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DIRECTIONS OF THE DEVELOPMENT OF THE DIGITAL ECONOMY IN THE CONDITIONS OF MILITARY CONFLICTS

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ABSTRACT

The aim of this work was to identify the development trends for the digital development economy during military conflicts in the case of Ukraine. The statistical processing of data from the World Bank and other official sources was applied. The Human Capital Index, the Network Readiness Index, the Digital Competitiveness Ranking, and the Innovation Index were considered. Their dependence on the Global Peace Index was also studied. It was found that the level of development digital economy of Ukraine did not decrease despite the annexation of part of the territory and the full-scale invasion of the Russian Federation, as the readiness of networks did not decrease compared to the pre-war period. The Human Capital Index and the intensity of the introduction of digital technologies in all spheres of life and production have not changed. A certain decrease in investments in research and inventions was established, which may have a negative impact on the development of the digital economy in the future. The conducted research identified trends for digital economy development during military conflicts. These include retaining human capital and its development, the introduction of innovations at all stages of employment, and the support and rapid restoration of the conditions required for digital activity. The results of this study have theoretical and practical significance, as they expand the research methodology of digital economy development in extreme conditions. The study had limitations determined by the lack of some 2022 statistics caused by unfavourable conditions for obtaining reliable data.

Keywords: digital technologies, digital economic platforms, human capital, innovative technologies, sustainable development, Peace Index

JEL Classification: F29, O20, O29

INTRODUCTION

The emergence of technologies in society's life triggered its transit from an agrarian system to an industrial and post-industrial one [1]. The beginning of the development of the digital economy is associated with the end of the financial crisis of 2007-2008 [2]. Digitization [3] is considered an accelerator of financial activity. New technologies enabled the combination of the physical and digital worlds in the economy [4]. The partial replacement of human capital with smart devices entailed their intensive production and investment in their development. Digital information and communication technologies are introduced into all industries and spheres of human life and activity: from digital product development to housing construction and agricultural operations. They affect the formation of the cost price at all stages [5]. They are also a tool for the interaction of economic agents and contribute to the development of defence, energy, research & education, as well as other industries.

Armed conflicts always cause irreparable damage to society and the environment, thus affecting the country's economy [6]. Climate change and associated migration can be the causes of conflicts [7]. An example is the drought in Syria, the military conflict and the mass migration of the population in 2011-2015.

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The causes of conflicts include increased life expectancy and the density of the population in the world [8], the uneven distribution of natural resources on the planet, terrorism, separatism, climate change, unemployment, income inequality, the spread of weapons of mass destruction, cyber-attacks [9], etc. Small states often become victims of conflicts [10].

While the countries of the world observe the ethics of military intervention in interstate conflicts [11], the states at war are trying to preserve their populations and economies. In particular, they are trying to attract foreign direct investment [12], partially and temporarily switch from the traditional economy to other forms.

LITERATURE REVIEW

Many studies dealt with digital economy issues. The digital economy was analysed in the context of a set of concepts of informatization, digitization, robotization, etc. [13]. The impact of high technology development on business and social changes in different countries was also identified [2]. It was proved that interaction with the international community, the use of world experience and technologies, is a prerequisite for the country's economic development [4]. The most intensive interaction covers a radius of 200 km. This process involves knowledge and other components of human capital. The latest technologies used include artificial intelligence and robotics, machines that can replace humans in various types of operations. Sensors are also used for remote monitoring and control of production processes, virtual and augmented reality technologies, new computing technologies, etc. The development of the digital economy affects macroeconomic parameters such as GDP, consumption, employment, trade, etc. [4, 7]. Other researchers [14] emphasized the importance of interaction in a common space, accentuating the importance of interaction through online platforms, including the housing, transport sectors, lending, freelancing, agricultural equipment, etc. Platforms are also considered business incubators, a special management mechanism, and a digital intermediary in the exchange of goods and services [15]. The digital economy also includes social networks that exist at the expense of the advertising shown there. Platforms provide jobs to their creators (architects and technologists), who design and maintain its digital infrastructure. The platforms also enable their users – freelancers, cloud consultants, and employees who use digital tools to perform human intelligence tasks – to get the job.

The development of information and communication technologies made improved the management of logistics, in particular, the management of stocks, processes, sales, pricing, etc. [16]. It also simplified the performance of many operations carried out by the employees through digital programs and applications [17], thereby reducing the burden on employees [18].

