UDC 001.895:(658.6+330.3)

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INNOVATIVE SOLUTIONS TO STIMULATE ONLINE TRADE MARKET IN THE CONDITIONS OF VIRTUALIZATION OF ECONOMIC PROCESSES

Abstract. *The creation and use of advanced digital technologies in various spheres of socio-economic life of society requires a conscious understanding of the effects, opportunities, and challenges that these technologies can provoke. The aim of the article is to study the variety of financial instruments, services used by individuals, to study the structure of sales in the field of e-commerce, and to establish a connection between the development of the online services market and the availability of consumer services, goods. The methodological apparatus of the study includes methods of analysis and synthesis, comparison, and generalization. The result of the scientific research was an analysis of the dynamics of changes in the share of the adult population that owns and uses various financial products, and services in 2021 and 2024, which made it possible to assess the level of financial and digital literacy and awareness of the population. A review of the dynamics of sales volumes in e-commerce by individual categories of consumer goods in 2021-2023 was carried out, which made it possible to outline the priority of purchases for consumers through online services and the prospects of the online services market. The value of scientific research is emphasized by the identified reasons for the dynamic growth in the volume of online service orders and the indicated ways of strengthening economic security in the virtual world. In conclusion, in order to achieve sustainable economic development, it's advisable for Ukraine to deepen the country's technological stability, develop production capabilities, implement innovative developments and digital technologies, adhere to the principles of environmental friendliness and inclusiveness in the course of economic activity, and try to consistently transform the economic thinking of the population towards constructiveness, scale, and high efficiency. Promising areas of further research should be the study of changes in the structure of the country's economy under the influence of achievements of scientific and technological progress and digital transformation.*

Key words: digital transformation of the economy, digital technologies, innovative solutions, financial products, e-commerce, online services.

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ІННОВАЦІЙНІ РІШЕННЯ ЗІ СТИМУЛЮВАННЯ РИНКУ ОНЛАЙН-ТОРГІВЛІ В УМОВАХ ВІРТУАЛІЗАЦІЇ ЕКОНОМІЧНИХ ПРОЦЕСІВ

Анотація. *Створення і використання передових цифрових технологій у різноманітних сферах соціально-економічного життя суспільства вимагає свідомого розуміння тих ефектів, можливостей та викликів, які ці технології можуть спровокувати. Метою статті є дослідження розмаїття фінансових інструментів, послуг, якими користуються індивіди, вивчення структури продажів у сфері е-комерції та встановлення зв'язку між розвитком ринку онлайн-послуг та доступністю споживчих послуг, благ. Методичний апарат дослідження охоплює методи аналізу та синтезу, порівняння та узагальнення. Результатом наукового дослідження став аналіз динаміки зміни частки дорослого населення, що володіє і користується різними фінансовими продуктами, послугами, сервісами у 2021 та 2024 роках, що дало змогу оцінити рівень фінансової та цифрової грамотності і свідомості населення. Здійснено огляд динаміки обсягів продажу в е-комерції за окремими категоріями споживчих товарів у 2021-2023 рр., що дозволило окреслити пріоритетність покупок для споживачів через онлайн-сервіси та перспективність ринку онлайн-послуг. Цінність наукового дослідження підкреслюється виявленими причинами динамічного зростання обсягів онлайн-замовлень послуг та зазначеними способами посилення економічної безпеки у віртуальному світі. У підсумку автор зазначив, що задля досягнення сталості економічного розвитку в довгостроковій перспективі Україні доцільно поглиблювати техніко-технологічну стійкість країни, освоювати нові виробничі можливості і розширювати наявні потужності, активно*

впроваджувати інноваційні розробки та цифрові технології, дотримуватися принципів екологічності та інклюзивності в ході здійснення господарської діяльності, намагатися послідовно трансформувати економічне мислення населення на конструктивність, масштабність та високоефективність. Перспективним напрямом подальших досліджень має стати вивчення змін у структурі економіки країни під впливом досягнень науково-технічного прогресу та цифрової трансформації.

