating the global digital market from the point of view of its functional content. Grouping and generalisation of data, their systematisation in terms of assessing the dynamics of the number of enterprises engaged in e-commerce as a percentage of the total number of enterprises and by industry, made it possible to determine that the largest share in the structure of enterprises engaged in e-commerce in Ukraine is occupied by travel agencies, tour operators, other reservation services and related activities, temporary accommodation, telecommunications, wholesale and retail trade; repair of motor vehicles and motorcycles. Tabular and graphical methods made this possible to visually display the results of the study, quantitatively and qualitatively compare the trends in the development of the global digital technology market and the possibilities of integrating the Ukrainian market into the system of global economic relations.

The research was informed by the scientific works of Ukrainian and foreign scholars and international organisations in the field of digital technologies, including the Institute for Information and Communication Technologies for Development (ICT4D), the International Telecommunication Union (ITU), and the Organisation for Economic Cooperation and Development (OECD). The State Statistics Service of Ukraine (2021) assessed the level of development, dynamics, and structure of the national digital market. The full-scale invasion has made adjustments to the collection of information on Ukrainian entities, which led to an assessment only for 2021 inclusive. The Internet speed rating 2021: Ukraine improved the results by 15 positions (2021) resource made it possible to form a ranking of countries in terms of mobile Internet speed, while the World Economic Forum (2022) and The World Bank (2024) resources provided the basis for an analytical study on the dynamics of the ranking of countries, including Ukraine, according to the inclusive Internet index and its components. Statista (2024a; 2024b), as a global resource of primary information, was used to assess the dynamics of the volume of IT services in the world. The study of the volume of expenditures on information technology in the world in modern conditions was based on Statista (2024b).

Results and Discussion

The development of the services market in 2010-2022 was a complex and dynamic economic segment that included a variety of services provided to consumers and businesses. The theoretical aspects of the modern services market and its structural elements can be viewed in the context of such key concepts and theories as non-physicality and intangibility, as services are non-physical and intangible, which distinguishes them from goods, i.e., services cannot be touched or stored; variability – services can vary depending on the specific conditions of provision and consumption.

As for the modern classification of services, the following features can be distinguished:

- by purpose: division of services into categories according to their purpose, for example, financial services, educational services, medical services;
- by the nature of consumption: distinguishing between services that can be consumed only at the time of provision and those that can be consumed over time;
- by service delivery models: service activities – basic principles and approaches to service delivery, including the development of customer service strategies and process optimisation.

The modern market of services is based on their quality content, in particular, the SERVQUAL model,

which defines the quality of services based on five main dimensions (reliability, responsiveness, competence, profitability and empathy) and the Moment of Truth model, which focuses on key moments when a customer interacts with a service, resulting in his/her opinion about the quality.

The advent of the Internet has transformed information technology. Modern widespread use of the Internet by people, companies and institutions has led to the emergence of a global market for Internet services and increased productivity in technological communications. Digital communication is the most cost-effective form of internal and external communication. Because digital communication is less susceptible to noise or distortion and allows for relatively simple signal manipulation, it is always preferable to analogue. For complex operations, digital electronic circuits are cheaper than analogue electronic circuits. Accordingly, the functions of the digital market, the interdependence of infrastructure and the role of the state are changing, which are key factors for analysing digital power structures and governance forms in empirical comparative studies of digital communication systems (Rojko, 2017). These aspects and theories interact and form a theoretical foundation for understanding the modern service market and its structural elements. The development of this segment of the economy is determined not only by the services themselves, but also by the ways in which they are provided, consumed, and interact with market participants.

One of the most important segments is the digital technology market. The digital technology market includes a large number of components that interact and form this segment. The main components of the digital market are shown in Figure 1. The technological dimension includes DT, as well as enabling technologies that allow people and organisations to get the most out of DT.

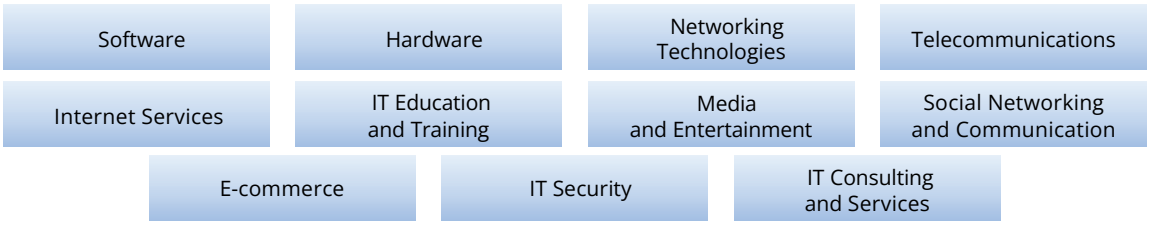

Figure 1. *The main components of the digital technology market*
Source: *compiled by the authors on the basis of M.I. Melnyk (2018), O.M. Liutak et al. (2020), O.M. Pankratova (2021)*

The most important structural elements should be described, in particular software, which includes operating systems, applications, business and consumer applications, websites, mobile applications; hardware and network technologies that connect computers, servers, mobile devices, routers, switches and other physical devices used for data processing and transmission, namely routers, switches, modems, cables, wireless technologies, data transmission technologies that provide connection and exchange of information between the Telecommunications and Internet services integrate mobile and fixed-line telephone services, satellite communications, broadband Internet access, data transmission and other communication technologies, as well as mail services, hosting, cloud computing, streaming services, search engines and other online services. Modern information technology is based on cyber defence systems, antiviruses, firewalls, identification and authentication, encryption and other security measures.

A separate segment is IT consulting, IT education and research and development, which brings together companies that provide consulting services, implementation and support of DT solutions for businesses and organisations, institutions that provide training and skills development in the field of DT, laboratories, companies and universities that research and develop new technologies in the field of DT.

Industries related to the provision of content for the Internet, streaming services, gaming, games and other media content, e-commerce, social media and communications are platforms for communication, information exchange and interaction between users. These components interact and determine the dynamics of the DT market, which is growing rapidly and constantly evolving.

DTs influence social life, strategic decision-making, and macroeconomic growth, which further impacts society by improving infrastructure and living standards. As noted by V.M. Panasyuk (2020), 'informatisation acts as a catalyst for socio-economic development, as modern information technologies play a leading role in the development of innovation, productivity and competitiveness, diversify the economy and stimulate business activity, thereby contributing to improving the living standards of the population'. S.I. Tay *et al.* (2018) pointed out that Industry 4.0 has led to changes in many professions, so the population is obliged to learn new tasks, and is also forced to use high-tech gadgets, which are quickly becoming the most important factor in their work.

Many academic and research institutions, international organisations and non-profit organisations are interested in studying the integration of countries into the global digital market. Several important institutions and research groups have addressed this issue (Table 1).

Table 1. *Institutions regulating the global digital market*

Name of the institution	Functionality	Aspect of activity in the context of the global digital market
World Bank	Studies and analyses the integration of countries into the global DT market in its research and reports	Investigate the impact of technology on economic development and social aspects
International Telecommunication Union (ITU)	Deals with the technical and regulatory aspects of communications	Conduct research and create reports on the development of DT infrastructure in different countries
Organisation for Economic Co-operation and Development (OECD)	Examines the integration of countries into the global DT market in the context of their economic and technological policies	Analyse innovations and efficiency of technology use
Institute for Information and Communication Technologies for Development (ICT4D)	Groups and institutes specialising in ICT4D	Study the impact of DT on development, including how countries integrate technology into their social and economic systems

Source: *developed by the authors*

In addition to the institutions listed in the table, international scientific and research organisations play an important role, with many universities and research centres conducting their own studies on the integration of countries into the global DT market, assessing technological progress and the impact on the economy and society. These organisations and groups help to monitor and understand trends in the global DT market and develop recommendations for governments and businesses. Assessing the level of a country's integration into the global technology market requires analysing various aspects of the economy, innovation, technological development, and international cooperation. Below are the key criteria that can be taken into account when assessing the level of a country's integration into the global technology market:

- exports and imports of technological goods and services: analysis of exports and imports of technological goods and services allows to assess the country's interaction with other national markets and global supply chains;
- participation in global technology projects: studying the country's participation in international projects, programmes and initiatives in the field of science and technology; number and development of technology start-ups: analysing the number and dynamics of technology start-ups allows to determine the level of the entrepreneurial environment and innovation activity;
- investment in research and development: assessment of the level of investment in research by both internal and foreign investors, development of new technologies and patenting, study of the volume and quality of innovation activity, including the development of new technologies and the number of patents;
- level of education and scientific potential: analysis of the quality and level of scientific research, analysis of the level of qualification of IT specialists and their participation in international projects, availability of high-quality educational and scientific institutions, participation in global technology events and conferences may indicate the country's activity and visibility in the global information and technology community.

These criteria should be analysed in combination, as their interaction determines the country's integration into the global technology market. It is also important to take into account the dynamics of change and adapt integration strategies to new challenges and opportunities. The modern digital technology market has a number of advantages over material and commodity-money exchanges, the key of which is the speed of delivery of goods or instant provision of certain services, including information. In addition, A.V. Stavytska (2017) noted that one of the key advantages of the digital economy is its lower cost (e-books are 25-55% cheaper than printed books), as well as the unlimited lifespan of most digital products, as they do not wear out like physical goods or tangible assets, except for obsolescence.

As of the beginning of October 2022, the global population stood at 7.99 billion, and the number of mobile device users reached 5.48 billion. Moreover, almost 4 out of 5 mobile phones used in 2021-2022 were smartphones. The global mobile user base grew by 170 million over the year, and the number of those using certain mobile phones was 68.6%. During 2021-2022, the number of Internet users grew by 3.5% to 5.07 billion, and 171 million new users in the last 12 months brought global Internet penetration to 63.5% of the world's total population (Key findings of the Global Digital 2023 report, 2023).

Studies by the International Telecommunication Union (2024) and Global mobile trends 2023 (2024) showed that by the end of 2023, more than two-thirds of the world's population will be using the internet – meaning that there will be twice as many people online as offline, giving internet users the status of a "supermajority". However, the analysis for 2019-2022 showed that the growth in the number of users will tend to decrease in the next 5 years, as it has used up its rapid potential during the COVID-19 pandemic.

The IT services and IT outsourcing market actively uses the concept of 'digitalisation' introduced by

computer scientists O.A. Dzhusov & S.S. Apalkov (2017). Digitalisation has affected most of the major spheres of social life, among which economic systems are considered the most widespread. According to O.V. Baula & O.M. Liutak (2022), the share of the information technology market in national GDP increased from 0.9% to 4% by 2019, and 10 companies with a market capitalisation of more than USD 1 billion emerged.

The overall decline in the time people spend online does not necessarily mean that it is becoming less important in their lives. In 2023, a typical global user will already spend more than 40% of their active time online. In addition, many studies show that most people in less developed economies outside of Western countries are unable to use the Internet at work all day. To put this in context, Gartner reports that the global 'knowledge economy' currently employs approximately 1 billion people, compared to the total global workforce of 3.3 billion (Law *et al.*, 2024).

According to S.E. Sardak & A.V. Stavytska (2015), 'there is an annual growth in IT spending in developing countries, in particular Brazil, India, and some countries in the Asia-Pacific region. The growth rate of IT spending is significantly higher than the annual GDP growth rate. The priority factor of using information technology to increase the competitiveness of these countries in the world affects the dynamic development of the IT industry in these countries'. Based on the data analysis, a graph was created to illustrate the distribution of the global IT services market for the period from 2016 to 2021 (Fig. 2).

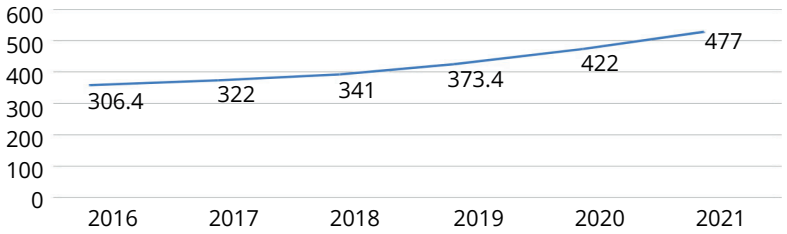

Figure 2. *Growth rates of the IT services market in the world in 2016-2021*
Source: *prepared on the basis of State Statistics Service of Ukraine (2021)*

Assessing the market prospects and key markers of its growth, the experts who say that 70% of companies will use hybrid or multi-cloud technologies, tools and management processes can be cited (Makarchuk & Fedulova, 2023). The introduction of 5G will enable faster network speeds (current 4G LTE network speeds are ten times slower). In the future, more than 50% of user touches will be based on the use of artificial intelligence, and global data creation will increase to more than 180 zettabytes by 2026, up from 64.2 zettabytes in 2020. The compound annual growth rate (CAGR) of the low-code development platforms market is projected to be approximately 30 per cent in 2030 (Tech at the edge: Trends reshaping..., 2023). T.S. Lunova (2022) noted that the main shifts will be about innovation and will develop around personal networks of experts at the edge of the organisation and be supported by capabilities that scale business benefits. In order to identify and build on their competitive advantage, companies need to increase their engagement with networks outside their organisations. This will allow them to identify and invest in promising opportunities.

The Internet of Things should not be viewed as a separate part of the architecture, but as a complex system of global data transmission, storage and analysis. Huawei holds an important position in one segment of this structure, but in 2024, companies from high-income countries, in particular the United States, will dominate. Three large companies – Amazon, Microsoft, and Alphabet-Google – have taken advantage of their advantage to become leaders in software and cloud services. These three giants account for 38% of total R&D expenditure and 34% of net sales revenue for 321 companies in the G2500 software and services sector. Huawei is the only high-tech Chinese company with a significant global market share outside of China (Kireev, 2019).

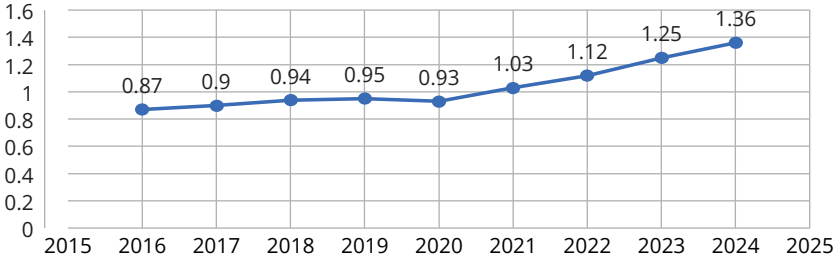

Figure 3. *Volume of IT services in the world, USD trillion*
Source: *prepared on the basis of Statista (2024a)*

Assessing the current trends in the global IT services market (Fig. 3), the significant dynamics: in 2016, its volume was USD 0.87 trillion, and in 2024 it will be USD 1.36 trillion, which was 1.56 times more can be seen.

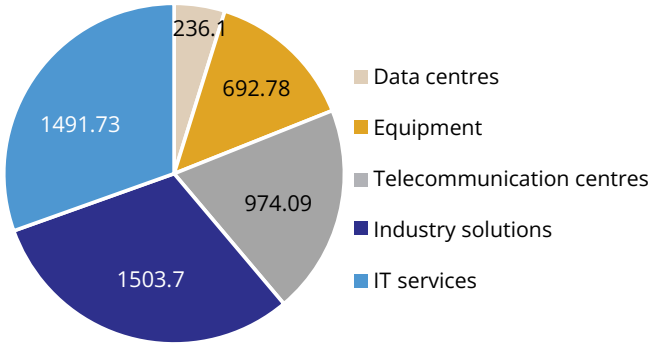

Figure 4. *Global IT spending in 2023, USD billion*
Source: *prepared on the basis of Statista (2024b)*

The structure of expenditures in the IT market is characterised by the dominant role of telecommunications services (35-37% of the market) and IT services (28-29%) (Fig. 4). Companies specialising in cloud technologies have either not lost any capitalisation or increased it even during the recession experienced in many countries. In 2020, amid the spread of the coronavirus and the introduction of distance learning and the transfer of employees to online work, there was an increase in demand for a number of information and communication services, including cloud services. This was expected, as both the private sector and businesses needed resources and technologies to organise remote work, including the deployment of virtual workplaces in the clouds, the introduction of video conferencing.

