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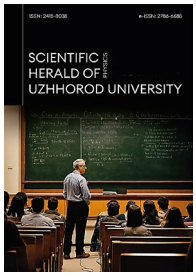

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The development of e-commerce as a factor stimulating economic growth

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Abstract

Relevance. Global trends in the transition to the principles of the digital economy and the introduction of e-commerce as a factor of economic growth are increasingly becoming the object of research by scientists. The economy is becoming even more digital, and the past COVID-19 pandemic has contributed to this acceleration.

Purpose. The purpose of this study was to investigate the role of e-commerce and its essence in the economy digitalization, as a stimulating factor in the development of the country's economy.

Methodology. The main methods of fulfilling the purpose of this study included the methods of systematic and structural-logical analysis of data, analysis and synthesis, generalization, prognostic method.

Results. The study strongly suggested that e-commerce has been developing at an accelerated pace all over the world in recent years. Both the announcement of the COVID-19 pandemic and the general trend towards the economy digitalization contributed to this. Global transformation processes continue and cover all spheres of life and production. The leaders are the countries of the world and, specifically, the countries of Europe. In Ukraine and Kazakhstan, programs for the economy digitalization of the countries have been developed, which are based on the principles "the state in a smartphone" and consider all elements of the structure of e-commerce.

Conclusions. The most promising areas are the development of digital platforms, cloud services, electronic banking support, information protection, etc. The support of Industry 4.0 technologies will allow not only to protect the external environment, but to create jobs and reduce unemployment in the future. It is still important to support the state at all levels

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of implementation of programs for the economy digitalization. The results of the study can be used as a basis for formulating and adjusting strategies and programs for digitalization of the economies of different countries.

Keywords: digitization; globalization; information technologies; digital platform; government programs.

Introduction

The implementation of information technologies in various branches of the economic system, digitalization and electronic commerce become a kind of engine in the conditions of globalization and sustainable development of the economy. The flow of goods, services, and money becomes directed. Now, in the 21st century, global mobility is becoming increasingly more common. The transmission of information via fibre optic cable, through datagrams – digital data packets, is becoming commonplace. Therefore, the acceleration of data digitization and the direct impact of digital transformation and the digital economy itself are rapidly developing [1]. This affects the growth rate of the global e-business market and the creation of new types of services, business models, and values. The digitization of information and the instantaneous flow of data over the Internet has also changed the structure of world trade. More manufacturers of goods and services are supplementing the list of their services with digital substitute goods or other services [2]. Every manufactured product comes with information in the form of a QR code where you can read data about the manufacturer, service centres, etc. The sites are supplemented with information about product availability, replenishment time, reviews, composition, useful articles, links, etc. [2]. In today's world, the global economy is undergoing an important stage of digitalization in its history. Previously, such critical phases of transformation were the development of industry, the emergence of plants, factories, mass production, the service sector, and the emergence of a new economy at that time.

Recently, the economy has received an impetus to transition to a digital basis [2]. The COVID-19 pandemic, announced in 2020, contributed to the development of digitalization of the economy and e-commerce in various countries [3]. Thus, in 2020, $4.28 trillion worth of goods were purchased online in the world. Well over 2 billion people made purchases [4].

E-commerce is becoming an integral part of the economy of most countries. Social networks, online stores, online banking, and other services are becoming a part of everyday life. Consumer habits and preferences are gradually changing [4].

World trends indicate that access to the purchase of goods and services on the Internet is a priority of most countries [3]. Many authors note that the digitalization of the economy will require new skills from the labour market, the requirements for workers and vacancies will change. Thus, M.A. Mashchenko et al. [4] note that over 90% of workers in various industries will need new knowledge in the digital field. An analogous opinion is shared by E. de Groot and M. Rosman [5], who draw attention to the need to improve the qualifications of employees in a new format.

The issue of new conditions for the development of the economy, namely the stimulation of industry and innovation (start-ups), is considered in the studies by S.M. Ilyashenko et al. [6]. The authors note the stimulating function of digitalization and the new era of economic development. However, today in Ukraine, as of 2021, 47.8% of the population has digital education skills below the basic level [4]. This mainly concerns the older generation. According to the 2030E strategy, Ukraine has great prospects, but so far, lags far behind in terms of digitalization and the implementation of major initiatives [7]. This is facilitated by the general instability of the situation in the country, external factors, the presence of a digital divide, legal imperfections in the regulation of e-commerce activities, insufficient qualifications in the information field among teachers of educational institutions, etc.

As for Kazakhstan, as noted by O.G. Karpovich et al. [8] and in the article by Zakon.kz [9], the country's development in recent years clearly follows the "Digital Kazakhstan" program. In the country, data digitization systems are being implemented in the production and trade sectors, and a program for creating databases in the employment and social security system is underway [10]. But some issues are still unresolved. These include low rates of Internet connection of the population of remote areas, resistance of the population to innovations, the digital divide, the presence of the problem of youth obtaining a qualified education in "Information Technologies" (IT) field, etc.

Common features in the nationwide programs of digitalization countries are the adherence to the following areas: digitalization of healthcare; implementation of programs based on Industry 4.0 and "smart factory"; digitalization of the spheres of employment and social assistance; digitalization of education, implementation of educational projects, etc.