Ключові слова: цифрова трансформація економіки, цифрові технології, інноваційні рішення, фінансові продукти, е-комерція, онлайн-послуги.

JEL Classification: D11, L10, O10, O32
DOI: https://doi.org/10.32782/2522-1205-2025-82-21

Statement of the problem. The dynamic and large-scale digital transformations that accompany humanity in the 21st century have affected not only its economic space, but its social, political, and spiritual spheres. Therefore, it's impossible to ignore the organizational, technological, institutional, social, environmental, moral-ethical, cultural, and other aspects of new economic relations that are being transformed under the influence of digitalization.

Economic processes today, more than ever before, must be characterized by a high level of adaptability and flexibility in order to adequately respond to the turbulence of the outside world. The active use of the Internet in the business world and everyday life of members of society transforms their traditional economic thinking and changes the importance for them of e-commerce and the online services market, which are growing rapidly.

And although modern advanced technologies expand access to important and popular goods and services, create the effect of barrier-free living, and can improve the quality of socio-economic life, they also become the cause of digital divides. Therefore, the issue of finding new opportunities to achieve long-term economic development using digital technologies and tools, as well as modernizing the structure of the country's economy, taking into account its resource and labor potential, level of innovation and technological capabilities, is becoming increasingly relevant, especially in Ukraine under martial law.

Analysis of recent research and publications. The first quarter of the 21st century has shown that the state of the country's economy and its growth potential are determined by the scale of digital transformations (DT), the implementation of innovative solutions, the focus on overcoming social disparities in society, and achieving sustainable development goals. Socio-economic, institutional, environmental and technological factors that lay the foundation for strengthening the economy in the context of globalization are gaining increasing importance.

Scientists, experts and specialists in economic issues both in Ukraine and abroad are trying in every possible way to clarify and argue the theoretical, methodological and practical aspects of DT and identify its impact on the state of the economy in the country. Thus, researchers J. Zhang, W. Zhao, B. Cheng, A. Li, Y. Wang, N. Yang, and Y. Tian study the impact of digital technologies on economic growth and conclude that they are necessary to mitigate the negative consequences of the Covid-19 pandemic and can positively affect economic growth, contributing to the modernization of the economic structure, stimulating employment and its restructuring [1].

Scientists A. Magoutas, M. Chaideftou, D. Skandali, and P. Chountalas have devoted their research to establishing a connection between the economic growth of EU countries and the rapid progress of advanced technologies. They seek to identify the importance of individual ICT indicators in economic growth and conclude about the critical role of the technological environment, emphasizing the growing influence of new AI technologies in the business sector [2, p. 1].

But not only EU countries are affected by DT. For example, Portuguese S. Gomes, J. Lopes, and L. Ferreira analyze the impact of digital technologies on the economic growth of OECD countries. The researchers conclude that "the impact of the digital economy, as measured by technological proxies – Internet, mobile phones, and fixed broadband – on the economic growth of OECD countries depends on their level of development and the indicators of technologies that encompass the digital economy" [3].

A team of researchers, including M. Javaid, H. Abid, P. Ravi, and K. Anil, have argued that automation, data sharing, cloud computing, robotics, big data, AI, IoT, and other technological trends of today are part of DT that aims to achieve new goals and intelligent practices that interact with customers. The researchers note that "the digital economy refers to economic activity that results from the integration of individuals, companies, devices, data, and transactions through digital technologies" [4].

Expanding on the existing research, scholars Q. Zhang, P. Wu, R. Li, and A. Chen focused on studying the impact of individual cities' DT on economic growth efficiency in the context of the digital media era, which fills a research gap in the existing literature on the impact of the digital economy at the city level and provides empirical understanding of how digitalization strategies can improve economic efficiency. The researchers note that "with the advent of the digital media era, the digital economy has exploded with unprecedented power and has become important in promoting high-quality economic development" [5].