Analysing the geographical features of the global digital technology market, it is worth noting the dynamic state of this segment in the system of international economic relations, which is constantly changing, just as the leaders may differ in different periods and with different indicators. Nevertheless, some countries have traditionally been leaders in this area, in particular: The United States of America is considered a leader in the field of DH, with Silicon Valley being a global centre for technology and innovation; China is becoming an important player in the global DT market, with large technology companies such as Alibaba, Tencent, and Huawei already making significant contributions to the industry; India is known for its role in software and information technology, with many international IT companies choosing India to open their development centres; Singapore is noted as a global technology hub, attracting companies and technology entrepreneurs from around the world. Sweden is one of the leading countries in the development of DH, with a large number of innovative technology companies; South Korea is known for high-speed Internet connections and technological advances, particularly in electronics manufacturing; the Netherlands is one of the countries in Europe that is noted for its development of DH, especially in the field of e-commerce and data. Israel is known for its vibrant innovation scene and large number of tech start-ups; Germany is noted for its high-tech manufacturing and research; Taiwan is an important electronics and technology producer and is known for companies specialising in microchips and other electronic components.

In telecommunications equipment, Huawei controls approximately one-third of the global market, while the top five companies account for two-thirds. The value chain in these sectors is also highly consolidated. One company (Cisco) has about half of the global telecoms router and switch market.

When assessing the future potential of the global digital market, it is worth considering research by leading organisations that states that by 2028, the global market for cloud microservices platforms will generate revenue of USD 4.2 billion, up from USD 952 million in 2020. One of the leading corporations in this segment, GitHub, has more than 200 million code repositories and is projected to have 100 million software developers by 2025. Almost 90% of developers already use APIs. Software developed by companies on cloud service platforms, open source repositories, and in the Software as a Service (SaaS) model will grow by 27.5 per cent between 2021 and 2028 (Kireev, 2019).

"The development of the digitalisation of the economy is facilitated by measures to develop new legislation in the information and communication technologies sector in Ukraine, discussion and adoption of new strategies for digital transformation aimed at using blockchain, cloud technologies, the Internet, etc." (Poberezhets & Makarevych, 2017). The thesis that Ukraine is actively developing the information and communication services sector and increasing its integration into this segment of the global services market is supported by the growing share of computer services in Ukraine's total exports of services. Assessing the trends, a significant increase

in the share of computer services in the country's total exports, especially in 2019-2021 can be noted. A key driver of such dramatic changes was the global pandemic, which led to the intensification of the development of this segment, the search for specialists in different countries, and offers to use their services remotely. The regression equation with a high correlation coefficient confirms this trend (Fig. 5).

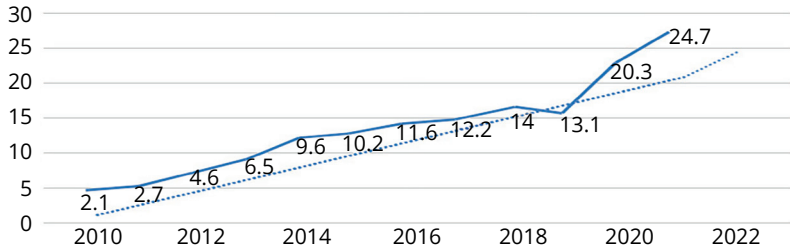

Figure 5. *Evaluation of the dynamics of the share of computer services in total exports of services of Ukraine in 2010-2021*
Source: *prepared on the basis of State Statistics Service of Ukraine (2021)*

"According to the World Bank, in 2021, the share of computer, communication and other services in the world was 54% of exports of commercial services, while in Ukraine this figure was 68%, in France – 54%, in Germany – 60%, in China – 56%, and in Poland – 57%. In 2021, the share of high-tech exports as a percentage of industrial exports was 20% globally (22% in 2020), 5% in Ukraine, 22% in France, 15% in Germany, 9% in Poland, and 30% in China. In 2020, the share of digital technology exports as a percentage of total exports of goods in the world reached 14.3% (12.7% in 2019), in Ukraine this figure was 0.7%, in France – 3.8%, Germany – 5.1%, Poland – 7.2%, China – 27.1%" (Camngca *et al.*, 2024).

Another factor in assessing the level of development of the digital technology market in Ukraine is the availability and use of Internet communications by both ordinary citizens and professional specialists in this segment. The first Internet users in Ukraine appeared in the Soviet era. In 1990, a project was implemented to create the first access nodes to the network that ran through Moscow to Finland, and support for the Ukrainian part of the ".ua" domain was launched. Initially, it was supported unofficially and informally, and on 1 December 1992, it was delegated to Ukraine. In 2022, the number of Ukrainian Internet users was almost 30 million, or about 67% of the country's population (Fig. 6).

As can be seen from Figure 6, since 1995, the growth rate of this indicator has been impressive, in fact, the number of Internet users has doubled every 5 years, in 2020-2022, the indicator tended to grow, but it did not exceed 1-2% per year.

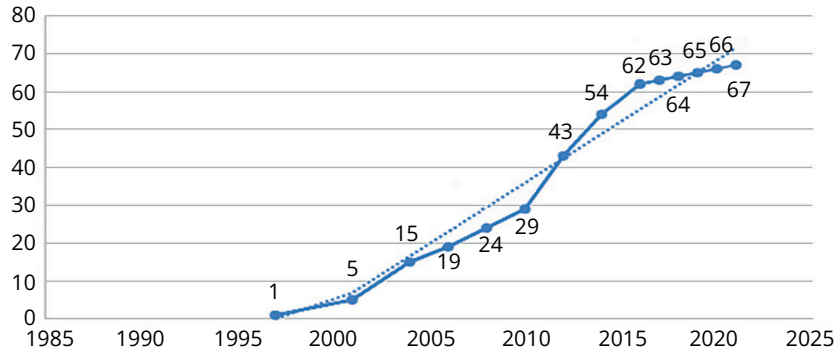

Figure 6. *Share of Internet users among the adult population of Ukraine, %*
Source: *prepared on the basis of State Statistics Service of Ukraine (2021)*

It was found that the main reasons for this phenomenon were the maximum satisfaction of the demand of those wishing (age group under 50) to access the Internet by providers of broadband and mobile coverage and the lack of demand from the older population, which does not use these types of services. Another indicator that characterises the level of development of digital technologies in Ukraine is the number of enterprises engaged in e-commerce (Fig. 7). In terms of quantitative content, the largest weight was given to such sectors as wholesale and retail trade, where the total number of enterprises for the analysed period correlated in the range of 914 units in 2018 and 931 units in 2021, processing industry (673-690 units),

respectively, machine building; production of furniture, other products, repair and installation of machinery and equipment (196-204 units), information and telecommunications (204-210 units) (Fig. 8).

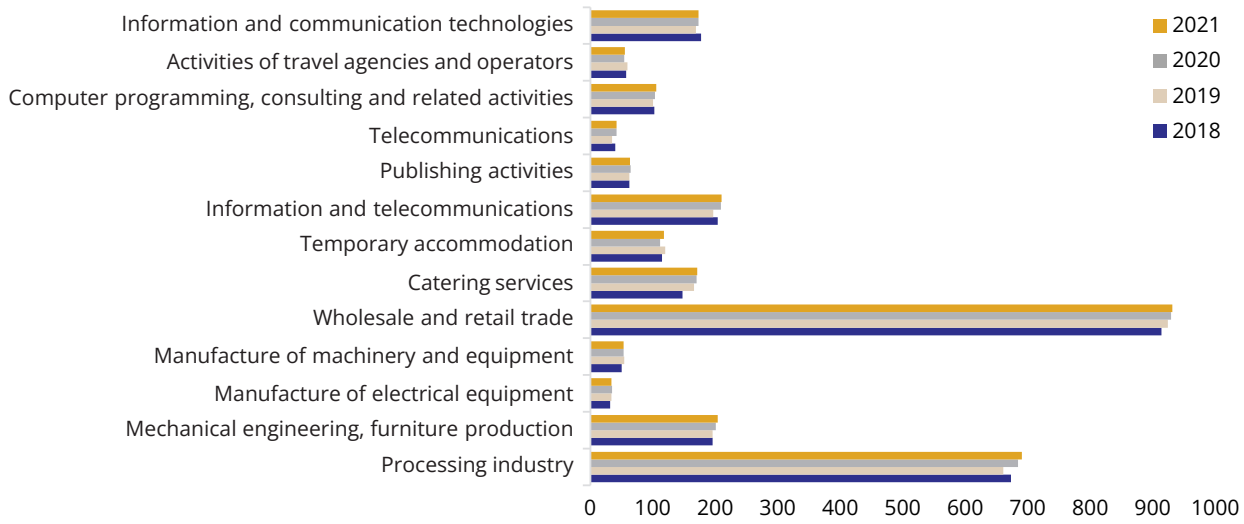

Figure 7. *Dynamics of the number of enterprises engaged in e-commerce in 2018-2021 by industry*
Source: *prepared on the basis of State Statistics Service of Ukraine (2021)*

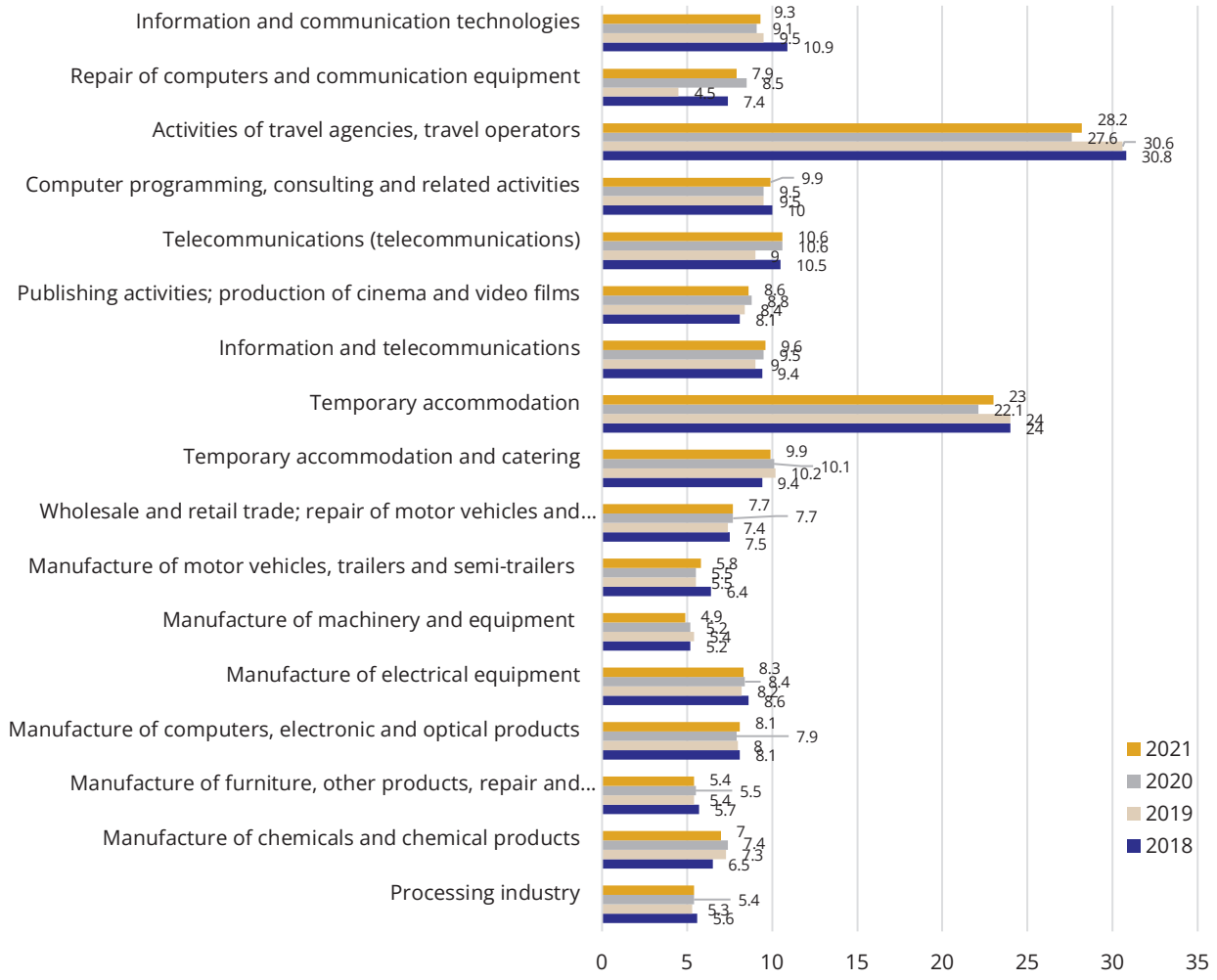

Figure 8. *Dynamics of the number of enterprises engaged in e-commerce in % of the total number of enterprises*
Source: *prepared on the basis of State Statistics Service of Ukraine (2021)*

Analysing Figure 8, it is worth noting that the largest share in the structure of enterprises engaged in e-commerce is occupied by travel agencies, tour operators, other reservation services and related activities (28.2% in 2021), temporary accommodation (23%), telecommunications (10%), wholesale and retail trade; repair of motor vehicles and motorcycles (7.7%).

Ukraine has created the preconditions for the development of the digital technology sector, including a market-based framework for development, adequate education for producers and consumers, an appropriate level of income that creates effective demand, developed infrastructure, and prices and profits that ensure expanded reproduction and stable interest from a wide range of investors. In addition, Ukraine has a competitive market environment regulated by the state, which stimulates the development of scientific and technological progress, in particular in the sectors of information technology, telecommunications and related services.

The priority tasks in the field of digital technologies in Ukraine are to develop a system of measures to stimulate the development of the market for communication and information processing technologies, introduce mechanisms of public-private partnership in the field of information technologies, increase the investment attractiveness of the electronic communications sector, and ensure the development of the infrastructure of the digital technologies market in Ukraine and its integration into global information networks.

In general, the analysis of the level of development of the digital technology market in Ukraine showed a high level of development of this segment, the availability of potential both in the field of network use and access to it, and in terms of human resources, as Ukraine is a significant market player in terms of providing high-quality personnel for the global market.

One of the main indicators that can be used to study the level of a country's integration into the global digital market is the Global Digital Competitiveness Index, which has been conducted by the Institute of Management (IMD) since 2017. "The study assesses the speed of technological transformations taking place in countries, thereby helping to shape government policy decisions in the field of competitiveness of the national economy, as well as strategic business decisions. In 2020, the study covered 63 countries, each of which was assessed based on an analysis of 50 indicators in three main areas". "Knowledge" as an indicator related to intangible infrastructure reflects the process of digital transformation through the discovery, awareness and learning of new technologies. "Technology" is an indicator that can assess the overall context that enables the introduction and development of digital technologies, including technological regulation, the availability of capital for investment in technological infrastructure. "Future readiness" are indicators that assess the level of technology adoption by governments, businesses, and society as a whole (Tech at the edge: Trends reshaping..., 2022).

It should be noted that the rankings were based on the results of the selection of reliable data and surveys in 2019-2020, which made it quite difficult to track and identify the impact of COVID-19. No further surveys were conducted due to the lack of demand and the growing development of the global IT market. In the Global Digital Competitiveness Report 2020, The United States of America once again topped the global digital competitiveness ranking, followed by Singapore (2nd place). As for the third place, Denmark overtook Sweden (4th place) and took 3rd place in the 2020 ranking. Hong Kong moved up three places to take 5th place, and Switzerland dropped one place to take 6th place in the ranking (IMD Global Competitiveness..., 2020). Assessing Ukraine's position in the global digital competitiveness ranking, the following indicators are worth considering (Fig. 9).