Thus, the issues and areas of digitalization of the countries' economies coincide in many respects. But there are also distinctive features related to the specifics of each country's development, mentality, geographical location, culture, and traditions.

The purpose of this study was to determine the influence of e-commerce as a stimulating factor in the development of the economy and to determine the prognostic data of the digitization of the economy.

To achieve the set purpose, the following tasks were implemented:

- to define the essence of e-commerce and digital assets in the modern economy;
- to systematize data on the development and implementation of e-commerce and digitalization of the economy using evidence from Ukraine and Kazakhstan;
- to evaluate the practices of European countries in the field of e-commerce;
- to build a forecast of economic growth based on the implementation of digitalization programs.

The successful implementation of such programs and their support at the state level will help reach a new economic level and improve the quality of services

provided by enterprises not only on domestic, but also on international markets.

Materials and Methods

During the study, the following materials were used as source materials:

- research on the issues under study;
- analytical reports on the dynamics of digital transformation indices;
- reports on the dynamics of the use of e-commerce in various European countries, research of statistical data and trends of e-commerce indicators;
- development programs "Digital Kazakhstan" [9], "Ukraine 2030E – A country with a developed digital economy" [7];
- legislative and regulatory drafts.

To achieve the goals within the framework of the developed tasks, the following research methods and tools were used:

- method of system-structural analysis;
- analysis and synthesis;
- generalization;
- deductions and inductions;
- predictive method (method of analogy).

The method of system-structural analysis was used to build the research logic. Furthermore, this method helped systematize the terminology related to the definitions "electronic commerce" and "digital assets" is systematized, considering the evolution of these concepts in relation to the development of economic scientific thought.

Using the method of analysis and synthesis, the essence of electronic commerce, its constituent elements, characteristics, as well as its place in relation to the physical circulation of goods, the specifics of exchange transactions on the Internet, the organization of online purchases and support of virtual stores, and distinctive features of electronic commerce, etc., were determined. Using the synthesis method, the position of digital assets was combined in the accounting system of digital data objects on the blockchain (decentralized database).

The next method was generalization, it is a method of logical completion of the process of abstraction. It is used to summarize the areas of development of e-commerce using digital assets in Ukraine and Kazakhstan, their prospects, risks, main inhibiting and stimulating factors, considering world practices, and as a particular case, European practices. This method was used to determine inherent features and common features affecting the main factors of the development of e-commerce, which are reflected in the implementation of national programs.

The methods of deduction and induction were used to investigate trends in transformation of economic relations under digital technologies and information resources in modern economic relations under external factors. Thus, the induction method helps investigate the trends of analytical indicators and draw a general conclusion about the prospects of digitalization of the country's economy as a whole. Using the deduction method, evaluating the general transformational processes in the global economic space and the transition to the digital economy, a positive decision was made to stimulate e-commerce.

Prognostic method (method of analogies) was used to build a forecast of economic growth based on the implementation of digitalization programs and the development of e-commerce as a whole in Ukraine and Kazakhstan (provided an optimistic forecast of their implementation within the framework of the proposed digitalization programs, considering the current state of economic development, external factors and internal environment, possible risks, mentality, etc.).

The successful implementation of e-commerce and the principles of the digital economy will contribute to the development of countries' economies and stimulate their entry into international markets.

Results

Defining the essence of electronic commerce in the conditions of the economy digitalization

Transformational processes in the economy all over the world in recent years have contributed to the transition of business processes from the physical to the informational space. Even if manufacturers have a real representative office or store, they create a digital database where everything is registered and, as a rule, e-commerce sales are gradually replacing physical ones.

There are several views on the definition of the essence of electronic commerce, which changed under external environmental conditions (Figure 1).

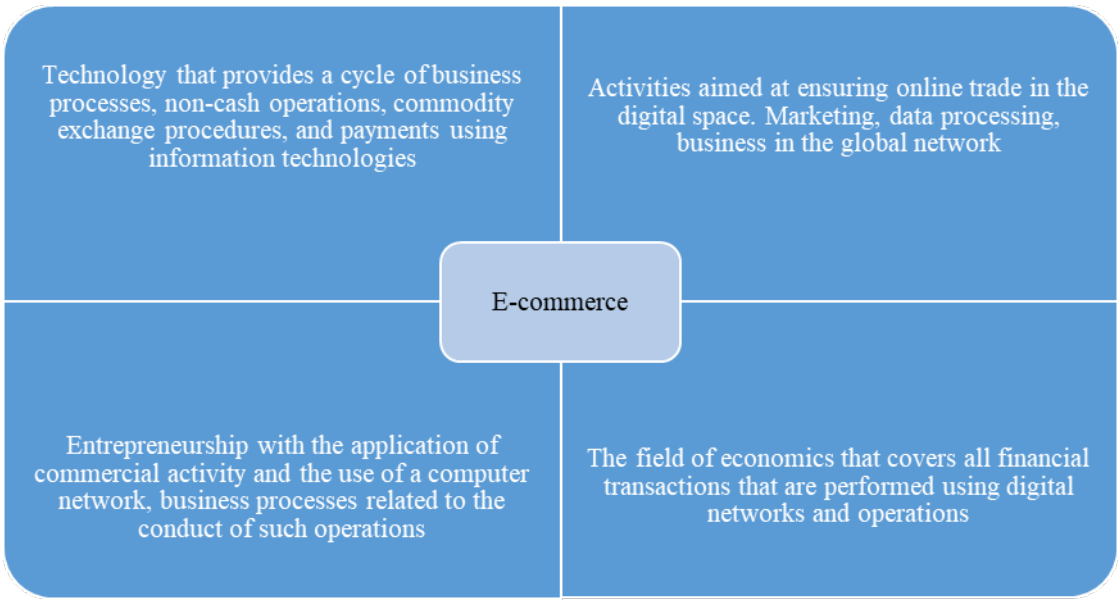

Figure 1. The evolution of the definition "E-commerce"
Source: compiled by the authors based on M. Mashchenko et al. [4].