At the same time, today, not only the issues of ensuring the effectiveness of the use of digital technologies

in economic processes are significant, but also increasing the security of their implementation. Therefore, N. Karimov, F. Khamidova, Sh. Saydullaev, and R. Parpieva are trying to solve the issue of guaranteeing economic security in the conditions of digitalization of socio-economic processes and note that "digitalization plays a significant role in the scientific, social and economic world order" [6], especially in countries whose economies are provided by modern digital technologies.

Certain issues related to the implementation of digital solutions and products in modern business processes have been reflected in the works of researchers from Italy and Spain, namely A. Botti, R. Parente, R. Vesci [7], and P. Magliocca [8]. We have also studied the nature of DT and the effects it has on the economy [9], investigated the imperatives of institutional change in the context of digitalization and identified their impact on entrepreneurship, industry, and economy [10].

However, researchers still fail to pay attention to the justification of the economic significance of DT for business, industry, and e-commerce. The possibilities and directions of expanding consumer access to the online market of goods and services are also insufficiently studied. Given the above, we consider it necessary to fill the gap in research in the study of digital financial instruments used by active users/buyers of the online services and e-commerce market.

Setting the task. The purpose of the article is to study the structure of ownership/use of digital financial instruments/services by individuals; to study the structure of sales and changing consumption trends in the field of e-commerce in the digital era; to establish a connection between the development of the online ordering market and the inclusivity and accessibility of consumer services/goods.

To achieve the goal of the article, the following methods were used: analysis – to review the available scientific literature on the use of digital solutions for the development of online trade and the implementation of economic innovations in various spheres and industries; synthesis – to study financial products/services owned and used by the population; comparison – to study the structure of e-commerce sales by different categories of goods and changes in the dynamics of their consumption in 2021-2023; generalization – to identify and substantiate the place of the modern online ordering market in the economic growth of countries.

Presentation of the main research material. The development of digital technologies and their active implementation in business processes and everyday operations of individuals are changing traditional economic relations, making them faster, more accessible, and multifunctional. DT of the economy has led to changes in production processes, logistics routes, business relationships with counterparties, supply chains, financial services market, consumer behavior, etc.

The role of advanced technologies in the modern economy and business can't be overestimated, because their use "is a crucial indicator for assessing business efficiency, regardless of size. The introduction of digital technologies increases business efficiency and productivity, improves services and products, and expands market reach" [2, p. 5].

Of course, the creation of modern digital technologies and products, and their implementation in various economic processes, spheres and industries requires proper preparation in the use of innovative developments and digital tools and a deep awareness of their importance in achieving the goals of sustainable economic development. And this requires more conscious digital education of people of different age groups, professions and social status.

TVERC in Taiwan, together with National Taiwan Normal University, published a work "Trends and Issues of Promoting Digital Learning in High-Digital-Competitiveness Countries: Country Reports and International Comparison" [11], where, using the example of individual countries of the world (Australia, Estonia, Finland, Germany, Hong Kong (China), Israel, Sweden, South Korea, Taiwan, Great Britain, the USA and others), they gave a critical assessment of modern digital learning (DL), which is developing rapidly under the conditions of the spread and use of digital technologies, creates new opportunities and challenges for traditional education, and is one of the factors of the digital competitiveness of countries on the world stage.

This work provides an idea of how, in the current conditions, "to strengthen mutual understanding and communication between Taiwan and other countries with high digital competitiveness in promoting DL…; to enable countries with high digital competitiveness to share their experiences in DL dissemination to promote international cooperation and common prosperity" [11].

It is undeniable that in digital education, a special role should be given to the study of issues of modern capabilities and security of using digital technologies in the financial sector. This is due to the fact that in one way or another, almost every adult in the modern digital world who has access to the Internet interacts with other economic agents and has financial relations with them in order to meet their needs (consumer, educational, medical, social, tourist, etc.). Fig. 1 presents the dynamics of changing the priority of individual digital technologies in solving financial issues for people over 15 years of age in 2021 and 2024.