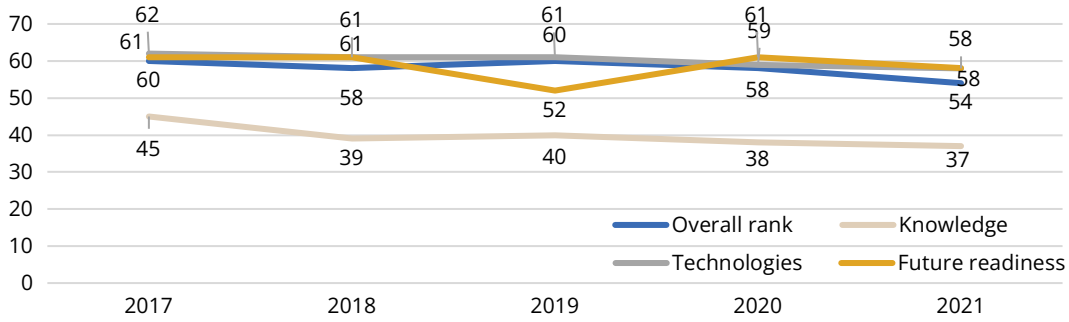

Figure 9. *Ukraine's position in the global digital competitiveness ranking*
Source: *prepared on the basis of Overview of the digital transformation of Ukraine's economy in wartime conditions (October, 2022) (2022)*

The analysis of Figure 9 shows that Ukraine's position in the selected digital competitiveness criteria is fairly stable. Only one of the indicators, Knowledge, saw a significant shift from 45th to 37th place in 2021, which is reflected in the overall rank: the improvement in position was 6 points – from 60th place in 2017 to 54th in 2021.

Another important factor in the country's integration into the international information services market is the global Speedtest index, which includes Internet speed ratings for the world's largest cities and countries. It should be noted that in 2022, Ukraine moved up 15 positions in the global mobile internet speed rating, from 77th place in January 2021 to 62nd place in January 2022, with the average download speed on the mobile network increasing by 10 Mbps: from 19.66 Mbps at the beginning of 2021 to 29.06 Mbps in 2022 (Internet speed rating 2021..., 2021). As of October 2023, Ukraine's position has slipped and is 96th with an average download speed of 24.62. For comparison, it is worthwhile to provide a ranking of countries and the corresponding speed of the given parameter (Table 2). Therefore, it can be noted that the leaders of the ranking are countries such as the UAE, Qatar, Kuwait, China and Macau. They represent the Asian region and are characterised by high mobile internet speeds, which is the key to the development of digital technologies. The closest country to them in Europe, Norway, is 100 Mbit/s behind the leader, and the United States is 160 Mbit/s behind, which indicates the loss of the leading positions of the world's leading countries and the corresponding further technological transformation of the Asian space.

Assessing the trends in the level of Ukraine's integration into the global market of digital services, it should be noted that in 2021, Ukraine was ranked first in Central and Eastern Europe in IT outsourcing according to Outsourcing Journal (2024), and also entered the top 20 countries in the MENA region for offshoring IT development. It is also worth noting that Ukraine is known for both the IT outsourcing industry and the provision of offshore R&D centre services. Therefore, a significant number of countries are interested in obtaining such services, although companies from the US and Western Europe are still regular customers. The main factors that attracted foreign firms to the Ukrainian IT market include a good location, a large number of talented IT specialists, low taxes (5%) and wages, cultural similarities, and high-quality work. The Global Inclusive Internet Index (3I-Index), published by the Economist Intelligence Unit (2024) since 2018, is based on such indicators as availability, which assesses the quality and breadth of available infrastructure for Internet access and the level of Internet use; including the skills of the population that are necessary for cultural and information policy. The corresponding dynamics of the rating and its components for the period 2018-2021 is shown in Figure 10.

Table 2. *Ranking of countries by mobile internet speed*

Place in the ranking	Country name	Value of the indicator, Mbps	Place in the ranking	Country name	Value of the indicator
1	UAE	269.41	51	United Kingdom	47.98
2	Qatar	206.8	55	Azerbaijan	45.70
3	Kuwait	191.74	60	Poland	42.79
4	China	164.14	63	Spain	40.47
5	Macau	155.75	71	Georgia	33.39
6	Norway	146.02	79	Moldova	30.72
7	South Korea	145.25	82	Philippines	28.28
8	Denmark	143.63	92	Mexico	25.15
9	Bulgaria	142.07	95	Indonesia	24.65
10	Ireland	139.52	96	Ukraine	24.62
13	USA	103.69	100	Uzbekistan	23.69
28	India	75.86	142	Cuba	3.33

Source: *prepared on the basis of Speedtest Global Index (2024)*

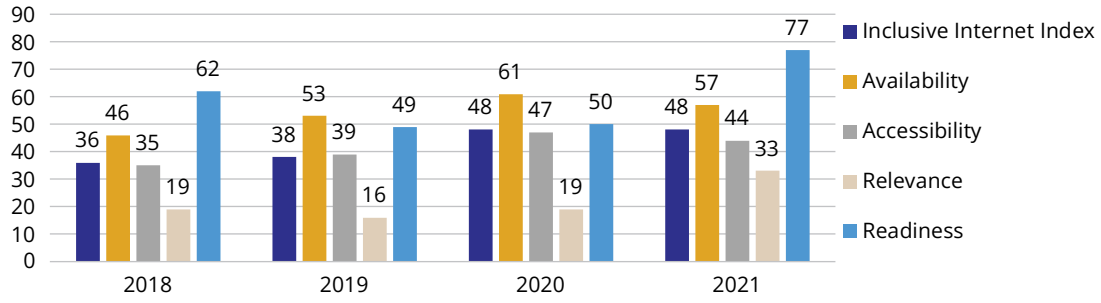

Figure 10. *Dynamics of Ukraine's rating by the Inclusive Internet Index and its components for the period 2018-2021*
Source: *prepared on the basis of World Economic Forum (2022)*

Evaluating the dynamics of Ukraine's ranking in the Inclusive Internet Index, a relative deterioration in its position, in particular in 2018 can be noted. Ukraine was ranked 36th out of 120 countries analysed, and in 2021 it was 48th. It should be noted that Ukraine's low level in the digital competitiveness ranking is due to low indicators of its components, including digital technologies and digital readiness (Fig. 11).

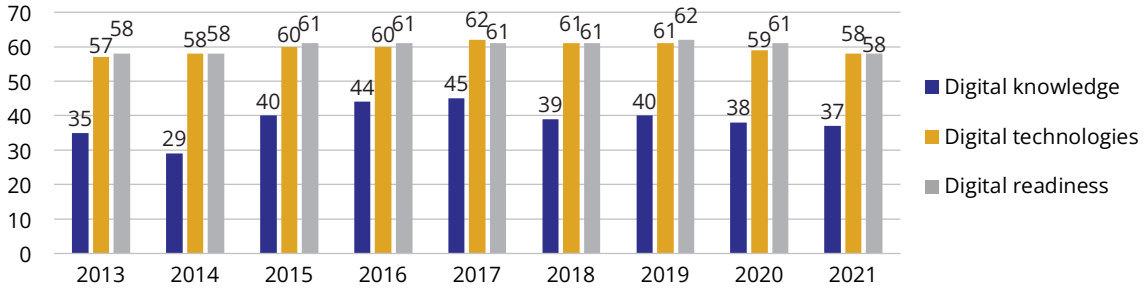

Figure 11. *Dynamics of Ukraine's digital competitiveness rating in 2013-2021*
Source: *prepared on the basis of V.Ye. Haustova et al. (2022)*

In 2022-2024, the information and communications technology industry will remain one of the leading areas of the country's economic potential, which was least affected by the hostilities due to the diversification of the workforce and the territorial fragmentation of production processes. It is through the significant potential based on human resources in the field of digital technologies that Ukraine can be expected to quickly integrate into the system of global economic relations, restore and help increase the competitiveness of the Ukrainian economy in the post-war period.

The integration of countries into the global digital market requires the active participation of public authorities in the development of modern strategies for the development and functioning of the digital economy. The key areas of transformation in this context may include: improving institutional support for all informatisation and digitalisation processes, including regulatory support for these processes and policy-making on global digital platforms; introducing tools for the rapid development of digital industries and businesses through the availability of digital technologies and stimulating the economy by attracting investment; increasing digital inclusion by ensuring equal access to digital technologies for all social groups to digital technologies and opportunities, as well as the promotion of digital literacy among the population.

The role of DT in the socio-economic development of countries can be viewed through a multidimensional framework based on the dimensions that influence socio-economic progress: politics, business, technology and society. This framework builds on several previous models, but is more general in context and focus, as it encompasses all DHs, not just some of them, and applies to all economies and regions, not just less developed ones. It can be argued that development occurs in both underdeveloped and highly developed economies, although the effects of specific factors may differ in intensity and direction. However, the general concepts and relationships remain relevant and important.

Conclusions

The dynamic development of the digital technology sector in 2000-2020 has changed the world by increasing the impact of globalisation and liberalisation on business and the competitive position of each economy in the global market. Such developments have prompted researchers to study the link between development and economic growth, with the number of Internet users, mobile phone subscribers and exports of digital goods becoming key factors that positively affect economic growth in transition economies. In Ukraine, the share of Internet users reached 68%. This value is not high compared to the leaders of the information competitiveness ranking, where this indicator is 100%. The government should promote Internet penetration and its use in everyday life and business as the first and most important step towards deeper integration into the global digital market. Increasing the use of digital technologies, especially the Internet, can contribute to economic growth, the diffusion of technology and innovation, the use of e-government and e-commerce, improved decision-making efficiency in firms, households and the economy as a whole, increased demand, lower production costs, and the transformation of the structure of the economy and foreign trade. The use of digital technologies will help bring Ukraine closer to the economic, technological and organisational practices and standards of EU member states, contributing to balanced regional development and improving Ukraine's competitive position in the global market.

In line with global trends, Ukraine has formed the preconditions for the development of digital technologies that can become the basis for increasing competitiveness in the post-war reconstruction. The key structural elements should be the formation of market-based principles for the development of information and telecommunications services, developed infrastructure, and increased solvency of the population, which will ensure expanded reproduction and stable interest of

a wide range of investors. However, according to analytical observations, the structure of Ukraine's IT sector in 2024 lags far behind global standards and is mostly represented by software products and Internet services. Thus, the priority tasks in the field of digital technologies in Ukraine include: developing measures to stimulate the development of the information and communication technologies market; introducing mechanisms of public-private partnership in the field of communication and information processing technologies; increasing the investment attractiveness of the computer network sector; and ensuring the development of the infrastructure of the electronic communications market in Ukraine and its integration into global information networks. Further research on the development of the digital technology market should focus on finding ways to increase the efficiency of the national economy by intensifying the production and introduction of new IT goods and services by increasing the competitiveness of existing computer and information systems.

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None.

Conflict of Interest

None.

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Особливості розвитку сучасного ринку цифрових технологій

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Анотація. Сучасний ринок цифрових технологій трансформується під впливом зовнішніх екстерналій та внутрішньої динаміки його розвитку. Метою статті було обґрунтування науково-практичних рекомендацій щодо особливостей інтеграції України у світовий ринок цифрових технологій та розробка пропозицій щодо активізації окреслених процесів. В дослідженні було використано логічний, ретроспективний аналіз, діалектичний метод, синтез, класифікація, групування та узагальнення даних, табличні та графічні методи, метод наукової абстракції та експлікації, кількісне та якісне порівняння. У статті досліджено теоретичні основи світового ринку цифрових технологій, а саме: розглянуто теоретичні аспекти сучасного ринку послуг та його структурних елементів, методичні підходи щодо інтеграції країн у глобальний ринок цифрових технологій. На підставі оцінки досліджень провідних науковців сформовано структуру сучасного ринку цифрових технологій, структурними елементами якого є програмне та апаратне забезпечення, мережеві технології та телекомунікації, інтернет-послуги, ІТ-освіта та навчання, медіа та розваги, соціальні мережі та комунікації, електронна комерція, інформаційні технології безпеки, ІТ-консалтинг та послуги. Визначено стрімку динаміку розвитку світового ринку ІТ-послуг, зокрема у 2016 році його обсяг становив 0,87 трлн. дол., а в 2024 році – 1,36 трлн. дол., що більше в 1,56 рази. Оцінено роль України на глобальному ринку цифрових технологій, проаналізовано тенденції та структуру розвитку світового ринку, а також досліджено рівень розвитку українського ринку цифрових технологій в умовах глобалізації. Визначено, що темпи зростання ринку ІТ-послуг у період за 2016-2021 роки були достатньо значними і зросли з 306,4 млн. дол. у 2016 році до 477 млн. дол. у 2021 році. Охарактеризовано інституційне забезпечення розвитку ринку цифрових технологій України в сучасних умовах та визначено пріоритетні напрями інтеграції України у глобальний ринок цифрових технологій. Практичне зазначення дослідження полягає у визначенні тенденцій, структури та динаміки розвитку сучасного ринку цифрових технологій в Україні та світі, акценті щодо розробки системи заходів сприяння розвитку ринку інформаційно-комунікаційних технологій

Ключові слова: інформатизація; інновації; світовий ринок інформаційних та телекомунікаційних технологій; телекомунікації та інтернет-послуги; програмне забезпечення; глобальна цифрова конкурентоспроможність

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Evaluating Generative AI in enhancing banking services efficiency

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Abstract. This paper aimed to evaluate the transformative role of Generative Artificial Intelligence in improving banking services efficiency through a systematic literature review. The review explored, how Generative Artificial Intelligence reshaped traditional banking practices by automating routine tasks, decision-making, and enhancing personalised customer experiences. The review also highlighted Generative Artificial Intelligences integration with advanced technologies such as blockchain and quantum computing, to achieve unprecedented levels of scalability, transparency, and operational excellence. The findings indicated the ability of Generative Artificial Intelligence to improve service quality through the automation of repetitive tasks such as loan applications and fraud detection, reducing operational costs, while optimising resource utilisation. AI-enabled chatbots and virtual advisors enhanced customer satisfaction by providing continuous service and personalised financial advice. The findings also validated the role of Generative Artificial Intelligence in preventing fraud through real-time anomaly detection and predictive analysis, reducing false positives and improving security scores. However, the findings identified major challenges such as algorithmic bias, risks from cyberattacks, and the opacity associated with "black-box" models, which complicate compliance and ethical governance. Regulatory frameworks and explainable AI models were identified as potential solutions to these problems. Additionally, employee upskilling was emphasised as essential for successfully adopting Generative Artificial Intelligence in banking. The review provided a holistic overview of the state of Generative Artificial Intelligence adoption in banking, the associated challenges, and future directions, enriching the academic discourse on enhancing innovation and sustainability within the banking sector

Keywords: banking automation; artificial intelligence solutions; regulatory compliance; fraud detection; financial technology

Introduction

Generative Artificial Intelligence (GenAI) is revolutionising the banking sector with astonishing prospects for increasing operational efficiency, improving customer experiences, and achieving higher levels of scalability. By employing emerging technologies, such as natural language processing, predictive analytics, and deep learning, GenAI is transforming, how financial institutions carry out crucial operations, including detecting and preventing fraud, engaging with customers on a personal level, and ensuring compliance with various regulations, such as the General Data Protection Regulation (GDPR) and the Artificial Intelligence Act (Gellert, 2021). I. Botunac *et al.* (2024) emphasised that this novel approach enables banking institutions to enhance the way they carry out their business tasks, improve decision-making precision, and adapt to the dynamic and competitive environment. Previously, automation, self-service solutions, and information technology were the primary drivers of operational efficiency in the banking sector. Nevertheless, GenAI introduces improved flexibility through a wide range of tools for optimising workflows, reducing employee errors, and facilitating