Integrated management information systems that support decision-making and their implementation have become widely used thanks to innovative technologies [19]. They combine systems of organizational and economic management and management of technological processes, as well as integration with the self-organization of management. Integrated management information systems have information presentability, which implies presenting the necessary public reporting of the company, for example, on sustainable development with a distinction between economic, social and environmental components, according to reporting standards and requirements. Moreover, it is possible to simultaneously comply with, for example, the GRI sustainability reporting standards, as well as the industry reporting requirements established by the American accounting standards in the field of sustainable development (Sustainability Accounting Standards Board, SASB)), and the International Financial Reporting Standards (IIFR) integrated reporting. The information used to compile the report is integrative, in other words, it is collected on an integrative basis of the ESG (environmental, social and governance) activities, taking into account mutual influences in it. An integrated combination of structural elements of the report is achieved in this case. Integrated management information systems have a user-friendly interface containing universal components, for example, management concept, business strategy, business model, business processes, risks, performance, etc. This management system enables generating a report on the current state of affairs at any time. Moreover, this report may contain only the requested components and indicators, as well as their explanations. Such management systems consider the integration process as the establishment (planning) and acquisition (actualization) of the integration features by the management system and economic processes in it, which turns the system and processes into integrated ones. In general, analytical work is a part of self-organizational management, which provides a combined financial and non-financial dynamic assessment of coherent influences in ESG activities and maintaining homeostatic equilibrium (balance) in the integrated system, neutralizing the effect of disintegration factors [20, 21, 29].

According to Li et al. [22], the digital economy has become a factor influencing rural-urban integration. It is also a factor that affects the equivalent distribution of capital, labour, technology, etc. In other words, finances are controlled through digital technologies. Digital technologies provide the rural and urban populations with the same information volumes. Digital technologies accelerate the labour flow both from rural and urban areas, also improving the level of meeting the

needs of the labour market with relevant offers. It also promotes the return of the rural population from the cities and the establishment of a dynamic balance between these two groups of the workforce.

There are different methods of studying the digital economy. The EU countries use the Digital Economy and Society Index (DESI) [2]. It includes the following four parameters: human capital; connectivity, integration of digital technology, digital public services.

Human capital has always had a significant impact on the economy. A qualified workforce, knowledge workers, who have professional experience, proper health, who are geographically mobile and have high productivity constitute the country's competitiveness in the field of the digital economy [23]. Each gender group, formed by age or sex, makes a different contribution to the development of the digital economy [24]. In turn, the digital economy has created new jobs and changed the requirements for employees' professional competencies [25].

War has a negative impact on all aspects of life, as well as on the country's sustainable development. Kundelis and Legenzova [26] studied the impact of the war on the sustainable development of the country's regions using the statistical analysis of the data of the State Statistics Service of Ukraine.

Humanity has always spent and continues to spend, a lot of money on weapons [27]. According to Stockholm International Peace Research Institute (SIPRI), the 2021 global military burden was USD 2.1 trillion (https://www.sipri.org/databases). Nevertheless, the war takes on other forms over time. The information war [28] has recently joined the war of arms [29].

Despite a large number of studies on various aspects of the digital economy development, the issue of its development under extreme conditions remains poorly studied in the academic literature.

AIMS AND OBJECTIVES

Therefore, the aim of this work was to identify the trends for digital economy development in the course of the hostilities on the territory of the state. The aim involved the following research objectives:

- identify objective parameters that characterize the level of the country's digital economy development;
- analyse the dynamics of these variables in the context of a military conflict;
- determine the trends for digital economy development in the country amid ongoing hostilities.

METHODS

A multidimensional system of indicators was used in this research in order to determine the level of digital economy development and its impact on the development of the state of war in the country. As Ukraine is not an EU member, it is not included in the ranking of the EU countries in terms of the Digital Economy and Society Index (DESI). This index includes human capital; connectivity, integration of digital technology, digital public services [22]. This is why parameters similar to DESI were used in this study for analysing the level of digital economy development and comparing it with other countries: the Human Capital Index, the share of Internet users, the Digital Competitiveness Ranking, and the Innovation Index.

The Global Peace Index was also used as an independent parameter to determine the impact of the military conflict in the country on digital economy development.

The Human Capital Index is calculated once a year based on the following indicators: the standard of living in the country, the level of literacy, education, and life expectancy.