Interestingly, in 2021, among the tools for solving financial issues, people most often used an open account at a financial institution (68.5%), a mobile money account (29%), and digital payments (29%). At the same time, an adult over 15 years old in 2021 preferred to use an average of 1-2 digital technologies simultaneously to solve their financial issues.

Instead, in 2024 we observe an increase in the number of simultaneous uses of various digital technologies by one adult – within 3-4 financial products and services. This is due to the development of the online services and e-commerce market, the spread of the use of digital solutions in economic processes, and the increase in the availability of digital products, which became a response to the challenges caused by the Covid-19 pandemic in the world. The appearance in 2024 of a number of new digital tools to meet the needs of the financial sector is noticeable, including a mobile phone with the ability to make payments and transfers, mobile phones and PCs for sending money and paying bills.

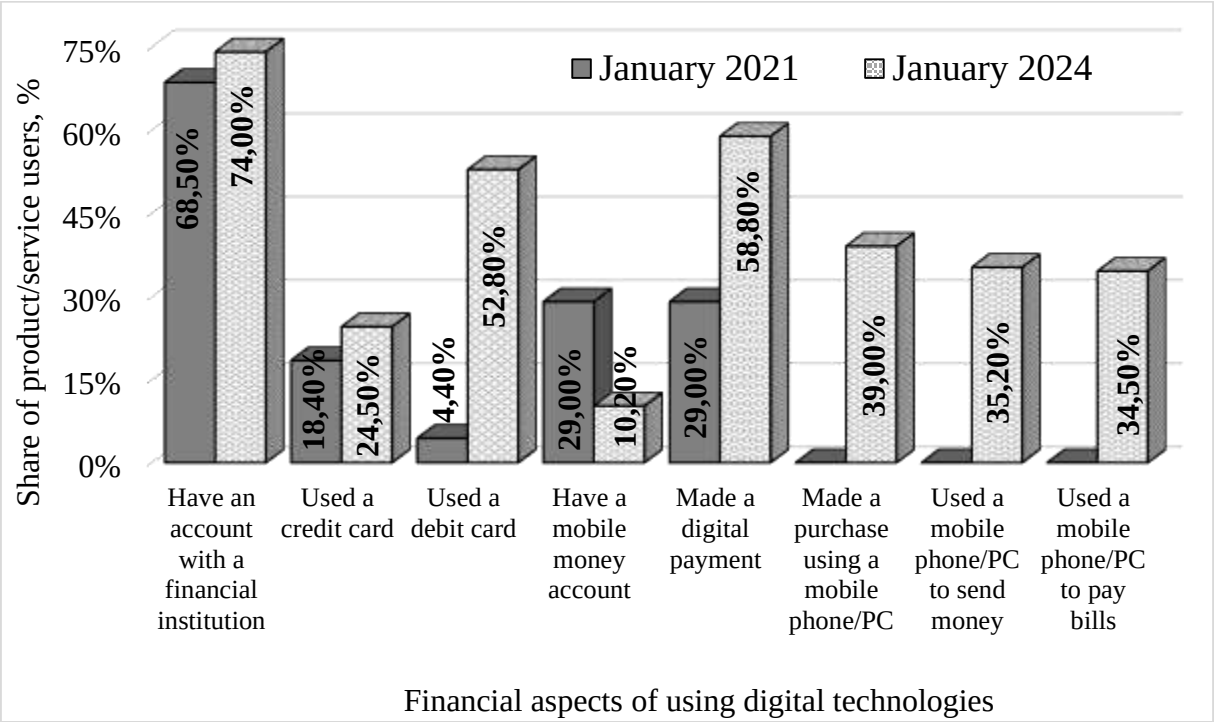

Figure 1. Dynamics of change in the share of the population aged 15+ (globally) that owned/used each financial product/service in 2021 and 2024

Source: based on sources [12, p. 439; 13, p. 224]

The data in Fig. 1 demonstrate a significant differentiation between the financial products, services and services used by the population over the age of 15 over the past few years. In order to balance the market for financial products and reduce the digital divide, it is necessary to "promote more significant investments in physical infrastructure to support ICT; provide social incentives for broadband Internet access; regulate prices for ICT services to ensure broad access; develop digital empowerment programs and regional digital growth strategies with a priority on ICT innovations" [3].