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customer service. Z. Mohammadi & A. Bano (2024) highlighted that technologies, such as AI-driven chatbots and virtual advisors enable banks to promptly address customer queries at any time, significantly improving the customer experience. A notable example was the application of Robotic Process Automation (RPA) in conjunction with GenAI. With the proliferation of this technology, there is a growing tendency to employ it in completing monotonous tasks, such as loan application processing and account management. M.S. Thekkethil *et al.* (2021) emphasised that the key advantage of these processes was their speed due to automation. Moreover, employees were freed from routine activities to focus on higher-level tasks requiring human decision-making. This shift enables financial companies to optimise resource allocation, fostering greater innovation and strategic decision-making at all organisational levels. Other studies further reinforce this perspective. For instance, K. Huang *et al.* (2023) underscored the role of GenAI in enhancing financial fraud detection through real-time transaction analysis and anomaly detection algorithms, significantly reducing fraud-related losses. This real-time capability allowed for immediate intervention to prevent fraudulent activities, minimising financial damage. Similarly, S. Kanungo (2020) examined the deployment of GenAI for dynamic credit risk assessments, highlighting how these models enable banks to develop more precise and adaptive lending strategies by analysing complex datasets. Such dynamic assessments facilitate more personalised loan offerings and better risk management across diverse economic conditions. Furthermore, N. Rane *et al.* (2024) explored the integration of GenAI in customer relationship management, noting how AI-driven sentiment analysis and personalisation enhance engagement and customer retention in a highly competitive market. This personalised approach fosters stronger customer relationships and increases customer lifetime value through targeted interactions. Despite its promising potential, the adoption of GenAI in banking presented several challenges. Key concerns include data privacy, ethical governance, and model transparency, particularly given the industry's stringent regulatory environment. Additionally, issues such as AI "hallucinations", where models produce inaccurate or illogical outputs, introduce significant risks to decision-making processes. G. Shabsigh & E.B. Boukherouaa (2023) highlighted that ensuring effective deployment requires not only robust data strategies, but also highly skilled talent and comprehensive frameworks to address potential biases and ensure regulatory compliance. These elements are crucial for balancing the benefits of innovation with the need for reliability and accountability in banking services. This study evaluated the role of GenAI in improving banking service efficiency by synthesising its benefits, challenges, and future directions, thereby contributing to discussions on its transformative impact on financial services. To assess the transformative impact of GenAI in the banking sector, a systematic literature review was conducted. This review involved synthesising peer-reviewed articles, conference proceedings, and other academic contributions from reputable databases such as Scopus, Web of Science, and IEEE Xplore, focusing on studies published between 2015 and 2024. The methodology focused on identifying key trends, opportunities, and challenges within the adoption of GenAI in banking operations.

Generative Artificial Intelligence: An overview

Generative Artificial Intelligence, or GenAI, is one of the most significant developments in the field of artificial intelligence, as it is capable of producing content – be it text, images, or even synthetic datasets. While traditional AI systems only evaluate and make sense of already available data, Generative AI systems create new and intrinsically relevant data. This change is effectively illustrated by referring to some of the primary structures, including Generative Adversarial Networks (GANs), Variational Autoencoders, and Large Language Models (LLMs), which sit at the core of modern Generative AI technology. For instance, in (GANs), two models are used: one model generates the output, while the other differentiates the generated images from real ones. Meanwhile, LLMs like GPT rely on transformer architectures to understand and replicate human-like language patterns, making them indispensable in fields such as natural language processing and data augmentation (Lee *et al.*, 2024). GenAI has transformed the financial and banking sectors by introducing various innovations in key areas such as risk management, fraud prevention, and automated customer service operations (Fig. 1).

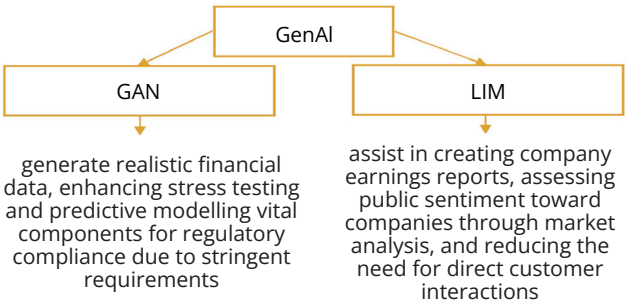

Figure 1. *Key innovations in the financial and banking sectors*
Source: *developed by the author*

These examples demonstrated that GenAI not only improves the efficiency of financial operations, but also enhances the quality of information-dependent processes by providing timely updates, which are crucial in the fast-paced nature of the industry (Kshetri, 2024). Integrating GenAI solutions into the financial industry is more complex than it might seem. This process involves working with sensitive financial data, which is subject to

specific regulatory controls. As a result, it can be challenging for generative models to fully understand the nuances of such data. Moreover, implementing these applications requires powerful computers and high-quality, task-specific training models, both of which are often costly and time-consuming to develop. In addition to these technical challenges, the adoption of GenAI in financial services faces issues such as algorithmic bias, data privacy concerns, and the risk of non-compliance with regulations. These challenges highlighted the need for effective governance frameworks to clarify the operationalisation of AI models in sensitive industries (Patil *et al.*, 2024). Critical ethical and regulatory factors influence the implementation of GenAI. For instance, even though synthetic data generation offers a solution for protecting the privacy of sensitive data by anonymising information, it raises concerns about the reliability and authenticity of the data provided. The European Union's General Data Protection Regulation (GDPR) and the soon-to-be-enacted AI Act impose stringent requirements on AI systems and their users, demanding the embedding of ethical principles in organisations' approved AI workflows (Gellert, 2021). To overcome these issues, it is important to involve regulatory bodies, designers of AI systems, and other stakeholders in the industry (Ishii, 2019). Looking ahead, the potential of GenAI in finance and other sectors is expected to surpass current expectations. Recent advancements in training methods, particularly Low-Rank Adaptation (LoRA), have enhanced the fine-tuning of AI models, making AI technology more cost-effective and applicable for specific purposes across various sectors of the economy. Additionally, GenAI is anticipated to integrate with other technologies such as blockchain and quantum computing, enabling the development of even better applications that are more secure and scalable. For instance, while it might seem contradictory, blockchain technology can enhance the transparency of AI outputs and inputs by providing clear and verifiable records of data transactions, addressing the limitations posed by cloud storage (Ren *et al.*, 2024). Conversely, it is presumed that quantum computers will elevate AI capabilities by reducing the time required for model training and advancing sophisticated areas such as motion prediction. However, with the emergence of such technological advancements, it is imperative to understand that change management must be exercised to foster innovation while adhering to regulatory principles. This necessity emphasised that policymakers must invest not only in policy frameworks, but also in the energy and resources required to ensure that AI growth occurs safely and responsibly.

Efficiency in banking services remains a critical concern due to its direct impact on financial stability, customer satisfaction, and economic growth. Banks strive to achieve the best output with the least input by optimising production processes, reducing costs, and enhancing service standards. Key features of effective banking services include faster transaction processing, lower costs, and improved accuracy in service delivery. Research has demonstrated that the banking sector becomes more efficient after undergoing digital transformation. This improvement is attributed to the automation of work processes, online transaction processing, and service delivery based on big data (Gherțescu *et al.*, 2024). The integration of technology, particularly artificial intelligence (AI) and digital solutions, has revolutionised efficiency in banking. AI-driven tools facilitate risk assessment, fraud detection, and decision-making processes, significantly reducing manual intervention and error rates. Additionally, digital platforms and automation have streamlined routine banking tasks, enabling faster transaction processing and enhancing customer interactions. For instance, a study by R. Sharma *et al.* (2024) highlighted that AI-powered fraud detection systems reduced false positives by 30%, allowing banks to allocate resources more effectively. Such advancements not only save costs, but also foster customer trust and loyalty through more reliable, responsive service delivery. In addition, regulatory compliance and risk management play a pivotal role in improving efficiency in the banking sector. The banking sector operates in a highly regulated environment, making it essential to embrace compliance-focused technologies. RegTech is an example of such technology, which simplifies compliance processes by automating reporting, monitoring, and auditing activities, requiring minimal time and resources. According to E. Johansson *et al.* (2019), banks that adopted RegTech solutions reduced their compliance costs by 15% compared to their overall operational costs, while also improving their operational resilience. This demonstrates a clear connection between adherence to regulations and enhanced operational efficiency.

GenAI applications in banking. Customer service and personalisation

GenAI is fundamentally changing, how the banking sector leverages customer service to combine efficiency with an increasingly personal touch. By employing cutting-edge technologies such as large language models, banks are redefining customer interactions, replacing traditional experiences with seamless, intuitive, and tailored alternatives. These innovations are not merely operational improvements; they represent a paradigm shift towards customer-focused banking. In customer service, GenAI enhances traditional support channels such as call centres and virtual assistants. For example, AIpowered chatbots handle routine tasks, including balance inquiries and transaction histories, with exceptional speed and accuracy (Kasaraneni, 2022). This allows human representatives to address complex or sensitive issues, creating a more balanced and effective customer service model. A notable example is Bank of America's virtual assistant, Erica, which has facilitated millions of interactions by providing budgeting advice, payment

tracking, and tailored financial guidance. Its conversational style ensures users feel supported rather than managed by a machine (Kochhar *et al.*, 2019). GenAI also drives personalisation, a cornerstone of modern banking. By analysing customers' financial histories and behaviours, AI systems recommend customised investment opportunities or loan packages. For instance, Citibank employs AI to deliver personalised financial advice through its digital platforms, aligning products with individual customer goals. This level of personalisation not only enhances satisfaction, but also built trust and loyalty, critical components of long-term banking relationships (Kaluarachchi & Sedera, 2024). Although GenAI holds great potential, its integration must address key issues, such as data security, regulatory compliance, and fairness in algorithms. By ensuring robust oversight and adhering to ethical guidelines, these technologies can effectively merge operational efficiency with genuine customer care, helping banks adapt to changing expectations in a competitive financial environment.

Advanced GenAI technologies are transforming fraud detection and risk management in the banking sector. Unlike traditional methods that rely on static rules or fixed patterns, these systems adapt dynamically to evolving threats. By analysing extensive datasets of transactions and user behaviours, they provide deeper insights into activities, enabling the detection of complex fraud schemes and significantly reducing false positives. This adaptive approach enhances security and operational efficiency, allowing financial institutions to better anticipate and mitigate risks in an increasingly complex threat landscape (Ali & Aysan, 2024). GenAI excels at real-time pattern recognition, identifying irregular behaviours such as sudden changes in spending patterns or unusual transaction locations that may signal fraudulent activity. For example, systems implemented by major banks can detect high-value purchases in unfamiliar regions, prompting immediate scrutiny. Furthermore, GenAI generates synthetic datasets to simulate potential fraud scenarios, enabling proactive identification of new threats before they emerge. This proactive approach strengthens defences against sophisticated schemes such as phishing and account takeovers. HSBC's AI implementation exemplifies this, enhancing detection accuracy while reducing false positives, thereby ensuring operational efficiency and customer trust. By adapting to evolving fraud tactics, GenAI bolsters fraud detection, mitigates cyber threats, and ensures seamless banking operations while maintaining high service quality (Barde & Kulkarni, 2023). GenAI significantly enhances risk management in banking through advanced predictive modelling. By analysing extensive datasets, these technologies enable institutions to simulate economic scenarios and assess their impacts on credit risk and market exposure. For instance, CitiBank employs AI-driven stress testing to model adverse conditions, such as economic downturns, providing detailed insights into borrower behaviours and financial vulnerabilities. These simulations facilitate more precise credit risk assessments and inform decisions on loan approvals and investment strategies. Additionally, GenAI's ability to continuously refine models based on new data ensures a proactive approach to risk mitigation, enabling banks to adapt swiftly to changing economic landscapes while optimising their financial operations (Hossain, 2024).

In the banking sector, GenAI was increasingly used to enhance regulatory reporting and improve compliance in terms of accuracy, efficiency, and transparency. This technology addresses long-standing issues in the sector by automating complex procedures, such as evaluating comprehensive regulatory frameworks and generating compliant reports from both structured and unstructured data. GenAI was widely used to automate regulatory filing preparation, including Know Your Customer (KYC) and AntiMoney Laundering (AML) procedures. By analysing transaction data, identifying irregularities, and creating thorough reports for regulators, these technologies reduce manual labour and ensure timely submissions. For example, AI-driven technologies assist banks in documenting decision-making processes and enhancing transparency in AI outputs, while ensuring streamlined compliance with the General Data Protection Regulation (GDPR) and Digital Operational Resilience Act (DORA) standards (Botunac *et al.*, 2024). Real-time monitoring and risk assessment in compliance are greatly improved by GenAI's ability to analyse legal texts, recognise regulatory updates, and suggest modifications. However, its complexity introduces challenges such as the "black box" issue, where AI decisions lack transparency. Explainable AI (XAI) approaches are being developed to improve stakeholder trust and accountability by providing clearer insights into AI-driven outcomes (AlJaloudi *et al.*, 2024). These approaches aimed to enhance transparency and build trust in AI-generated decisions.

Challenges and limitations of GenAI in the banking sector

GenAI systems can produce opaque and unpredictable results, making compliance with stringent banking standards difficult. The "black-box" nature of these models poses significant challenges to auditing and accountability, especially in high-risk applications such as loan approvals or fraud detection. Ethical considerations, including bias in data, can lead to discriminatory practices and reputational damage for financial firms. For instance, AI-driven credit scoring systems may inadvertently perpetuate historical inequalities, necessitating stricter governance frameworks to monitor fairness (Botunac *et al.*, 2024). Banking systems face increasing cybersecurity threats as a result of their growing reliance on GenAI. The threat of adversarial attacks, in which malicious actors manipulate inputs to produce harmful outcomes, is growing. Furthermore, GenAI could be exploited to automatically create malware or phishing

scams that are highly convincing, putting consumers and financial institutions at greater risk. Adherence to industry best practices for AI implementation and the development of strong cybersecurity architecture are necessary to build resilience against these threats (Dhoni & Kumar, 2023). GenAI's ability to mimic human-like reasoning and dialogue is often limited by its reliance on historical data. In banking, where real-time adaptability and precision are critical, errors or oversights in model outputs can lead to significant operational risks. For instance, inaccurate responses in automated customer service systems or incorrect transaction flagging in fraud detection may disrupt operations and erode customer trust (Dhake *et al.*, 2024). Specialised knowledge is needed to adopt GenAI, yet many financial organisations lack sufficient expertise for AI-related positions. Developing cross-functional teams, recruiting AI experts, and upskilling current staff remain ongoing challenges in integrating AI into current workflows. Furthermore, employees frequently express concerns about job displacement, when AI capabilities are introduced, highlighting the necessity of workforce inclusion measures, training, and clear communication (Walkowiak & MacDonald, 2023). Hallucinations, which occur, when GenAI produces factually incorrect or fabricated outputs, represent specific concerns in banking. For instance, hallucinated outputs in customer service could convey false information about financial products, undermining trust. Similarly, hallucinated regulatory interpretations might lead to compliance issues. These results are due to GenAI's probabilistic nature and limitations in its training data. Mitigating hallucinations requires thorough validation of AI-generated responses, incorporating human oversight, and developing model designs that prioritise factual correctness (Sahoo & Dutta, 2024).