But the concept of "electronic commerce" today is broader and includes several components (Figure 2), which are not limited to trade transactions, but are related to digital assets.

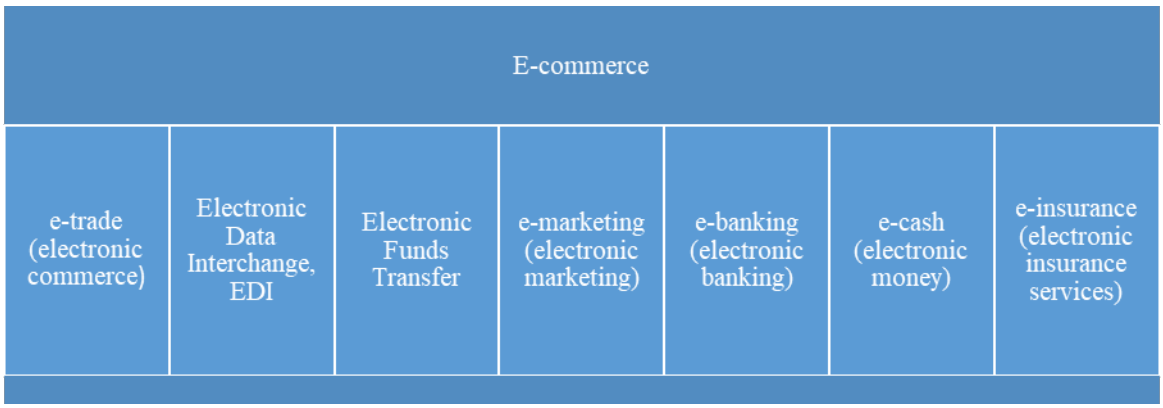

Figure 2. Components of e-commerce
Source: compiled by the authors based on M. Mashchenko et al. [4] and M. Keenan [11].

That is why it is important to consider the place and impact of e-commerce in the digitalization of the economy and the factors affecting it. The digitalization of the economy has its characteristics and indicators, which are based on a number of indices (Table 1).

Table 1. Indicators of the economy digitalization

Index group	Name	Abbreviation
Main	Digital Economy and Society Index	DESI
	Network Readiness Index	NRI
	Digital Evolution Index	DEI
	World Digital Competitiveness	WDC
Composite ratings based on indices	Information and computer technology (ICT) Development Index	IDI
	Digital Economy and Society Index	DESI
	World Digital Competitiveness Index	WDCI
	Digital Evolution Index	DEI
	Index of the economy digitalization of the Boston Consulting Group	eIntensity
	Network Readiness Index	NRI
	United Nations e-Government Global Development Index	EGDI
	Electronic Participation Index	EPART
	Global Connectivity Index	GCI
	Global Innovation Index	GII

Source: compiled by the authors based on M. Mashchenko et al. [4] and D.A. Vise and M. Masleed [12].

That is, those that characterize the level of digitalization of society as a whole, evolutionary processes, its competitiveness in terms of digitalization. One of the most common phenomena in the economy over the past few years can be called digitalization in the economy and all the transformational changes taking place there. The emergence of online goods, services, electronic funds, cryptocurrencies, and their turnover in the virtual space. These processes are also monitored using appropriate indices that help compile statistical data, including the efficiency of the use of personnel potential. Ratings that are based on indicators of internationally accepted indices are highly popular (Table 1) [12]. As a rule, such ratings differ in characteristic features, initial data taken as the basis of the analysis – for example, the level of the economy digitalization in different countries. Analysing the indicators, it is possible to identify general trends and differences in the level of preparedness of the world economy, economies of different countries for digitalization, implementation of the principles of electronic commerce [1].

The main elements of the digital economy include technologies such as clouds, distributed computing, digital data, and online sales. The second most significant group of technologies consists of blockchain, digital twins, augmented reality, additive manufacturing, robots, and cognitive technologies. It should be emphasized that technologies such as centralized data storage and processing centres, broadband Internet access, which are carefully considered by many companies and experts, have negligible effect on the development of digitalization of the economy. One of the major and significant technologies in the period of transformation to the digital economy is the introduction of digital platforms. This platform, which is a software product, contains other technologies that provide users with access to information, give the right to quality services, which include planning, analytics, market entry. The successful development and implementation of digital technologies in the economic space would not be possible without qualitative changes in the development of information and computer technologies (ICT) and the performance of the following conditions:

- growth in the scope of use of digital technologies;
- reducing the cost of digital technologies and tools, making it available to the consumer;
- constant growth in the pace of digitization of the economy, especially in countries that are not developing stably enough (in more developed countries, on the contrary, the pace is slowing down);
- increasingly accessible and widespread digital devices (computers, smartphones, smart devices and machines connected to the Internet of Things) are growing in volume.