Researchers I. Yoo and C.-G. Yi, studying the impact of economic innovation on social systems, found that different driving forces cause economic innovation at different times, and modern digital economic innovations lead to changes in industrial structure, increase productivity and reduce costs in the manufacturing sector. It's noted that changes in industrial structure under the influence of digitalization lead to cross-industry convergence, the creation of new markets, changes in jobs and income distribution, the transformation of consumer values towards sharing and subscription, the emergence of new industries [14].

There is an increasing need to offer both citizens and businesses more digital services and benefits to drive economic growth. "Consumers increasingly demand access to digital services for their speed and efficiency, but they face a complex landscape that requires equipment and support to navigate" [2, p. 14].

Nevertheless, digital inclusion is constantly expanding, as both the e-commerce sector and the online services market are growing dynamically in both their volume and audience reach. Fig. 2 shows the dynamics of e-commerce sales volumes by consumer goods in 2022-2024.

It is noteworthy that throughout all three years under study, electronics, clothing and accessories, and food products remain the undisputed leaders in e-commerce sales. In 2024, several consumer goods in e-commerce stood out, which are characterized by positive growth dynamics. These are tobacco products, household goods, pharmaceuticals, and luxury goods.

As can be seen from Fig. 2, digital technologies are expanding consumers' purchasing power and encouraging them to spend more on various categories of goods. Regional imbalances in the development of the digital economy between some countries are becoming increasingly evident, "in particular, East Asia, Southeast Asia (especially Singapore), Central and Eastern Europe have a relatively high level of digital economy, while most countries in West Asia (except Israel), Central Asia and South Asia are still lagging behind" [1].