This review highlighted the transformative impact of GenAI on the banking sector, particularly in driving operational efficiency, improving customer engagement, enhancing fraud detection mechanisms, and streamlining regulatory compliance. While the review identified numerous opportunities presented by GenAI, it also brought attention to critical challenges and limitations, emphasising the need for a balanced approach that aligns technological advancements with ethical and regulatory considerations. The findings confirmed that GenAI significantly improves operational efficiency by automating routine tasks, enabling banks to reallocate human resources to higher-value, strategic roles. Tools such as Robotic Process Automation (RPA) and AI-driven chatbots demonstrated tangible benefits in areas such as loan application processing, account management, and customer service. For instance, the integration of virtual assistants like Bank of America's "Erica" demonstrated, how AI can deliver personalised financial guidance while maintaining responsiveness at scale. However, the scalability of these solutions across diverse banking systems, particularly in underdeveloped or digitally immature markets, remains uncertain. Addressing these challenges requires future research to evaluate the adaptability and costeffectiveness of GenAI in heterogeneous banking environments.

GenAI has demonstrated superior fraud detection and risk management capabilities by leveraging real-time data analytics, pattern recognition, and synthetic data generation to combat sophisticated financial crimes. By simulating complex fraud scenarios, GenAI facilitated proactive threat identification and enables financial institutions to adapt to evolving cyber risks. However, the susceptibility of GenAI models to adversarial attacks and algorithmic bias raises questions about their reliability. Although AI has reduced cases of "false positives" in fraud detection, they still highlight the necessity for model refinement. Enhanced transparency through Explainable AI (XAI) frameworks and robust governance mechanisms will be crucial in addressing these concerns. Furthermore, collaboration between cybersecurity experts and financial regulators can mitigate risks associated with adversarial manipulation.

The ethical and regulatory implications of GenAI adoption are among the most pressing issues identified in the review. While GenAI has simplified compliance processes through automated reporting and real-time monitoring, its "black-box" nature has complicated auditability and decision transparency. This opacity is particularly concerning in high-stakes applications, such as loan approvals or credit risk assessments, where biases in AI outputs might perpetuate systemic inequalities. Additionally, hallucinations – instances, where GenAI generated incorrect or misleading outputs – pose risks to customer trust and regulatory compliance. To overcome these challenges, banks must integrate ethical guidelines into AI deployment strategies and adopt regulatory technologies (RegTech) that enhance accountability, while fostering innovation.

The adoption of GenAI introduced significant implications for the workforce, as automation reshapes traditional roles within financial institutions. While reducing the burden of repetitive tasks, GenAI necessitates a shift in workforce capabilities, requiring upskilling and cross-disciplinary expertise in AI operations. The review highlighted that fears of job displacement might create resistance among employees, necessitating transparent communication strategies and inclusive workforce development programs. By fostering a culture of collaboration between human expertise and AI systems, financial institutions can ensure a smoother transition to technology-driven workflows.

Conclusions

GenAI is transforming the banking sector, powering operational efficiencies, elevating customer experiences, and catalysing innovation. This review has underscored GenAI's transformative impact on automating routine tasks, enhancing fraud detection, and ensuring

regulatory compliance. From tailored financial solutions to predictive analytics, artificial intelligence applications offer banks assistance with efficient workflows, cost optimisation, and the ability to build trust and customer loyalty through tailored services. While GenAI holds transformative potential, incorporating it into banking operations faces several challenges. Data privacy considerations, algorithmic bias, and the black-box nature of models remain significant obstacles to transparency and accountability. Furthermore, challenges, like AI hallucinations and cybersecurity threats pose operational risks, requiring extensive mitigation strategies. To overcome these challenges, banks must implement strong governance mechanisms, invest in competent talent, and comply with strict regulatory obligations. The future for GenAI in banking is promising, especially, when coupled with next-generation technologies such as blockchain and quantum computing. Blockchain can enhance data transparency and traceability, while quantum computing may accelerate AI model training and expand applications. However, there needs to be a fine balance between innovative strategies and ethical and regulatory practices to fully realise these benefits. Ultimately, GenAI was a disruptor to traditional banking and presents an opportunity for great transformation as banks strive for better efficiency and innovation. By tackling its inherent challenges through an interdisciplinary approach and disciplined implementation, financial institutions can fully realise GenAI's potential, fostering secure, efficient, and customer-focused operations. Ensuring the sustainability of these efforts in such a rapidly evolving landscape will require future research focused on model interpretability, risk mitigation, and integration with synergistic technologies. Future research should also explore the integration of GenAI with other emerging technologies, assess its long-term impact on financial stability, and address the regulatory challenges surrounding its widespread adoption.

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Conflict of Interest

None.

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Оцінка генеративного ШІ у підвищенні ефективності банківських послуг

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Анотація. У цій статті було оцінено трансформаційну роль генеративного штучного інтелекту у підвищенні ефективності банківських послуг шляхом систематичного огляду літератури. У дослідженні було розглянуто, як генеративний штучний інтелект змінив традиційні банківські практики, автоматизуючи рутинні завдання, процеси прийняття рішень та покращуючи персоналізований клієнтський досвід. Також було висвітлено інтеграцію генеративного штучного інтелекту з передовими технологіями, такими як блокчейн та квантові обчислення, для досягнення безпрецедентного рівня масштабованості, прозорості та операційної досконалості. Результати дослідження продемонстрували здатність генеративного штучного інтелекту покращувати якість послуг через автоматизацію повторюваних завдань, таких як обробка заявок на кредити та виявлення шахрайства, що знижує операційні витрати та оптимізує використання ресурсів. Чат-боти та віртуальні радники, що працюють на базі штучного інтелекту, підвищують задоволеність клієнтів, надаючи цілодобовий сервіс та персоналізовані фінансові поради. Результати також підтвердили роль генеративного штучного інтелекту у запобіганні шахрайству через виявлення аномалій у реальному часі та проведення прогнозного аналізу, що зменшує кількість хибно позитивних результатів і покращує показники безпеки. Однак, було виявлено ключові виклики, зокрема алгоритмічну упередженість, ризики кібератак та непрозорість, пов'язану з моделями «чорного ящика», що ускладнює забезпечення відповідності нормативним вимогам, та етичне управління. Регуляторні рамки та моделі пояснюваного штучного інтелекту визначені як потенційні рішення цих проблем. Крім того, наголошено на важливості підвищення кваліфікації працівників для успішного впровадження генеративного штучного інтелекту у банківській сфері. Огляд надав цілісну картину стану впровадження генеративного штучного інтелекту в банківській сфері, пов'язаних викликів і перспектив, доповнюючи академічний дискурс щодо підвищення рівня інноваційності та сталого розвитку банківського сектору

Ключові слова: автоматизація банківських послуг; рішення штучного інтелекту; нормативна відповідність; виявлення шахрайства; фінансові технології

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Strategic procurement in the 21st century business and its impact on corporate performance of firms in the Nigerian manufacturing sector

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Abstract. Procurement plays a crucial role in every business organisation, yet many local enterprises in Nigeria face significant challenges in implementing efficient procurement strategies. The purpose of this study was to examine the effects of strategic procurement on the performance of Lafarge Cement Plc., a prominent manufacturing firm in Nigeria. Data from the study was analysed using the structural equation modelling and the findings revealed a significant relationship between the variables of interest. Specifically, the path analysis revealed that e-procurement plays a crucial role in enhancing operational performance. With strong path coefficients for key components such as data visibility (0.853), cycle time (0.816), and supplier relationships (0.822), e-procurement had a total effect coefficient of 0.623 on operational performance, which suggested that 63% of Lafarge Cement Plc. operations could be improved, if adequate consideration was given to e-procurement system like electronic Purchase Orders and procurement through other digital Sourcing Platforms. In a similar context, procurement integration was also found to substantially influence the competitive advantage, with a total coefficient of 0.703. This showed that by focusing on procurement efficiency such as cost savings and time reductions, Lafarge Cement Plc. can strengthen its market position to improve responsiveness to market demands. Supplier integration (0.907) was shown to positively influence service delivery quality. The analysis confirmed that strong supplier relationships, supported by effective contractual agreements and feedback mechanisms can enhance consistency and superior service delivery of the institution. The practical implications of this study were that by integrating e-procurement and supplier's integration into its procurement system, Lafarge Cement Plc. can efficiently adapt to changing market conditions in Nigeria, such as the everyday fluctuations in the cost of raw materials, thereby minimising supply disruptions and ensuring greater stability in its production

Keywords: sustainable procurement; supply chain management; supplier relationship management; procurement optimisation; cost reduction

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Introduction

In the 21st century, procurement emerged as a crucial function in modern business operations. It involves the three main 'P's, namely, planning, purchasing, and provisioning of goods, services, and/or resources, without which organisations cannot function. However, since the evolution of businesses to large-scale operations, the complexity of managing resources and supply chains has grown exponentially. Even in the modern fast-paced business landscape, many companies now grapple with persistent challenges like procurement inefficiencies, unreliable suppliers, and varied unpredictable costs. These hurdles do not merely disrupt operations, but stifle businesses' potential to unlock maximum value. Strategic procurement has become a game changer, causing a shift from simply managing acquisitions to redefining procurement as a key driver of competitive advantage, offering much more than merely cost savings for corporate enterprises.

According to W. Abdallah *et al*. (2024), strategic procurement can be regarded as a comprehensive approach to managing the entire product sourcing lifecycle. This refered not only to making purchases, but encompassed the entire process of identifying product needs, selecting the best suppliers, managing contracts, mitigating risks and disruptions, and continuously monitoring supplier performance to identify areas for improvement. I. Munir (2024) noted that over 63% of businesses were continuously seeking to optimise their supply chains and sourcing strategies for greater efficiency and long-term value. However, despite the prominence of procurement in global trade, the methods and approaches, through which procurement was conducted still indicate an evident challenge, especially within growing markets like Africa and some other developing parts of the world.

Africa has one of the largest consumer markets, both in population and consumption. With over 1.4 billion people, the continent is home to an expanding consumer class, driving increasing need for demand and purchasing activities. Meanwhile, in many African businesses, procurement was still a reactive function rather than a proactive one. The 2024 African Development Bank (ADB) report showed that nearly 50-70% of operational costs in African manufacturing firms are allocated to procurement expenses, almost double the percentage seen in firms within developed economies (Country focus report 2024 – South Africa..., 2024). As a result, many African businesses face inflated production costs due to inefficiencies in procurement processes. C. Ragasa *et al.* (2020) observed that some locally produced goods in Africa were priced similarly to, or even more expensively than, imported goods of the same quality. This discrepancy posed a major threat to the sustainability of local businesses and contributes to the growing strain on the balance of payments (BOP) in many African nations, a challenge that persists.

In Nigeria, Egypt, South Africa, and other African nations with large manufacturing sectors, very few local enterprises have successfully integrated strategic initiatives into their procurement processes to acquire inputs. The escalating costs of locally made goods specifically in Nigeria have highlighted inefficient procurement as a critical issue, affecting not only businesses, but also the broader economy. In 2020, the National Bureau of Statistics (2024) reported that Nigerian manufacturers allocate an average of ₦19.54 trillion from their operating expenses to procurement, largely due to inefficient sourcing practices and inflated costs imposed by intermediaries. Over the years, this figure had increased at a geometric rate, contributing to the reason that many Nigerian products were often priced higher than comparable imports, which undermined both sales and market competitiveness. As a result, businesses in Nigeria faced challenges such as frequent stock-outs, overstocking, and missed opportunities.

Despite these setbacks and challenges, D.O. Areguamen *et al.* (2022) highlighted that many local administrators in Nigerian businesses continue to perceive procurement as a simple transactional function, often reducing it to activities like bargaining and negotiation, while overlooking its strategic role in driving long-term business value. N.D. Lebete & T.C. Maramura (2023) emphasised that procurement costs constitute a significant portion of operational expenses for Nigerian firms. However, the narrow focused on short-term savings rather than long-term strategic goals limited the potential of these businesses to leverage procurement for sustainable growth and competitive advantage in the global market.

The purpose of this study was to examine the effects of strategic procurement on corporate performance of Lafarge Cement Plc., Nigeria. The study sought to understand the current state and effect of procurements in Nigeria through specific objectives, such as: to determine the influence of e-procurement on operational performance in Lafarge Cement Plc., Nigeria; to assess the effects of procurement integration on competitive advantage in Lafarge Cement Plc., Nigeria; to ascertain the effects of supplier integration on the quality service delivery in Lafarge Cement Plc., Nigeria.

Hypothesis of the study: H01: E-procurement does not have significant effect on operational performance; H02: Procurement integration does not significantly influence competitive advantage; H03: Supplier integration does not significantly affect enterprise quality services delivery.

Literature Review

Strategic procurement has emerged as a critical component in modern organisational operations, reshaping conventional practices to align with broader business objectives. The shift from perceiving procurement as a

simple administrative task to recognising it as a strategic driver has sparked a wealth of academic discourse. According to M.T. Seidu *et al.* (2024), the concept "strategic" in procurement refered to an integral approach to sourcing that fulfils long-term goals, harmonising procurement with business strategies to maximise value and minimise risks. Unlike mere purchases, it was an organisational process of planning to ensure that the goods and services needed to do business successfully were obtained on time as needed, and on budget. G.W. Kitavi *et al.* (2020) elaborated on this distinction by highlighting the shift from conventional procurement, which was often transactional, to a more integrative process involving supplier collaboration and long-term planning. This evolution underscored the strategic significance of procurement as a dynamic function linked to overall organisational success in modern business environment.

Specifically, the recent advancements in technology have further reshaped procurement practices, particularly through digital tools and automation. C.C. Ugo *et al.* (2022) identified digital procurement or e-procurement as a pivotal strategy for enhancing efficiency and transparency. Despite these benefits, N.D. Lebete & T.C. Maramura (2023) cautioned that over-reliance on automation may marginalise suppliers lacking technological capabilities, particularly in developing regions. This tension highlighted the dual role of technology as both an enabler and a disruptor in global procurement.

While electronic technology and procurement integration were widely recognised as components to strategic sourcing, S. Juhara (2024) emphasised supplier integration another critical element addressing vulnerabilities that can disrupt operations. It mitigated the financial and operational risks of contract delays, advocating for proactive mitigation strategies. These included supplier performance evaluation and contingency planning, which were particularly relevant for Nigerian manufacturers, as noted by D.O. Areguamen *et al.* (2022). Their study highlighted the value of maintaining efficient supply chains and managing risks to ensure operational continuity. Game theory provided a useful framework for understanding these dynamics, illustrating how strategic decisions between buyers and suppliers shape procurement outcomes.

Empirical research has increasingly linked strategic procurement to improved organisational performance. E.G. Assam *et al.* (2023) reported a positive correlation between sustainable procurement practices and logistics efficiency, emphasising procurement's role in driving operational success. However, C.T. Zwingina *et al.* (2022) presented a more complex picture in their analysis of the Nigerian oil and gas sector, where procurement's impact on firm performance was mediated by external factors such as market volatility and regulatory challenges. These findings suggested that, while strategic procurement offered significant potential, its effectiveness can vary depending on industry-specific conditions.

Despite these advancements, challenges persist in the Nigerian context, where many businesses fail to fully embrace strategic procurement. S. Juhara (2024) also found that procurement was often considered as a transactional function focused on bargaining and negotiation, as opposed to a strategic enabler of value creation. This limited perspective was further reflected in the significant financial burden of inefficient procurement practices. Nigerian manufacturers allocated a substantial portion of their operating expenses to procurement, driven by inflated costs and inefficiencies. These practices result in higher product prices, reducing competitiveness and exacerbating challenges such as stockouts and overstocking.

To address these issues, researchers have emphasised the need for a broader adoption of strategic procurement practices. E.G. Assam *et al.* (2023) underscored the value of sustainable procurement strategies in optimising logistics and reducing costs. However, C.T. Zwingina *et al.* (2022) suggested that industry-specific factors must be considered, particularly in sectors like oil and gas, where procurement challenges were deeply intertwined with external market dynamics. According to C.C. Ugo *et al.* (2022), fostering supplier collaboration and leveraging digital tools can greatly enhance procurement efficiency, but these efforts must be tailored to the unique needs of each industry. Conclusively, while the evolution of procurement practices has been significant, there is still a pressing need for more context-specific research, particularly in developing economies like Nigeria.