The basis of the development of digital technologies is the development of digital assets. Let us define the essence of a digital asset as the basis of virtual assets and electronic commerce [4].

Digital asset as the basis of e-commerce development

The question of a digital asset arises as soon as there is talk of digitalization processes and e-commerce. Some studies related to research in this area equate the concept of a digital or virtual asset with the expressions token and cryptoasset [13]. According to the Law of Ukraine No. 2074-IX "On virtual assets" [14], virtual assets are defined as such intangible assets that are the object of exclusively civil rights and have a value expressed in the form of some virtual collection of electronic data. Pursuant to the Law of Ukraine No. 361-IX "On prevention and counteraction to legalisation (laundering) of criminal proceeds, terrorist financing and financing of proliferation of weapons of mass destruction" [15] – a virtual asset is an exclusively digital expression of value, and in such a format it is possible to perform all the functions inherent in electronic commerce operations: transfers, trade, exchange, investment, etc. Thus, a digital asset (virtual asset) becomes the basis of e-commerce, its main toolkit.

Digital assets in the form of tokenized assets (tokens) combine digital data objects in the blockchain (decentralized database) in the accounting system (Figure 3).

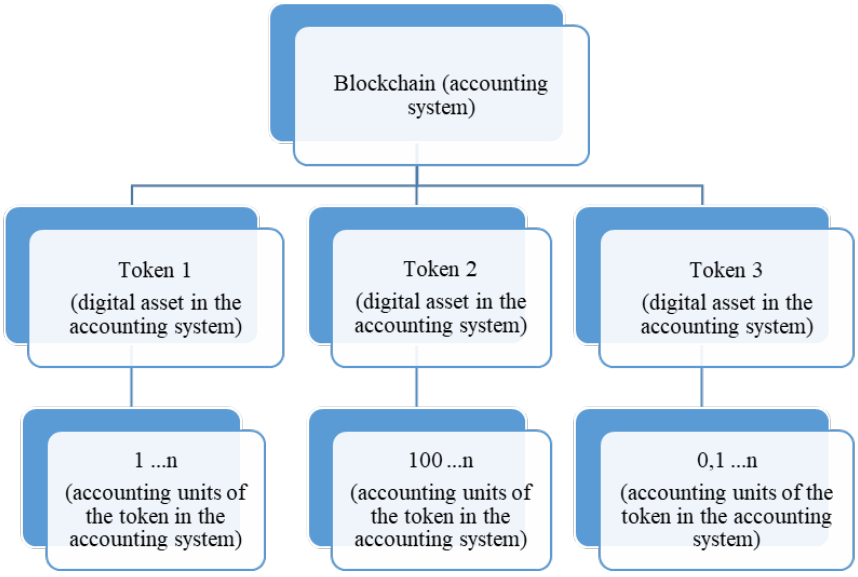

Figure 3. Scheme of a digital asset (tokenized asset) in the blockchain (accounting system)
Source: compiled by the authors based on A.A. Kud [13] and S. Chen and M. Zhou [16].

Thus, the functions of exchange, Electronic Data Interchangy (EDI), as well as other functions of e-commerce based on a digital asset are implemented.

Evaluation of factors of development of e-commerce in Ukraine and Kazakhstan

As mentioned in the previous subsection, the introduction of a decentralized accounting system and electronic commerce based on digital assets contributes to the revitalization of the economy. But several issues in these areas are still unresolved. Let us consider the main ones and compare the inherent features using evidence from the EU, Ukraine, and Kazakhstan (Table 2).

The complex of these factors contributes to the transition to new business models based on the development of the digital ecosystem and digital platforms. European countries are considerably ahead of the curve in terms of mobile commerce. Countries such as Great Britain, the Czech Republic, Ireland, Norway, Sweden are leaders in online shopping and the implementation of e-commerce in smartphones [12].

Table 2. Development factors of e-commerce in EU countries, Ukraine, and Kazakhstan

Indicator	European Union	Ukraine	Kazakhstan
Regulatory framework	Digital Services Act (DSA) Digital Markets Act (DMA)	Law on Electronic Commerce Law on Virtual Assets	State program "Digital Kazakhstan"
The rate of implementation of IT technologies	High	High up to 2020	Average
Work on Strategies for the development of the economy digitalization	"Shaping Europe's Digital Future"	"Ukraine 2030 E-Country with a developed economy"	State program "Digital Kazakhstan"
Principal areas of strategy implementation	Increasing competition in online markets, strengthening cross-border digital trade	Electronic commerce; Blockchains; IoT platforms; Smart products and services; Mobile technologies; Cloud computing; Industry 4.0; E-banking; Cybersecurity; Artificial Intelligence; Smart technologies; Business models, etc.	Data openness; Development of small and medium-sized businesses; Mobile technologies; Logistics; Industry 4.0; E-banking (payments); Electronic commerce; Support of agriculture; Smart technologies; Cybersecurity; Innovative ecosystem (Astana hub), etc.
Factors of negative influence	The digital divide between the population persists	Slow implementation of ICT, shortage of specialists	Low level of innovative development, staff shortage

Source: compiled by the authors based on V. Fischuk et al. [7], O.G. Karpovich et al. [8], Over two years of... [9], D. Coppola [17].