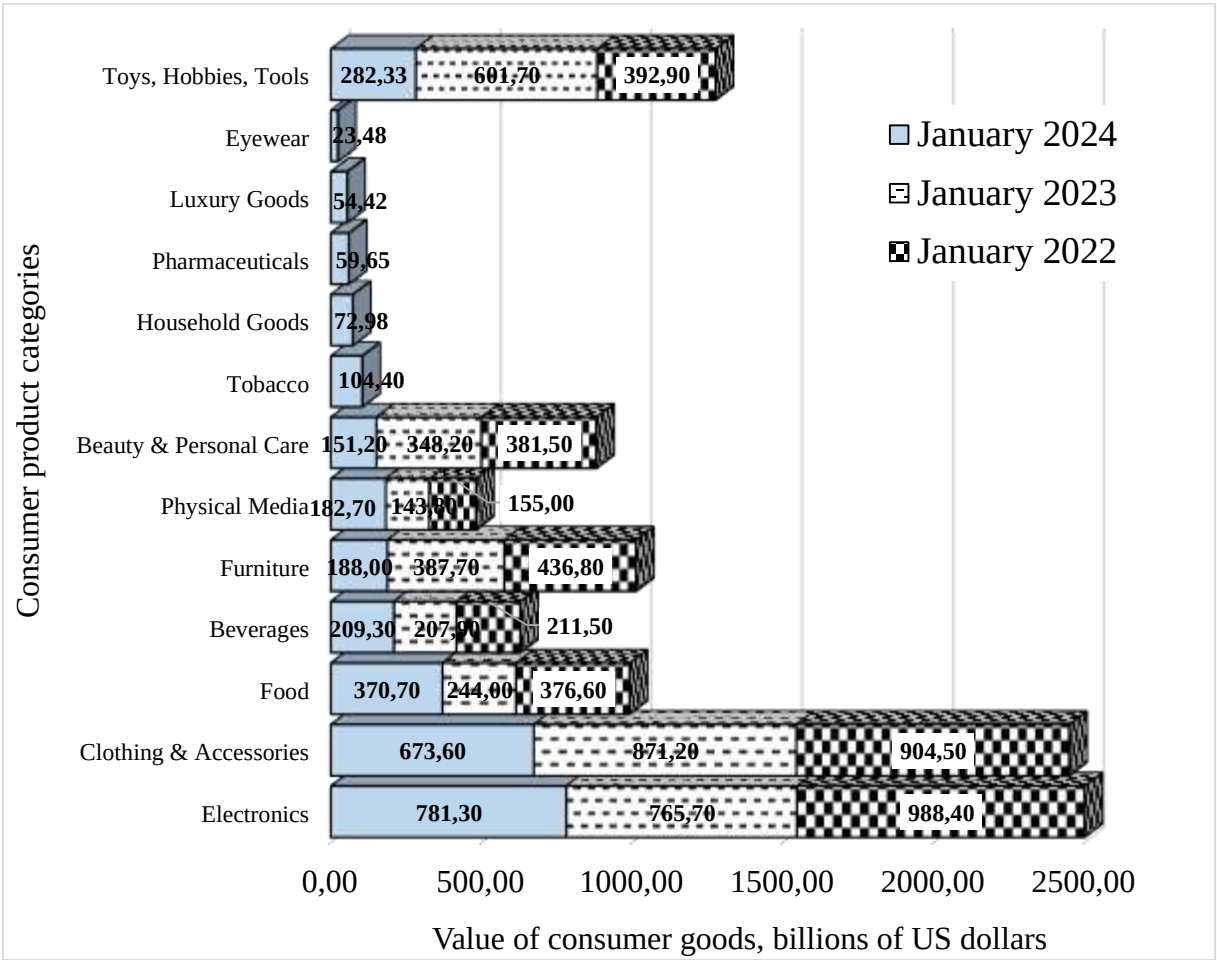

Figure 2. Dynamics of global e-commerce sales volumes (B2C only) by consumer goods category in 2021–2023
Source: based on sources [12, p. 450; 13, p. 232; 15, p. 366; 16, p. 245]

Advanced technologies create "a roadmap to help industries adapt traditional methods and support a new revolution. In the digital economy, expanded integrated ecosystems that use software platforms to create value, increase sustainability, and drive innovation through networked goods, assets, people, and processes replace old linear value chains with the participation of partners" [4].

In the context of DT of the economy, individual industries and business sectors are undergoing significant changes; their potential and capabilities, adaptability and flexibility are changing. The dynamic development and increasing accessibility of the global Internet have significantly affected the market of online services and orders, in particular travel (Fig. 3).

Fig. 3 shows the growth in online travel and tourism bookings across all categories in 2024 compared to 2022 and 2023, including: flights, train travel, accommodation bookings, and holiday bookings. The increase in the number of devices used by people that are connected to the Internet expands access to various goods and services, making their purchase easy, convenient and fast. At the same time, there is a risk of leakage of users' personal data, and the need for increased cybersecurity is growing.

In ensuring economic security, the following areas are distinguished: "increasing the competitiveness of companies operating in the IT and e-industry sector; eliminating the dependence of domestic industry on foreign IT and information security means…; innovative development of IT and e-industry" [6].

Researcher W. Al-Zoubi proposes to improve the basis of digitalization by "navigating the complex landscape of digital progress...; supporting entrepreneurs in global crises...; outlining the social consequences of the transformation of digital government...; promoting sustainable digital economic growth" [17].

Thus, e-commerce and the online services market in some countries of the world, and Ukraine in particular, are still not marked by a high level of success, especially in terms of their technological capabilities. However, the desire and attempts to achieve sustainable development goals, to provide members of society with expanded and easy access to a variety of vital goods and services, forces both government agencies and business representatives to more carefully implement digital solutions in practice and to responsibly develop resources