Materials and Methods

The study employed a quantitative research methodology, grounded in the philosophical framework of positivism. Descriptive survey research design was adopted, and the population comprised the entire 243 staff members of Lafarge Cement Plc. in Ilorin, Kwara State, Nigeria. The organisation was selected being a prominent leader in not only Nigerian manufacturing, but the African manufacturing sector at large. As a large corporation with expansive operations, its use of advanced procurement strategies can reveal valuable data, on how these practices influence corporate performance, offering a comprehensive case study for others in the sector. In determining the sample size, R.V. Krejcie & D.W. Morgan (1970) formula was utilised with formula presented as follows:

$$s = \frac{X^2 \mathrm{NP}(1-\mathrm{P})}{\mathrm{e}^2(\mathrm{N}-1)+X^2\mathrm{P}(1-\mathrm{P})}, \quad (1)$$

where X^2 is the chi-square value for 1 degree of freedom at a 0.05 significance level (3.841); N is the population size of workers (243); P is the estimated proportion of 0.5 maximises variance, ensuring the largest possible sample size; e is the degree of accuracy or significance level, set at 0.05. R.V. Krejcie & D.W. Morgan (1970) recommended the use of 0.50 as an estimate of the

population proportion to maximise variance, which will also produce the maximum sample size. Thus, at 95% confidence level, P = 0.5, (1−) ≈ 1.

$$s = \frac{3.841 \text{ x } 243 \text{ x } 0.5\ (1-0.5)}{0.05^2(243-1)+3.841 \text{ x } 0.5\ (1-0.5)};$$
$$s = \frac{933.363\ x\ 0.25}{0.605+0.96025};$$
$$s = \frac{233.34075}{1.56525};$$
$$s = \frac{233.34075}{1.56525} = 149.0757067\ . \quad (2)$$

The sample size for the study was determined at 149, which was in accordance with the views of N. Hill & J. Brierley (2003), who reported that a sample size of 100 and above was sufficient to present good concise research findings. The tools used in the study included a well-structured questionnaire employing a 5-point Likert scale (Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), Strongly Disagree (SD)) to precisely measure respondents' perceptions and opinions, with a pretest conducted on 10 respondents to ensure the reliability and clarity of the questionnaire.

The survey covered three core research questions: 1) "In what way does e-procurement affect operational performance of manufacturing firms?"; 2) "What is the influence of procurement integration on Lafarge competitive advantage?"; 3) "What impact does supplier integration have on the quality service delivery?". In distributing the survey, a simple random sampling technique was employed, giving each employee in the organisation an equal chance of selection. S.P. Mukherjee (2019) pointed that this method minimised bias and ensured that the sample accurately represented the broader population within Lafarge Cement Plc. Questionnaires were handed directly to respondents, with statements carefully crafted to focus on each of the study's variables, encouraging precise responses. To further enhance the instrument's effectiveness, a content validity check was conducted, ensuring alignment with the objectives of the study. Structural equation modelling (SEM) was subsequently used to analyse the collected data, offering a robust framework for evaluating relationships among variables. The study was conducted following the norms of The Declaration of Helsinki (2013).

Results and Discussion

Results present the findings of this study, which investigated the influence of strategic procurement on organisational performance at Lafarge Cement Plc. The analysis offered critical insights from the collected data, highlighting the effects of procurement practices on operational performance, competitive advantage, and quality service delivery. Descriptive statistics, including frequency distribution and tabular presentation, were employed to summarise the data and provide a clear overview of respondents' perceptions. To test the research hypotheses, Structural Equation Modelling (SEM) was employed as an inferential statistical technique. However, out of the 149 distributed questionnaires, 121 were completed and returned, resulting in an impressive response rate of 81%. This strong response provided a reliable foundation for the study's conclusions, with the findings summarised in Table 1.

Table 1. *Demographic characteristics of the respondents*

Variable	Category	Frequency	Percentage
Gender	Male	75	62.0%
	Female	46	38.0%
	Total	121	100%
Age	18-25 years	39	32.2%
	26-35 years	58	47.9%
	36-45 years	21	17.4%
	46 years and above	3	2.5%
	Total	121	100.0%
Marital status	Single	52	43.0%
	Married	58	47.9%
	Divorced	9	7.5%
	Widowed/Widower	2	1.6%
	Total	121	100.0%
Highest educational level	OND/NCE	45	37.2%
	B.Sc/HND	71	58.7%
	MSc	5	4.1%
	PhD	0	0.0%
	Total	121	100.0%

Source: *developed by the authors*

The demographics results showed that 62% of the respondents were male and 38% of them were female. This implied that more than half of the total respondents were male. M.M. Ugochukwu (2020) observed that

the job requirements in the sampled company tend to favour male employees due to the strenuous and laborious nature of the tasks involved. Therefore, there was a greater number of male employees compared to female employees at Lafarge Cement Plc. (Miltenburg, 2008). In addition, the firm was full of largely homogenous, young employees (26-35 years), which could be due to the fact that the work required youths full of strength and vigour to work and operate effectively. Most employees at Lafarge Cement Plc. were married (47.9%). Importantly, the educational qualification of respondents revealed that 37.2% of the respondents were at least OND/NCE holders, 58.7% of the respondents held B.Sc/HND degrees, 4.1% held MSc, while few held PhD. This implied that respondents had qualifications necessary to understand and respond to the study questionnaire, thus enabling them to provide valid responses, on how strategic procurement affected their performance. K.J. Sileyew (2020) emphasised that data analysis relies on sufficient, relevant data aligned with its purpose, whereas inadequate data can lead to inaccurate conclusions. To ensure reliable and valid results, a normality test was conducted (Table 2).

Table 2. *Normality test*

	Number of observations used	Mean	Std. deviation	Excess kurtosis	Skewness
E-procurement	121.000	0.850	0.032	-0.361	-0.067
Operational performance	121.000	0.840	0.046	-0.435	-0.161
Procurement integration	121.000	0.838	0.027	-0.038	-0.226
Competitive advantage	121.000	0.839	0.027	-0.408	-0.038
Supplier integration	121.000	0.831	0.057	-0.293	-0.263
Quality service delivery	121.000	0.885	0.013	-0.341	-0.269
Organisational performance	121.000	0.822	0.001	-0.408	-0.292

Source: *developed by the authors*

The normality results revealed that the sample size was 103, which implied that an absolute value of skewness of +1.0 or below was expected for the data to be normal. For kurtosis, an absolute value of +3.0 was expected for a normal peakedness as any figure outside the threshold may be severely signalling a concern. The normality results showed that all the variables were within the threshold of the absolute value of ±1.0 and the kurtosis results were also within the absolute value of ±3.0. The normality test results indicated that all data included in the analysis were normally distributed, making them suitable for further analysis and inferences.

To assess the effects of strategic procurement on organisational performance, three hypotheses were formulated. The first assessed e-procurement measured by data visibility, cycle time, and supplier relationship against operational performance. The second examined procurement by procurement efficiency, cost savings, and time savings against competitive advantage. The third assessed supplier integration measured by contractual agreements, supplier capabilities, and feedback mechanisms.

The analysis of the model provided comprehensive insights into the interrelationships between strategic procurement practices and organisational performance at Lafarge Cement Plc. The findings highlighted the interconnected nature of the independent variables (e-procurement, procurement integration, and supplier integration) and their significant impact on the dependent constructs (operational performance, competitive advantage, and quality service delivery).

The path analysis revealed that e-procurement significantly enhanced operational performance, with a total effect coefficient of 0.623. Key components, such as data visibility (0.853), cycle time (0.816), and supplier relationship (0.822) collectively drive this outcome. These dimensions underscored the efficiency gains achievable through enhanced visibility and streamlined processes. Operational performance indicators, with positive coefficients (0.818, 0.907, and 0.795), reinforced the strong linkage between e-procurement and efficiency in operational processes. This suggested that adopting robust e-procurement systems can lead to significant cost reductions, improved resource allocation, and greater transparency in operations. For Lafarge Cement Plc., these efficiencies translate into improved production timelines, better supply chain coordination, and a reduction in bottlenecks, enabling the organisation to meet market demands more effectively.

Procurement integration was found to substantially influence the competitive advantage, with a total coefficient of 0.703. Efficiency in procurement processes, as indicated by a coefficient of 0.856, enhanced profitability through cost savings and supports competitive pricing strategies. Additionally, time-saving measures (0.803) highlighted the role of reduced lead times in achieving greater market responsiveness and flexibility. These findings underscored the value of aligning procurement strategies with overall business goals. By integrating procurement functions across organisational units, Lafarge Cement Plc. can achieve cost leadership, while maintaining a strong market position. This integration facilitated improved collaboration, streamlined decision-making, and the ability to adapt to dynamic market conditions, ultimately supporting long-term sustainability (Fig. 1).

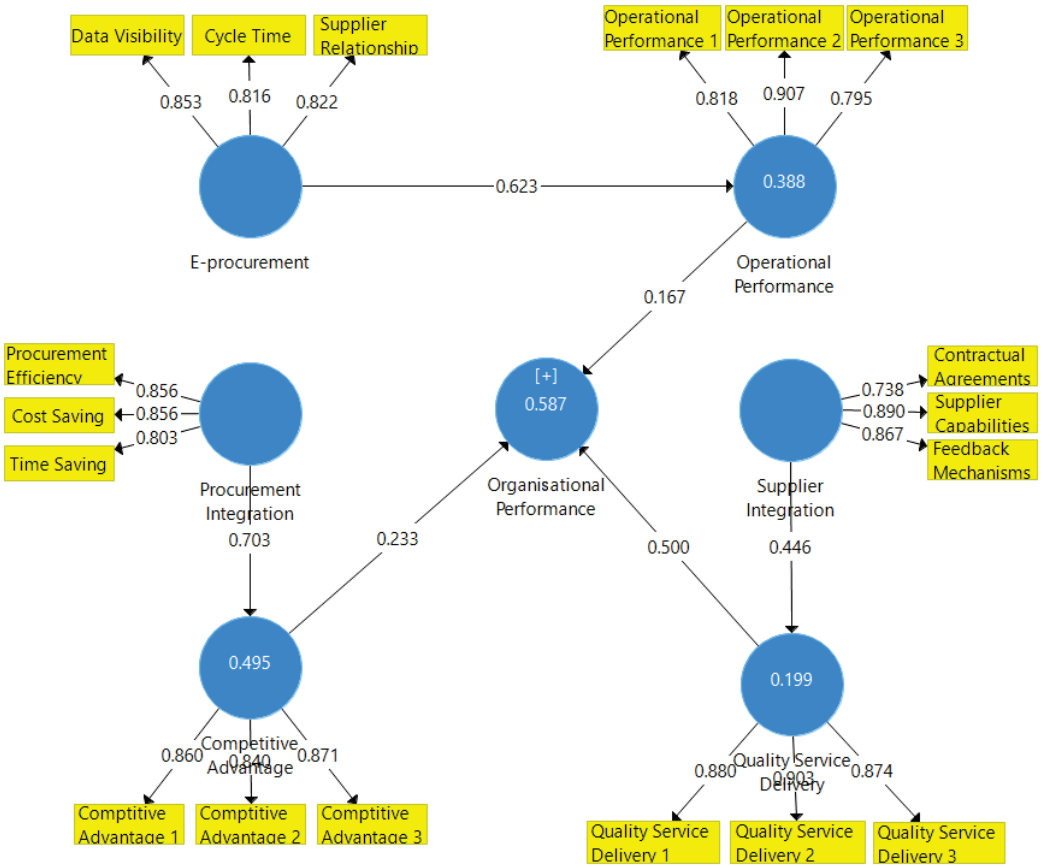

Figure 1. *Path model of strategic procurement and organisational performance*
Source: *developed by the authors of this study*

The relationship between supplier integration and quality service delivery was significant, as indicated by positive weights for all proxies. The path analysis confirmed that well-structured supplier integration mechanisms, such as robust contractual agreements, supplier capabilities, and effective feedback mechanisms positively influence service delivery outcomes. For Lafarge Cement Plc., these findings highlighted the critical role of strong supplier partnerships in ensuring consistent quality and reliability. Supplier integration not only reduced the risk of supply chain disruptions, but also fostered innovation through collaboration, enabling the delivery of superior products and services. The ability to maintain high service standards strengthened customer satisfaction and loyalty, which were essential for competitive success in the manufacturing industry.

The interrelations among the constructs revealed critical insights into the dynamics of strategic procurement practices. Efficiency gains from e-procurement, such as real-time data visibility and reduced cycle times, complement procurement integration by enhancing coordination and decision-making, which directly affects both operational performance and competitive advantage. Analogously, effective procurement integration fostered stronger supplier relationships through seamless communication and collaborative planning, ensuring supplier reliability and alignment with organisational goals, which significantly improved quality service delivery. Moreover, integrated supplier networks bolster operational performance by reducing lead times and ensuring the prompt delivery of quality materials, thereby enhancing overall production efficiency (Table 3).

Table 3. *Results of hypothesis testing*

Hypothesis	Standard deviation (STDEV)	P-Values	Supported/Not supported
H_{01}: E-procurement significantly influences operational performance	0.071	0.000	Supported
H_{02}: Procurement integration significantly influences competitive advantage	0.056	0.000	Supported
H_{03}: Supplier integration significantly influences enterprise quality service delivery	0.063	0.001	Supported

Source: *developed by the authors*

Result from H01 revealed that various dimensions of e-procurement contribute significantly to enhancing operational performance. For H01, which tested whether e-procurement had a significant effect on operational performance, the findings revealed that this hypothesis was not supported. The standard deviation (STDEV) for this relationship was 0.071, and the P-value was 0.000, which is highly significant. The low standard deviation suggested that the results were consistent across respondents, and the P-value further suggested strong statistical significance, supporting the rejection of the null hypothesis. This implied that e-procurement had a significant and positive impact on operational performance at Lafarge Cement Plc. The significant P-value (0.000) indicated a very low probability of the result occurring by chance, strengthening the argument that e-procurement was genuinely a critical factor in enhancing operational efficiency.

Furthermore, the result aligned with findings from existing literature, where N.D. Lebete & T.C. Maramura (2023) highlighted, how visibility and supplier relations in procurement processes were essential to overcoming challenges within complex organisations, ultimately improving performance. In the Nigerian manufacturing sector, where M.M. Ugochukwu (2020) emphasised the critical role of inventory and procurement efficiency on profitability, e-procurement's contribution to reducing cycle time and improving data visibility aligned with increased operational control and cost reduction. S. Bag *et al.* (2020) discussed, how strategic procurement initiatives, such as e-procurement, contribute to stronger operational frameworks, which enabled companies to respond more efficiently to market demands. Moreover, C. Ragasa *et al.* (2020) illustrated that competitive performance for local manufacturers in West Africa relied heavily on efficient sourcing and procurement processes to match or exceed the quality and cost-effectiveness of imports.

For H02, which proposed that procurement integration does not significantly influence competitive advantage, the hypothesis was also not supported. Findings from H02 revealed that procurement integration plays vital role in strengthening competitive advantage of sampled firm. The findings revealed a standard deviation of 0.056 and a P-value of 0.000. Again, the low standard deviation suggested consistency in the data, while the P-value confirmed the statistical significance of the relationship. These findings suggested that procurement integration had a substantial positive impact on competitive advantage. F. Bienhaus & A. Haddud (2018) highlighted that the digitalisation of procurement processes, often termed "Procurement 4.0", played a vital role in driving procurement efficiency and lowering costs. Additionally, L.A. Jama & I.H. Mohamud (2024) found that strategic procurement integration not only reduced costs, but also fostered sustainable supplier relationships, directly affecting competitive standing. Thus, this analysis underscored that in manufacturing enterprises, procurement integration is critical to achieving both cost effectiveness and a competitive advantage, ultimately facilitating stronger market positioning and resilience.