The rate of spread of e-banking is quite high in the EU countries. The legal framework is also important, namely the Digital Services Act (DSA) and the new EU law on digital markets – Digital Marketing Act (DMA). The purpose of these legislative acts is to secure the activities of companies and content in the virtual space, primarily this concerns e-commerce. These legislative initiatives are aimed at regulating money transfer transactions, tracking suspicious content, assessing possible risks, and creating digital platforms for large companies to flag illegal content [17].

As for Ukraine, by 2022, the rate of digitalization of the country was also characterized as sufficiently high (up to 30% per year) [7]. Comparing the strategic vectors of development, which are laid down in the digitalization programs of Ukraine and Kazakhstan, common characteristics are observed. This is the development of mobile technologies (smartphoneization); development of electronic commerce; e-banking; the areas of ensuring cybersecurity and development within the framework of Industry 4.0 coincide [18]. Furthermore, support for the development of smart technologies and the creation of digital platforms.

Digital platforms as a tool of the digital economy

Digital platforms (DPs) synthesizing the tools of the digital economy have innovative technologies, the ability to use digital tools and a free competitive market. Digital platforms create a common information space that allows saving on costs (digitalization is used in the accounting of the number of workers and payroll) [12].

According to their characteristics, CPUs are as follows:

- technological – those that provide access to goods, services, IT services, consumers (e.g., AliExpress);
- functional – those that provide access to special tools (e.g., Digital Single Market);
- corporate – those that provide access to the optimization of management processes (e.g., public procurement);
- infrastructure – platforms that provide access to digital infrastructure (e.g., Google Maps);
- commercial (marketplaces) – a platform that provides access to the market, where parties interact during the purchase of goods (e.g., Amazon);

- industry – those that provide access to optimize the interaction of participants (e.g., Zoom);
- informational – those that provide informational access to the market (e.g., Google Market).

Each developed digital platform has the following user groups:

- functional management of the operator of the digital platform;
- supplier – to provide goods and services offered by the platform;
- consumers – buy goods and services;
- service provider – creates a functional module;
- regulator – supervises monitoring [19].

The developed digital platform has an axis on which the economic process and interaction of end users are built (Figure 4).

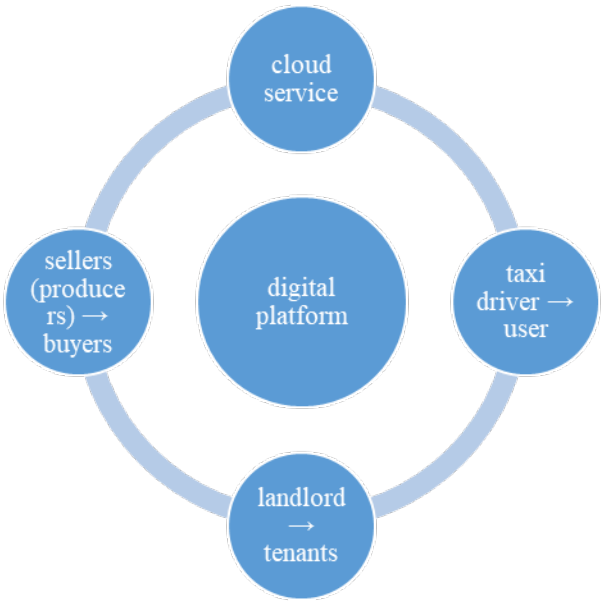

Figure 4. Consumer interaction within digital platforms (example)
Source: compiled by the authors.

Characteristic of digital platforms is their difference in algorithms. Functional limitations also characterize them. It is natural for digital platforms to capture and remember all transactions. The economic processes implemented on the platforms are transparent and analytical. With the leading tool of the transition to digital platforms (platformization), all economic processes are digitized and become transparent: a multi-level digital model of the economy is formed, where every financial transaction is controlled [19].

Digital platforms play a vital role in the transformation of the economy. Each digital platform reflects a separate section of the country's development program and handles the implementation of the strategic plan. The number of platforms is constantly growing, and the number of sectors of the digital economy is also growing with them. An element of competition arises, caused by different degrees and nature of influence, different elemental composition. Competition drives every digital platform to develop and constantly improve. The development of digital markets is gradually bringing e-commerce and its components to the fore, contributing to the development of its subsystems [20].

The implementation of digitization programs developed at the state level and the successful implementation of digital platforms will give impetus to the development of electronic commerce, banking, and the growth of Internet coverage in all areas of a citizen's life. Forecast data and their comparison are presented in Table 2. Comparing the directions of digitalization of the economies of the two countries, the Ukraine 2030 E program includes more ambitious and large-scale projects aimed at attracting funds from European partner countries. The "Digital Kazakhstan" program is primarily aimed at supporting the country's image, considers the specifics of the country's development and mentality, the purpose is not just to increase digitalization, but to achieve a level of economic development that allows it to be among the 30 developed countries by 2050 [21].

Table 2. Digital development of countries according to state programs (forecast data)

Program name	Implementation period	Output data	Expected data (forecast)
Ukraine 2030 E-country with a developed digital economy	Up to 2030	As of 2019 1. Digitization of physical (hard) infrastructure – 50%; 2. Digitization of IT infrastructure – 10%; 3. Financial availability of IT for the consumer – 53 c.u. per year; 4. Possession of basic digital skills of the population – 35%.	Expected 100% 95% 1000 c.u.