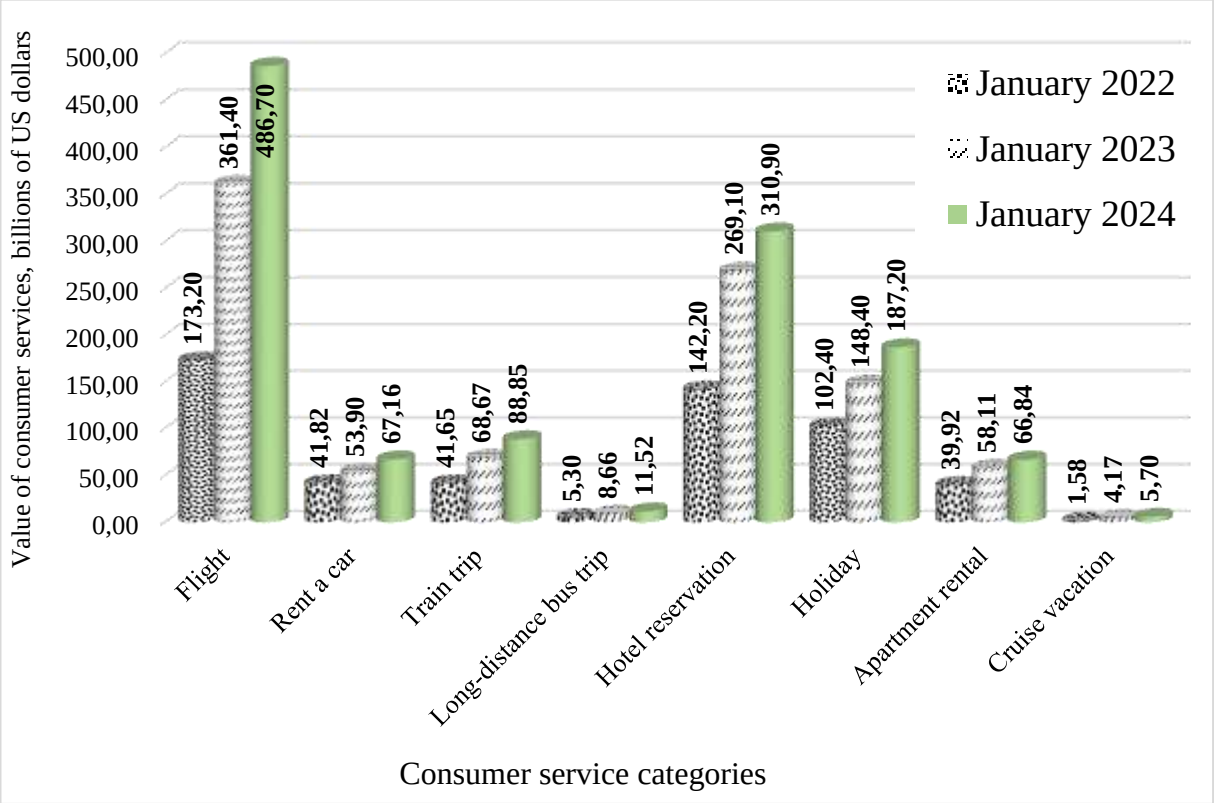

Figure 3. Dynamics of global online travel and tourism booking volumes by category in 2021–2023
Source: based on sources [12, p. 461; 15, p. 376; 16, p. 249]

Conclusions and prospects for further research in this area. The increasing demand from buyers of e-commerce goods and the benefits of the online services market (which intensified during the Covid-19 period and after the pandemic, when quarantine restrictions were in effect) has caused, on the one hand, the need for accelerated development of consumer market segments of remote purchases, reservations, and orders to meet dynamically growing needs, and on the other hand, has faced a number of challenges and risks in connection with the establishment of new production and sales chains. A particularly important role in this is played by deepening the country's technological sustainability, developing new production capabilities, implementing innovative solutions, introducing digital technologies, and adhering to environmental initiatives that will help achieve sustainable economic development.

Further scientific research should be carried out to identify structural changes in the Ukrainian economy under the influence of scientific and technological achievements and DT, which give impetus to the practical implementation of innovative models of economic development. It is also advisable to develop ways to overcome the digital divide in the socio-economic lifers of residents of different cities, regions, and countries.

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Стаття надійшла до редакції 05 квітня 2025 року