H03, which tested whether supplier integration significantly affected enterprise quality service delivery, was found to be supported. The standard deviation for this hypothesis was 0.062, and the P-value was 0.000, both of which suggested a significant and reliable result. The low standard deviation suggested that the findings were consistent across respondents. The significant P-value reinforced the conclusion that supplier integration played a crucial role in ensuring quality service delivery. This aligned with J.E. Hobbs (2020), who emphasised the significance of close supplier relationships and integrated supply chains in maintaining quality and resilience during challenging times, such as the COVID-19 pandemic. Analogously, K. Chinogwenya & R. Utete (2023) highlighted that high maturity levels in supplier integration and logistics processes were essential for achieving reliable service quality, especially in advanced manufacturing contexts. D. Fianka & T. Perera (2022) cautioned that over-reliance on specific suppliers can led to vulnerabilities, they also noted that integrated supplier relationships facilitate resource recovery and efficiency, which is crucial in a circular economy.

These findings underscored the value of strong supplier relationships and integration in maintaining high service standards, as suppliers with strong capabilities were more likely to contribute to consistent, high-quality performance. Thus, the results of hypothesis testing indicated that e-procurement, procurement integration, and supplier integration all significantly affect operational performance, competitive advantage, and service delivery, respectively. S. Tripathi & M. Gupta (2021) affirmed that low standard deviations and highly significant P-values (all below the 0.05 threshold) lend strong support to these relationships, confirming that these procurement practices were vital to the performance and competitiveness of Lafarge Cement Plc.

In summary, the findings of this study provided strong empirical evidence that e-procurement, procurement integration, and supplier integration play a significant role in improving operational performance of Lafarge Cement Plc. in Nigeria. It was found that e-procurement helped the company operate more efficiently, procurement integration strengthens its competitive advantage, and supplier integration improves the quality of services delivered. The consistent findings and strong statistical evidence proved that these procurement practices were essential for boosting performance, reducing costs, and staying competitive in the manufacturing industry.

Conclusions

In the 21st-century business environment, strategic procurement is not merely an operational necessity but a

crucial driver of competitive advantage. The findings of this study emphasised the significant influence of three core procurement variables – e-procurement, procurement integration, and supplier integration, on the corporate performance of Lafarge Cement Plc. E-procurement, by transforming procurement digitally, enhances operational efficiency through better data visibility, reduced cycle times, and strengthened supplier relationships, thus boosting productivity and responsiveness. Procurement integration ensured cost savings and time efficiencies, promoting seamless workflows and optimised resource allocation, which reinforced the company's competitive edge. Supplier integration, by fostering close partnerships, improved service quality and delivery reliability, mitigated risks, and enhanced supply chain resilience, key for sustaining operational excellence. Together, these strategic procurement elements underscored the vital role of procurement in driving the operational and competitive strength of Lafarge Cement Plc., solidifying its position in a competitive market.

Based on the conclusions drawn from the study, several recommendations were proposed for Lafarge Cement Plc., the manufacturing industry, and other stakeholders, including the government and researchers. Lafarge Cement Plc. and other stakeholders should enhance e-procurement practices to improve operational performance by leveraging data visibility, optimising cycle times, and strengthening supplier relationships. To boost organisational performance and competitive advantage, the company should advance procurement integration through initiatives that emphasised procurement efficiency, cost savings, and time management. Additionally, fostering supplier integration was essential for enhancing service quality, which can be achieved by implementing robust contractual agreements, digital payment platforms, and effective feedback mechanisms. These measures will not only build stronger customer relationships, but also ensure the delivery of superior services.

Further research should explore the individual and combined effects of e-procurement, procurement integration, and supplier integration on firm performance in other industries. Expanding this research to sectors like healthcare, retail, and logistics would offer valuable insights for improving not only the firm's procurement strategies, but largely driving economic growth in Nigeria.

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None.

Conflict of Interest

None.

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Стратегічні закупівлі в бізнесі XXI століття та їх вплив на корпоративну ефективність підприємств виробничого сектору Нігерії

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Анотація. Закупівлі відіграють ключову роль у кожній бізнес-організації, проте багато місцевих підприємств у Нігерії стикаються зі значними труднощами у впровадженні ефективних стратегій закупівель. Метою цього дослідження було вивчення впливу стратегічних закупівель на ефективність Lafarge Cement Plc., провідного виробничого підприємства в Нігерії. Дані дослідження були проаналізовані за допомогою структурного моделювання рівнянь, і результати виявили значний взаємозв'язок між досліджуваними змінними. Зокрема, аналіз траєкторії показав, що електронні закупівлі відіграють важливу роль у підвищенні операційної ефективності. Маючи високі коефіцієнти зв'язку для ключових компонентів, таких як видимість даних (0,853), цикл часу (0,816) і відносини з постачальниками (0,822), електронні закупівлі мали загальний коефіцієнт впливу 0,623 на операційну ефективність, що свідчило про те, що 63 % операцій Lafarge Cement Plc. можуть бути покращені за умови належного впровадження системи електронних закупівель, таких як електронні замовлення на закупівлю та використання цифрових платформ для закупівель. У подібному контексті інтеграція закупівель також суттєво впливала на конкурентну перевагу із загальним коефіцієнтом 0,703. Це показало, що, зосереджуючись на ефективності закупівель, таких як економія витрат і скорочення часу, Lafarge Cement Plc. може зміцнити свої ринкові позиції та підвищити адаптивність до ринкових вимог. Інтеграція постачальників (0,907) мала позитивний вплив на якість обслуговування. Аналіз підтвердив, що міцні відносини з постачальниками, підкріплені ефективними договірними угодами та механізмами зворотного зв'язку, можуть забезпечити стабільність та високий рівень обслуговування підприємства. Практичні наслідки цього дослідження свідчать про те, що завдяки інтеграції електронних закупівель та взаємодії з постачальниками у свою систему закупівель, Lafarge Cement Plc. може ефективно адаптуватися до змінних ринкових умов у Нігерії, таких як щоденні коливання вартості сировини, тим самим мінімізуючи затримки у постачанні та забезпечуючи більшу стабільність у своєму виробництві

Ключові слова: сталий розвиток закупівель; управління ланцюгами постачання; управління відносинами з постачальниками; оптимізація закупівель; зниження витрат

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Digital economy: Trends, challenges, and development prospects

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Abstract. The relevance of the topic is driven by the rapid development of information technologies, which are transforming business models, consumer habits, and methods of conducting economic activities. In a world, where digital technologies are becoming the foundation for innovation and competitiveness, understanding the processes taking place in the digital economy is critically important. The purpose of the article was to systematise the main trends in the development of the digital economy, identify the challenges faced by governments, businesses, and society as a whole, and assess the prospects for digital transformation in various sectors of the economy. To achieve this goal, it was apply a comprehensive analytical method, which included a review of scientific articles, analysis of statistical data, as well as a study of digitalisation practices in different countries. The findings confirmed that the digital economy has significant potential to stimulate economic growth, increase productivity, and create new jobs. However, despite the positive outlook, the article also identified serious challenges, such as inequality in access to digital technologies, cybersecurity issues, and the need to adapt legislation to new market conditions. Additionally, it emphasised that not all countries have equal opportunities to leverage digital technologies, which may lead to increased inequality between them. The article also proposed approaches to forming partnerships between government institutions, businesses, and educational establishments to ensure the successful integration of digital technologies into all areas of life. Key investment areas have been identified, including infrastructure development, raising the level of digital education, and supporting innovation and startups. The practical value of the study lies in the development of recommendations for shaping effective government policies and strategies that can promote the development of the digital economy

Keywords: digital transformation; digital technologies; Internet; social networks; cellular mobile connections

Introduction

The digital economy has become an integral part of the global economic landscape, creating new opportunities and challenges for businesses, governments, and society as a whole. This phenomenon, which encompasses the use of digital technologies to conduct economic activities, includes e-commerce, financial technologies, the platform economy, and other innovative models.

Among the key trends shaping the development of the digital economy are the rapid growth of data volumes, the automation of business processes, and the widespread integration of artificial intelligence. These technologies are not only transforming business operations, but also reshaping traditional industries, creating new markets and opportunities for entrepreneurship. However, alongside the positive aspects of digital transformation, significant challenges also arise, such as cybersecurity, inequality in access to digital resources, and the need to adapt regulatory frameworks. Businesses and governments are facing the need to find a balance between innovation and ensuring security, privacy, and social responsibility.

The study of the digital economy was conducted by scholars M. Akuliushyna *et al.* (2024), who identified the prospects for the development of the digital economy

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in Ukraine. O. Cherep *et al.* (2024) outlined the advantages and challenges of the digitalisation of Ukraine's economy, researched the essential characteristics, main goals, and tasks of Ukraine's economic digitalisation. The authors highlighted, refined, and characterised the principles of the digital economy, which are becoming avant-garde in nature.

The author N.O. Fisunenko (2023) revealed key aspects of the digital transformation of the national economy in the context of European integration processes from both theoretical and practical perspectives. T.Ya. Gubernat *et al.* (2024) studied the role of the digital economy as a catalyst for the development of small and medium-sized enterprises (SMEs), focusing on aspects of innovation and institutionalisation. They examined key opportunities for SMEs in the context of the digital economy and explored the main aspects of innovation and institutionalisation of the digital economy in the SME sector.

Researchers N.M. Hurzhiy *et al.* (2024) explored the complex interrelationship between digitalisation and consumer habits, highlighting the mechanisms that drive behavioural shifts in online engagement, purchasing models, and brand loyalty. They also analysed companies' strategic responses to the digital challenge, examining, how businesses adapt their marketing approaches, distribution channels, and product innovations to succeed in the digital space.

Scientists O. Koval & O. Lyshak (2024) characterised the digital transformation of the economy under global challenges and analysed the impact of digital transformation on the economy, particularly on business processes and socio-economic systems. They investigated the role of innovative technologies, such as artificial intelligence and blockchain, in transforming traditional industries, while also identifying the advantages of the digital economy and the major challenges related to cybersecurity. V.V. Makedon & A.V. Chabanenko (2022) highlighted the features and distinctive traits of the digital economy's emergence in modern globalised world. The authors explored the dynamics of production, trade, and consumption of digital products and services in the global economy and developed a model of the global IT infrastructure for collecting and storing digital data.

H.V. Nazarova & V.O. Rudenko (2021) studied the etymology and institutional structure of the digital economy, considering it as a system of social, cultural, economic, and technological relationships between the state, business, and citizens functioning in a global information space. Researchers emphasised the extensive use of network technologies that generate digital types and forms of production and delivery of products and services, leading to continuous innovative changes in management methods and technologies aimed at improving the efficiency of socio-economic processes. N. Shveda *et al.* (2024) established the theoretical, conceptual, and practical foundations of digital transformation on the example of Ukraine and developed recommendations for improving the development of digital transformation processes.

The purpose of the article was to systematise the primary trends in the digital economy's evolution, identify key challenges faced by governments, businesses, and society, and evaluate the prospects for digital transformation across various economic sectors.

Materials and Methods

To conduct a comprehensive analysis of the digital economy, its trends, challenges, and prospects for development, this article employed a set of integrated research methods aimed at generating new scientific insights. In the initial phase, a thorough review of existing academic sources, publications, and reports on the digital economy was conducted. This phase allowed for the formation of the theoretical basis of the study and the identification of key areas for analysis. A combined approach was used to collect empirical data, integrating both quantitative and qualitative methods. The quantitative analysis involved processing statistical data on the development of the digital economy, while the qualitative analysis included case studies of specific companies and projects. Data were gathered from open sources such as statistical reports, reports from international organisations, and studies conducted by other researchers. This enabled the conclusions to be supported by both quantitative and qualitative data. The choice of these methods was driven by the need to obtain a comprehensive and in-depth understanding of the development of the digital economy. The combination of quantitative and qualitative approaches allowed for not only a statistical assessment of trends, but also a deeper understanding of the context and motivation of market participants. The experimental base of the study consisted of data obtained from the following sources: official reports from statistical agencies such as Google Marketing Platform (2024), Meta (2024), ByteDance (2024). Data from sources such as LinkedIn (2024), X Business (2024), the World Bank Group (2024), the International Monetary Fund (2024), the OECD (2024), and internal reports from companies like Google LLC, Meta Platforms, Inc., ByteDance Ltd, LinkedIn Corporation, X Corp., and GSMA were also analysed, providing insights into the adoption of digital technologies. The statistical data in the study were collected using various open-source reports and resources, ensuring a comprehensive and detailed analysis. DataReportal (2024) provided information on internet and social media penetration rates in Ukraine, offering insights into the number of active users for platforms like Facebook, YouTube, Instagram, and TikTok, including total users, gender distribution, and growth rates. Meta (2024) presented statistics on user demographics and activity for Facebook and Instagram, revealing trends in audience reach and usage rates over time. Kepios (2024) supplied

data on internet penetration and the growth of online users in Ukraine, emphasising demographic patterns and estimates of the offline population. Ookla (2024) contributed data on internet connection speeds in Ukraine, including median mobile and fixed broadband speeds, showcasing year-over-year improvements. GSMA Intelligence (2024) shared insights on the number of mobile connections in Ukraine, reflecting the prevalence of multi-device usage. Google Marketing Platform (2024) and LinkedIn (2024) provided detailed audience data for YouTube and LinkedIn, focusing on user demographics and potential advertising reach. ByteDance (2024) delivered information on TikTok's user base in Ukraine, emphasising adult users aged 18 and above and growth trends. X Advertising (2024), formerly Twitter, highlighted the expansion of platform usage and audience reach in Ukraine. The study employed significant methodologies for data usage, including quantitative analysis, processing numerical data from the mentioned sources to identify trends and draw comparisons over time. Metrics such as internet penetration, social media adoption, and connection speeds were statistically analysed. User data were categorised by age, gender, and geographic location to examine usage patterns and preferences. Temporal comparisons of metrics were conducted from 2022 to 2024 to assess growth rates and shifts in digital behaviour.

Results and Discussion

The digital economy is a system of economic, social, and cultural activities based on the widespread use of digital technologies, the internet, and data. It encompasses the creation, distribution, and consumption of goods and services through digital platforms and technologies as summarised from various sources and literature.

L.V. Batchenko & O.V. Reva (2023) noted that digital transformation of the economy is a key strategic direction for the development of the country. The introduction of technologies, the Internet of Things, artificial intelligence, and other innovative solutions contributes to increased productivity and competitiveness. Digital solutions are being implemented to enhance the efficiency of all sectors of the economy, used in public administration, and play an important role in society. The challenges and risks associated with digital transformation include cybersecurity issues, changes in organisational culture, and the need for constant technological updates and the introduction of innovations.

The internet and digital platforms allow companies and consumers to operate on a global scale, regardless of geographical boundaries. This facilitates market expansion and creates new opportunities for international collaboration. The digital economy stimulates innovation development. New technologies, such as artificial intelligence, blockchain, the Internet of Things (IoT), big data, and cloud computing, transform traditional business practices and create new industries.

In the digital economy, technological and business changes occur much more rapidly than in the traditional economy. The emergence of new technologies and solutions required companies and workers to quickly adapt to new conditions. Thanks to digital technologies, processes such as management, production, and distribution of products and services become more decentralised. This enables the growth of small and medium-sized enterprises, independent of physical infrastructure.

One of the key structural units of the digital economy is platforms that connect producers and consumers (e.g., marketplaces, social networks, rental and exchange services). It significantly alter traditional business models. An increase in the number of platform users enhances its value for both new and existing users. This phenomenon is known as the network effect and is an important factor in the success of many digital companies (e.g., Facebook, Uber, Amazon).