			90%
State program "Digital Kazakhstan"	Up to 2022	As of 2017 1. The total volume of electronic trade is 0.8%; 2. The share of services through the E-Gov platform in the total volume of services to the population is 35%; 3. The number of jobs in the IT sector is 92,000 per year; 4. The level of digital literacy of the population is 75.5%.; 5. Share of network users – 77%.	Expected 2.3% 80% 110 81.5% 81.5%

Source: V. Fischuk et al. [7], A. Tuleubekova [21], Law of Ukraine No. 675-VIII "On electronic commerce (E-commerce)" [22].

As the data presented in the table suggests, each of the strategies is aimed not just at stimulating trade operations, but at the complete reformatting of economic processes. It also covers the creation of new jobs that are related to the field of IT knowledge.

An important stage is also considering existing problems. Thus, the issue of the digital divide persists today, i.e., the difference between the capabilities and ease of access to digital technologies and online services, or the Internet for distinct categories of the population. This is also true for Ukraine and Kazakhstan. There is also a difficulty in the statutory regulation of the information and computer sphere. Despite the adopted legislative initiatives, there are still quite a few gaps, which creates space for fraud and abuse and the growth of cybercrime opportunities.

In addition, a concern for Ukraine is the unfavourable environment associated with external threats, the demographic situation caused by the departure of a part of the citizens outside the country due to the armed conflict, part of the specialists involved in hostilities, there are not enough young specialists, the older generation does not have time to master new technologies at a sufficiently high level.

There is a problem of insufficient regulation of the requirements for teaching in the field of IT, due to which programs are compiled without considering the requirements of the market. Future specialists acquire knowledge that is not competitive for employment.

Ukraine's issues today are demographic, economic, and external threats, due to the military conflict. Kazakhstan's issue is that the pace of digitalization is somewhat slow, demographics, and not a high percentage of youth among the population as the driving force of new technologies.

E-commerce often saves time and human effort, allows having more spare time for recreation, tourism, fitness, and sports. However, it requires compliance with new business rules and the establishment of these rules and regulations. The volatility of the national currency is important for e-commerce. It is necessary to take measures related to the protection of commercial information and protection against cyber fraud and online payments to secure the national currency and maintain a stable exchange rate. Digital banking plays an influential role here. In this regard, the development of digital financial technologies is extremely critical for the digitalization of the economy [17].

In today's world, a favourable technological infrastructure of the Internet and financial institutions is being created. Most European countries are considerably more developed in terms of electronic banking. The leaders are Denmark, where the share of electronic payments exceeds 63%, Ireland (60%), and Great Britain, where the share of card payments is about 53% [4; 17]. International payment systems are becoming increasingly popular in the world and are a crucial element in the development of e-commerce, as mentioned earlier. The processes of development of virtual currencies are becoming an integral part of the economy digitalization. But the presence of the problem of the "digital divide", i.e., the share of the population that does not have a sufficient level of knowledge about electronic commerce and e-money, is still an unresolved issue. These issues increase the risks of implementing digitalization processes, inhibit the development of digital education of the population, and reduce the pace of e-commerce implementation. Furthermore, using the forecast, it is possible to determine the future difficulties associated with the intensive digitalization of the economy. In the future, many professions will become irrelevant, there will be an issue of population employment and the need for retraining and re-educating the workforce. E-commerce, thanks to digital platforms, will become practically the only one. Conventional trade will become an anachronism of society that existed before the stage of the economy digitalization [17].

The most important work equipment will be electronic devices with the Internet: smartphones, laptops, tablets, etc. Many people will work interacting with electronic devices and the Internet remotely. Digitalization of the economy will save resources and working time. Productivity and labour efficiency will grow rapidly, which will affect, as a factor, economic growth with the digitalization of the economy [23]. Economic growth also involves solving the problem of employment. With sustainable economic growth, it will be possible to provide the population with a minimum monthly income, regardless of whether a person has a job. Changing the economy to a digital one can led to the extinction of some professions and a spike in the unemployment rate, and this issue needs to be solved [19]. The use and development of digital platforms (DPs) will allow building a more logical and analytical structure of the economy. The digital economy will develop together with the "green economy". Natural resources will be used less and less, and renewable sources will be more prioritized. Agriculture and people's nutrition will change significantly. The digital society will try to fight environmental pollution and global warming.

Discussion

In recent years, the sphere of online sales and Internet distribution has become much wider in everyone's everyday life. The years of the pandemic also contributed to this. The development of e-commerce and the economy digitalization as a whole is taking place at an increasing pace. But despite all the favourable factors, there are those that cannot be overcome.

The issue of the economy digitalization and the resulting related problems are raised in many scientific studies. Thus, numerous scientists devote their research to the aspects of digitalization of all spheres of economic activity, to the obstacles that arise on this path [4; 6]. The issues discussed in the previous sections of the study also confirm that many issues are still unresolved. This is, firstly, the preservation of the digital divide. A common concern for many countries in both Europe and the post-Soviet space. The issue of the digital divide has been considered rather frequently in the studies of scientists because the aspect of the population's readiness for digitalization of the economy and the introduction of new principles of trade, banking, digital services, etc. is important. Thus, O.G. Karpovich et al. [8] note that according to WEF research, only the economies of 25 states are prepared for the implementation of digitalization. Among the leading countries are Japan, the USA, South Korea, and Singapore. I. Kalenyuk and L. Tsymbal [2] also share the idea of the digital divide and the need to overcome it.

The next problem, which is shared by many scientists, such as F.E. Langroodi [24], is legal regulation. Despite the adoption of legislative initiatives and development strategies, the issue of regulation of commercial activity is still not resolved completely. This provides a basis for the growth of cybercrime [22].

Another area of the issue under study is education and provision of specialists in the field of IT. The main concern is the lack of fixed competencies for teachers in this field and, as a result, the lack of uniform requirements for teaching software products. The authors note that high-quality education in the field of ICT is not just training future specialists, but also ensuring competitive advantages in the e-commerce market. This opinion is shared in their research by authors M. Reeves and K. Whitaker [25]. They note that competitiveness in the labour market depends on the quality and speed of acquiring appropriate digital education. Furthermore, they note important aspects related to the future of the labour market. Many professions still require the active involvement of a human. The authors give an example that the result of a medical examination can be issued by a machine, but the diagnosis must still be pronounced by a doctor because "live" emotions are needed [25]. A. Jabłoński and M. Jabłoński [26] consider and share the problems of education and further employment.

The organization of communications is also essential. Previously, this communication took place mainly through telephone communication, provided for the availability of telephone sets. Now this communication is formed primarily through the Internet and social networks, most people have smartphones and laptops. Their prevalence in countries, their number, play a massive role in the development of the digital economy and the spread of electronic commerce. The dependence of the expansion of the borders of electronic commerce on indicators such as the size of the territory, the share of youth in the population, the prevalence of the Internet, the number and prevalence of smartphones and laptops, were considered in the studies of S. Kraus et al. [1], Zakon.kz [9] and C. Anderson [27]. The USA is the leader in these studies, China is also rapidly developing towards the digitalization of the economy. Judging by the ratings and indicators, Ukraine and Kazakhstan are gradually improving their positions [28; 29]. The identified problems of Ukraine today are a decrease in the share of qualified personnel due to population migration abroad and mobilization associated with the introduction of martial law in the country, as well as the instability of economic development and external risks [30-32]. Kazakhstan's issue is the preservation of low rates of introduction of information networks and demographic, i.e., not a high proportion of young people among the population. There is also a share of the country's population that deeply mistrusts digital services and online technologies. The main driving force of the development of the digital economy in society is the youth, who were born not so long ago and consciously did not experience a sceptical attitude towards the state, banks, companies [33-35].

The studies emphasize that young people stand for the future development of the digital economy and are more actively involved in online commerce [9]. According to research, consumers are not active enough in online shopping because they are distrustful of online shopping. Other complex financial transactions have not yet gained popularity due to public scepticism about online trading, especially among the older generation [36; 37]. The online literacy of the population needs to be constantly developed, overcoming the negative perception of some people about digital services and the digital economy. The young generation is becoming a leader in the spread of Internet commerce throughout the world, and especially in the countries of the European Union, where new software products and examples of e-commerce are being tested using evidence from young people [38; 39]. Young people prefer the digital economy the most and much less the traditional economy that destroys nature. Many sectors of the digital economy are being developed by innovative projects (startups) created mainly by young people [40].

As the study showed, the development of sectors of the digital economy continues at a rapid pace. With the economy digitalization, the following sectors are distinguished: clouds, distributed computing, Big Data, and Internet goods, digital platforms [41]. The second most important group of sectors consists of blockchain, digital twins, augmented reality, additive manufacturing, robots, and cognitive technologies.

Digital platforms structured in diverse ways, depending on their focus and purpose, are considered the most promising area. As mentioned earlier in the study, digital platforms can be aimed at access to goods or services, functionality, technologies, provide data exchange, have an infrastructural, technological focus, etc. [42; 43] Successful examples of such platforms include the implementation of the Diia (State and I) digital platform in Ukraine, which combines the implementation of many functions of state and social programs [7; 44]. A

comparable platform in Kazakhstan is "E-Gov", which performs analogous functions [21]. An inherent feature of digital technologies is that they are dynamically developing. Thus, the number of services on the Diia platform is constantly being supplemented, even in times of instability and external threats. The development of such projects within the framework of the economy digitalization can also be called successful, such as the "HELSI" platform supported by the Ministry of Healthcare of Ukraine, which helps to significantly reduce time and expand opportunities for access to medical services. In Kazakhstan, within the framework of the digitalization program, the National Telemedicine Network was created, which continues its development and support until now [9]. One of the priority directions for the creation of platforms is the development of the "Digital Silk Road", the purpose of which is to consider the specifics of the country, its mentality, to ensure the maximum spread of high-quality access to the Internet and cybersecurity of online operations in the network [21; 45].

Modern specialists attach immense importance to blockchain and cloud services for data storage. Thus, these issues are considered in detail by I. Pypenko and A. Kud [29]. They point out that the advantages of the modern economy are increasingly given and considered in the current situation and future digital economy. Services of payments, transfers, electronic money, and e-banking also occupy a large place [46; 47]. Electronic money is gaining popularity. For instance, in 2020, the number of operations with their use in the world increased by 3.1 times [17]. The economy digitalization is displacing cash, and the economy is moving to electronic money [48]. According to the study, the digital economy is vastly different from the conventional economy of resources, labour, and sustainability. Currently, the biggest problem on Earth is global warming, the cause of which is primarily the traditional economy [49]. Therefore, the implementation and observance of the principles of Industry 4.0 is vital. After all, another issue is "plastic pollution" of the environment [24]. The digital economy can solve these problems as well. These properties of the digital economy are a key driver of productivity and economic growth [50].