Digital technologies allow for the automation of most processes, particularly in the areas of production, logistics, marketing, and customer service. This increases labour productivity, but simultaneously raises concerns about employment and the need for workforce retraining. A significant feature of the digital economy is the continuous access to goods, services, and information via the internet. This enables businesses and consumers to conduct transactions anytime and anywhere.

The relationship between the digital economy and cybersecurity, including threats and protection strategies, was studied. The research highlighted the diversity and complexity of attacks on digital infrastructure, proving that implementing proactive security measures can reduce risks and enhance data confidentiality (Vdovichen *et al.*, 2024). Since data is the foundation of the digital economy, protecting information, ensuring privacy, and addressing cybersecurity have become key tasks. There is a growing need for new approaches to risk management. These features not only change traditional business models, but also require a reassessment of the roles of governments, businesses, and society in the context of rapid technological advancement.

The impact measurement of the level of digitalisation remains a methodologically unresolved task. There are a significant number of different methodological approaches to determining the extent and level of digitalisation. This indicated that the phase of forming the digital economy is still incomplete and hinders statistically reliable research on the processes related to it (Vyshnevskyi, 2020). D. Kotelevets (2022) analysed key indicators that characterise the national economy's readiness for digitalisation, such as the number and structure of enterprises with Internet access, businesses with their own websites, and those using chat services to communicate with customers. It worth to analyse the overall state of digital technologies in Ukraine in 2024 (Fig. 1).

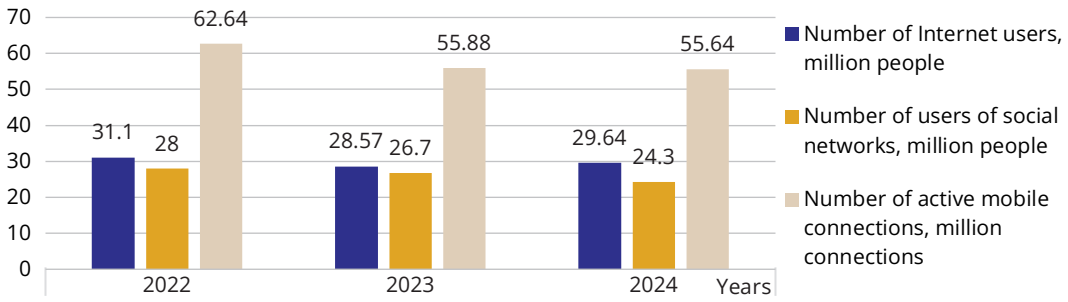

Figure 1. *Analysis of digital technology usage in Ukraine*
Source*: developed by the author based on DataReportal (2024)*

According to DataReportal, at the beginning of 2024, there were 29.64 million internet users in Ukraine, accounting for 79.2% of the population. The number of social media users reached 24.30 million in January 2024, representing 64.9% of the total population. Ukraine had 55.64 million active mobile connections at the start of 2024, exceeding the population by 148.7%.

At the beginning of 2023, there were 28.57 million internet users in Ukraine, with a penetration rate of 79.2%. In January 2023, there were 26.70 million social media users, equivalent to 74.0% of the total population. At the start of 2023, there were 55.88 million active mobile connections in Ukraine, which equated to 154.9% of the total population. In January 2022, there were 31.10 million internet users in Ukraine, and the internet penetration rate at the beginning of 2022 was 71.8% of the total population. In January 2022, there were 28.00 million social media users in Ukraine, representing 64.6% of the total population. As of the beginning of 2022, there were 62.64 million mobile connections in Ukraine, equivalent to 144.6% of the total population.

The analysis of the data in Figure 1 allowed to conclude that the usage of digital technologies among the population of Ukraine showed a tendency to decrease. This was linked to the overall decline in the population. However, in 2024, the number of internet users increased by 1.07 million individuals. For further analysis of digitalisation, it's important to note that as of January 2024, Ukraine's population stood at 37.42 million people. Demographic statistics revealed that 54.3% of the population are women, while 45.7% are men. Additionally, 70.2% of Ukraine's population resided in urban centers, whereas 29.8% live in rural areas. The median age of the Ukrainian population was 44.3 years. According to Kepios (2024), in January 2024, the number of internet users in Ukraine increased by 1.1 million individuals (+3.7%) compared to the beginning of 2023. The internet penetration rate reached 79.2%, but approximately 7.78 million people still remained offline. Data from Ookla (2024) indicated that the median mobile internet speed was 24.83 Mbps, representing a 121% increase from the previous year. Fixed internet connections in Ukraine demonstrated a speed of 73.68 Mbps, which is a 22.5% rise over the year.

It worth to examine the usage of social platforms among Ukrainians. According to DataReportal (2024), in January 2024, there were 24.30 million active social media users in Ukraine. A total of 82% of internet users in Ukraine were active on social platforms. Among social media users, 52.9% were women and 47.1% were men. The increasing number of users on various platforms has had a significant impact on different aspects of people's lives, particularly in the business sector. The rise of social media platforms like Facebook, Instagram, and TikTok has revolutionised communication, creating new ways for people to interact, share information, and express themselves. It has also influenced cultural trends and consumer behaviour by enabling viral content to spread quickly across the globe. Online learning platforms, such as Coursera (2024), Udemy (2024), and educational YouTube channels, have made education more accessible to a broader audience. This has transformed traditional learning methods and allowed people to gain skills and knowledge remotely, catering to diverse learning preferences. Platforms offering telemedicine services have expanded access to healthcare, allowing people to consult with doctors and medical professionals remotely. The growing use of wearable devices and health apps has also empowered individuals to monitor and manage their health more effectively. The business landscape has been profoundly influenced by the growing number of online users. E-commerce platforms such as Amazon and eBay have transformed traditional retail, enabling businesses to reach global markets with ease. As noted by A. Goloborodko & S. Lehominova (2020), these companies closely collaborate with logistics companies.

Digital marketing, driven by platforms like Google, Facebook, and Instagram, has revolutionised, how companies engage with customers. Social media has also become a powerful tool for brand building, customer service, and direct sales. The rise of platforms like LinkedIn (2024) has changed the way professionals network and search for jobs, while freelancing platforms such as Upwork (2024) and Fiverr (2024) have created new opportunities for remote work and gig economy jobs. This shift has redefined career paths, offering flexibility and diverse work options to a larger segment of the population.

Overall, the growing number of users on different platforms has significantly reshaped industries, creating new opportunities and challenges in nearly every aspect of life.

N.S. Tanklevska & V.O. Miroshnychenko (2024) analysed the impact of the digital economy on the financial stability of enterprises, identifying and describing the positive and negative aspects of the functioning of economies under the transformative processes of the digital economy. The authors generated theoretical propositions regarding an effective digital economy mechanism to strengthen the financial stability of enterprises that will be adapted to modern conditions of economic digitalisation.

Digital economy has a significant impact on business and its management. Digital technologies are changing traditional business models, allowing companies to create new products, services, and ways to interact with customers, which contributes to the emergence of new industries such as e-commerce, financial technologies, and sharing platforms. They also enable the automation of many business processes, reducing costs and increasing operational speed, particularly in project management, accounting, logistics, reporting, and business analysis. Through big data analysis, companies can better understand the needs of their customers by offering personalised products and services, which helps improve the customer experience and increase loyalty. Digital technologies also provide businesses with the ability to adapt more quickly to market changes, respond to new challenges and opportunities, including through remote work and flexible production processes. The internet and digital platforms offer the opportunity to enter new markets without physical presence, which expands opportunities for sales and growth, especially for small and medium-sized enterprises. At the same time, managing data security and confidentiality becomes an important part of management strategies, as businesses must integrate measures to protect information and minimise the risks of cyberattacks. The digital economy also fosters innovation, encouraging businesses to implement new technologies such as artificial intelligence, blockchain, and the Internet of Things, which allows them to achieve new levels of efficiency and competitiveness. Thus, digitalisation is transforming business and its management, improving efficiency, flexibility, and opportunities for innovation.

To the development of Ukraine's digital economy, the government needs to invest in broadband Internet: ensuring access to high-speed internet across all regions, including rural areas. Additionally, it should establish the infrastructure for storing and processing large volumes of data, enabling companies to leverage information effectively. To accelerate the development of the digital economy, several steps need to be taken. This includes developing IT training programmes by introducing specialised courses and training in universities and vocational institutions to prepare professionals in digital technologies. Scholarships and grants for students, as well as financial support programmes for individuals pursuing degrees in information technology, can also be proposed. Another step involves creating incubators and accelerators to support startups in developing business ideas and entering the market. Providing financial backing for scientific research in technology and innovation is equally important.

Collaboration with the government, business sector, and education should focus on establishing partnerships between universities and companies to develop joint internship programmes, facilitating the integration of young professionals into the business sector. Additionally, initiatives uniting the efforts of the state and the private sector should be organised to address urgent digitalisation challenges. Reducing administrative barriers, such as streamlining online business registration processes, will promote the growth of e-commerce. The development of payment systems is also vital in the digitalisation process, as the implementation of new payment technologies, such as mobile payment systems, can enhance the convenience of online shopping.

Investments in cybersecurity are crucial, providing companies and government institutions with resources to protect against cyber threats and implementing training programmes to prepare information security specialists. Financial incentives for companies, such as tax breaks and grants for enterprises adopting new technologies and automation, are also necessary. In the sphere of international relations, attracting international investments by creating favourable conditions for foreign investors can help secure additional resources for the development of the digital economy. These proposals could form the foundation for a digital economy strategy aimed at enhancing the country's competitiveness and improving the quality of life for its citizens.

The digital economy has a number of key features that distinguish it from the traditional economy. As noted by P.L. Hrynko (2020), the legal regulation of activities in the field of the internet economy began with the adoption of the Law of Ukraine "On the National Program of Informatisation" in 1998. The legislative framework for the organisational and legal principles of electronic commerce in Ukraine was established with the Law of Ukraine "On Electronic Commerce", adopted in 2015. This law, in addition to defining key terms, established the procedures for business entities' actions, when using information and telecommunications systems and outlined the rights and obligations of participants in electronic commerce relations.

The foundation of the digital economy is data and its utilisation. Digital technologies enable the collection, storage, analysis, and processing of vast amounts of data, which fosters the development of new business models and enhances management efficiency. Different authors interpreted the concept of the digital economy in different ways. A. Mazaraki *et al.* (2020) wrote that

the digitalisation of Ukraine's economy is a key driver for enhancing the competitiveness of its sectors and industries, improving citizens' well-being, developing the labour market, fostering new industries, and creating new products, properties, and values. It represented the only correct path for Ukraine's economic growth, the formation of competitive advantages, and the development of innovative entrepreneurship in the global digital environment.

I. Radionova & O. Akulov (2023) substantiated scientific tools that allowed them to clarify the definition of "digital economy". L.I. Fedulova & L.M. Yemelianenko (2020) argued that the phenomenon of the concept of "digital economy", in its generalised form, was considered as a system of social, economic, and technological relations between the state, the business community, and citizens. This system operated in the global information space through the widespread use of networked digital technologies, leading to continuous innovative changes aimed at improving the efficiency of socio-economic processes.

The authors H.V. Nazarova & V.O. Rudenko (2021) stated that the concept of the digital economy was distinguished by different authors based on the following characteristics: an economic system characterised by the integration of digital technologies for the collection, storage, processing, transformation, and transmission of information across all sectors of activity; a set of economic activities, such as industries within the national economy involved in the production and trade of digital goods and services in a virtual environment; a complex combination of various elements (technical, infrastructural, organisational, software, regulatory, and legislative), serving as a complement to the real economy, focused on sustainable economic development.

Researcher M.V. Rudenko (2020) emphasised that the differentiation of authors' understanding of the multifaceted definition of the category "digitalisation" was examined from four perspectives: the state, scientists, practitioners (entrepreneurs), and society. This approach enabled the distinction of the concept's interpretation based on its area of application, the category of individuals providing the definitions, and the ultimate goals for which the definitions are provided.

Conclusions

Therefore, the digital economy represents a new economic paradigm based on the use of digital technologies for the creation, exchange, and consumption of goods and services. It encompasses a wide range of activities, including e-commerce, financial technologies, business process automation, and innovative solutions that impact various aspects of life.

The data highlighted significant trends in digital technology usage in Ukraine, with internet and social media adoption continuing to grow despite a decline in population. As of early 2024, internet penetration reached 79.2%, and social media usage stood at 64.9% of the population, demonstrating widespread digital engagement. Facebook, YouTube, Instagram, and TikTok remained dominant platforms, with notable increases in user numbers, especially on TikTok, which saw a 26.6% growth from 2023 to 2024. The growth in mobile connections, which exceeded the population by 148.7%, further underscored the increasing reliance on mobile devices. Overall, Ukraine's digital landscape showed continued expansion in both internet access and social media participation, even amid demographic challenges.

The development of the internet, mobile technologies, big data, and artificial intelligence will transform the ways businesses operate, and how consumers interact with producers. Digitalisation will enable cost reductions, improve management processes, and facilitate quicker responses to market changes. The digital economy will open up new opportunities for the emergence of start-ups and business models that previously did not exist.

Increased investment in digital technologies will foster the creation of new markets and industries. The digital economy will allow enterprises to access international markets, lowering entry barriers. Through the advancement of digital services, citizens will gain access to new opportunities, such as online education, telemedicine, and e-services. Moreover, the digital economy can serve as a vital tool in addressing challenges such as economic crises and global pandemics, thanks to the flexibility and adaptability of digital solutions.

The digital economy not only transforms business and society, but also opens new horizons for innovation and sustainable development. To realise its maximum potential, it is essential to actively implement effective government policies, stimulate investment, and promote education in digital technologies. Therefore, the right strategies and efforts can ensure the stable development of the digital economy in Ukraine.

Future research on Ukraine's digital economy should focus on areas such as the impact of digital technologies on business models, socio-economic disparities in digital access, government policies, the effects of AI and automation on labour markets, cybersecurity and data privacy, and the role of digital technologies in sustainability.

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Conflict of Interest

None.

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Цифрова економіка: тенденції, виклики та перспективи розвитку

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Анотація. Актуальність теми зумовлена стрімким розвитком інформаційних технологій, які трансформують бізнес-моделі, споживчі звички та методи ведення економічної діяльності. У світі, де цифрові технології стають основою інновацій та конкурентоспроможності, розуміння процесів, що відбуваються в цифровій економіці, є критично важливим. Метою статті було систематизувати основні тенденції розвитку цифрової економіки, визначити виклики, з якими стикаються уряди, бізнес і суспільство в цілому, та оцінити перспективи цифрової трансформації в різних секторах економіки. Для досягнення цієї мети було застосовано комплексний аналітичний метод, який включав огляд наукових статей, аналіз статистичних даних, а також вивчення практик цифровізації в різних країнах. Результати дослідження підтвердили, що цифрова економіка має значний потенціал для стимулювання економічного зростання, підвищення продуктивності та створення нових робочих місць. Однак, незважаючи на позитивні перспективи, стаття також виявила серйозні виклики, такі як нерівність у доступі до цифрових технологій, проблеми кібербезпеки та необхідність адаптації законодавства до нових умов ринку. Крім того, було наголошено, що не всі країни мають рівні можливості для використання цифрових технологій, що може призвести до зростання нерівності між ними. У статті також запропоновано підходи до формування партнерств між урядовими установами, бізнесом та освітніми закладами для забезпечення успішної інтеграції цифрових технологій у всі сфери життя. Визначено ключові напрямки інвестицій, включаючи розвиток інфраструктури, підвищення рівня цифрової освіти, а також підтримку інновацій та стартапів. Практична цінність дослідження полягає в розробці рекомендацій щодо формування ефективної державної політики та стратегій, які можуть сприяти розвитку цифрової економіки

Ключові слова: цифрова трансформація; цифрові технології; Інтернет; соціальні мережі; мобільні зв'язки

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