In summary, at the international level, e-commerce, and its components, including digital platforms, investments, marketplaces, and blockchain, are considered the most promising areas of digitalization of the economy. As noted in the study, the economy digitalization stands at the origins of its development. Each country is interested in attracting foreign investment, so different laws are passed to stimulate and regulate the e-capital market and the e-commerce market. At the international level, measures are also being taken to stop global warming, which poses a colossal danger to the Earth. The digital economy will help humanity preserve nature, develop new trade markets, and generate new jobs.

Conclusions

Global market changes and economic processes, changes in external conditions and the impact of information technologies on all spheres of economic activity are increasing every year. Digitalization and e-commerce are becoming a guarantee of sustainable economic development of every developing country. The flow of products, the flow of services, and the flow of capital become end-user oriented. The "World in a smartphone" technology is becoming increasingly widespread, when practically all operations that a consumer needs: from reading the news, weather forecast, to scheduling an appointment with a doctor or obtaining a certificate, they receive thanks to a mobile device. Transmission of information over fibre optic cables using digital data packets is becoming increasingly common. The digital transformation of economic processes is taking place at an accelerating pace all over the world. This affects the growth of the global e-commerce market and the creation of new services, business models and values. The digitization of information and the instantaneous flow of data through the Internet have also changed the structure of world trade. Databases of goods and services are being created, many new Internet stores and startups related to e-commerce appear every day. In the world, the world economy is undergoing a critical stage of digitalization and transition to a new format of development. There is a transition to a digital e-commerce economy.

The COVID-19 pandemic, which was announced in 2020, gave a significant boost to the development of e-commerce and contributed to the digitalization of the economy and e-commerce in various countries. But the habits and preferences of consumers change according to the country's development, mentality, and cultural habits.

E-commerce and its elements are becoming stimulating factors in the development of the economy of countries. During the study, the essence of e-commerce was considered as a new economic category in the transformational economy based on a digital asset. The essence of a digital (virtual) asset was determined, which is the main tool of electronic commerce, is an object of data accounting, it is often called a tokenized asset, or a crypto asset. It is based on a digital asset that the construction of blockchains (data storage systems, data accounting) is based.

Digital asset-based e-commerce is a multi-faceted category that encompasses not only online commerce (e-commerce), but also digital data exchange, capital movement, e-banking, e-money, and e-insurance services.

Researched areas of the economy digitalization and implementation of e-commerce using evidence from Ukraine and Kazakhstan suggest that the most promising are the implementation of digital platforms based on the principle of "the state in a smartphone" ("Diia" in Ukraine; "E-Gov" in Kazakhstan). Furthermore, quite successful are the areas related to the development of e-banking and logistics areas, such as in Ukraine, the program supported by the Ministry of Health "HELSI", in Kazakhstan – the program within the framework of the implementation of the "Digital Silk Road".

Thus, the most promising in the development process are digital platforms. The role of national support and the involvement of state structures in the implementation of strategies and programs for digitalization of the country's economy is essential. The practical application of research results can be used as a basis for building or adjusting strategies (Programs) for digitalization of the economies of various countries, e.g., the post-Soviet space.

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Conflict of Interest
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Анотація

Актуальність. Світові тенденції переходу до принципів цифрової економіки та впровадження електронної комерції як фактора економічного зростання все частіше стають об'єктом дослідження науковців. Економіка стає ще більш цифровою, а минула пандемія COVID-19 сприяла цьому прискоренню.

Мета. Метою даного дослідження було дослідити роль електронної комерції та її сутність в умовах цифровізації економіки, як стимулюючого фактору розвитку економіки країни.

Методологія. Основними методами досягнення мети дослідження стали методи системного та структурно-логічного аналізу даних, аналізу та синтезу, узагальнення, прогностичний метод.

Результати. Дослідження переконливо показало, що електронна комерція в останні роки розвивається прискореними темпами в усьому світі. Цьому сприяло як оголошення пандемії COVID-19, так і загальна тенденція до діджиталізації економіки. Глобальні трансформаційні процеси тривають і охоплюють усі сфери життя та виробництва. Лідерами є країни світу і, зокрема, країни Європи. В Україні та Казахстані розроблені програми цифровізації економіки країн, які базуються на принципах "держава в смартфоні" та враховують всі елементи структури електронної комерції.

Висновки. Найбільш перспективними напрямами є розвиток цифрових платформ, хмарних сервісів, підтримка електронного банкінгу, захист інформації тощо. Підтримка технологій Індустрії 4.0 дозволить не лише захистити зовнішнє середовище, а й створити робочі місця та зменшити рівень безробіття в майбутньому. Важливою залишається підтримка держави на всіх рівнях реалізації програм цифровізації економіки. Результати дослідження можуть бути використані як основа для формування та коригування стратегій і програм цифровізації економік різних країн.

Ключові слова**:** цифровізація; глобалізація; інформаційні технології; цифрова платформа; державні програми.