The Network Readiness Index measures the impact of ICT on a country's economy in the following dimensions: technology, people, governance and impact. Each of them is also evaluated by three groups of parameters, a total of 58 variables.

The Digital Competitiveness Ranking created by the Swiss International Development Management Business School (IMD) in Lausanne was also used. It is built on a comparison of 50 indicators related to the digital transformation of countries, management policies, investment in research & development, education, in digital technologies, etc.

The Global Innovation Index assesses the commercial results of innovation activity and the level at which the governments encourage innovation activity. It includes 82 parameters.

The Global Peace Index is based on the following indicators: the violence and crime rate, and military spending.

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The study focuses on the period covering 2011 to December 2022. This period was chosen in order to compare the digital economy development in Ukraine before the annexation of part of its territory by Russia, to determine the impact of the annexation in 2014 on the digital economy development in the country, and the impact of the full-scale invasion of Russian troops on February 24, 2022. Not all statistics for 2022 were published at the time of the study. The period before the full-scale invasion of the Russian Federation troops on the territory of Ukraine – until 2022 – was considered because of the lack of data.

Ukraine apart, the sample included 6 more countries, three of which had military conflicts on their territories during the study period, as well as three countries in which there were no conflicts during the study period. The first group includes Yemen, Mali, and Sudan, which had military conflicts on their territories that took place in 2014-2015, 2012, and 2012, respectively. Great Britain, Germany and the USA were arbitrarily selected for the second group of countries.

RESULTS

As the digital economy cannot develop without human potential, information and communication, as well as innovative technologies, these parameters were analysed in this study. Table 1 presents the results of the analysis of the human potential development index for the period of the conflict.

Table 1. Dynamics of the Human Capital Index (HCI). *(Source: according to the [30])*

Year / Country	2010	2017	2018	2020
Ukraine	0.6	0.6	0.6	0.6
Yemen	-	0.4	0.4	0.4
Mali	-	0.3	0.3	0.3
Sudan	-	0.4	0.4	0.4
Germany	0.8	0.8	0.8	0.8
Great Britain	0.8	0.8	0.8	0.8
USA	0.7	0.8	0.7	0.7

The costs incurred for retaining and improvement of human capital cannot have immediate results. Nevertheless, it is necessary to continuously invest in the formation of human capital so that the economy, including the digital one, does not feel the consequences of the war in the future. This includes, in particular, the preservation of the life and health of the country's population of all age categories, regardless of gender and social status, as well as providing opportunities for children and young people to get quality education, even during martial law in the country, and employees – to continue lifelong learning according to the sustainable development principles. In 2022, educational institutions continued to operate in Ukraine. Teaching and learning were carried out depending on the security situation in a blended form: alternating offline and online. The latter was implemented through the latest technologies.

Starting from 2012, Ukraine occupied different places in the countries ranking for the Network Readiness Index (NRI) (Table 2).

Table 2. Ukraine's place in the ranking for the Network Readiness Index. *(Source: according to the [31])*

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Position	75	73	81	71	64	-	-	67	64	53	50

As Table 2 shows, the place in ranking fell from 73 to 81 with the beginning of the annexation of part of the territory of Ukraine in 2014. However, Ukraine rose in the ranking by 31 points during the war from 2014 to 2022. The Network Readiness Index increased during the full-scale invasion of the Russian military on the territory of Ukraine – during 2022 – and the position in the ranking moved up by three points. Table 3 provides a comparison of the main parameters included in the evaluation of the Network Readiness Index for the two years 2020 and 2022.

Table 3. Ranking of Ukraine by subcategories of the Network Readiness Index. *(Source: according to the [31])*

Year / Subcategory	2020	2022	Shift
Content	46	50	↓ by 4
Government	71	52	↑ by 19
Trust	49	54	↓ by 5
Inclusion	72	60	↑ by 12
Business	52	50	↑ by 2
Quality of life	77	57	↑ by 20
Technologies of the future	53	51	↑ by 2
Access	79	37	↑ by 42
Economy	62	43	↓ by 19
Position	83	84	↓ by 1
Individuals	63	7	↑ by 56
SDG contribution	91	83	↑ by 8

According to the data in Table 3, Ukraine rose in the ranking of countries for the Network Readiness Index in most subcategories from 2 to 56 points. It fell in the ranking by 1-19 points in 4 subcategories. Ukraine has not only retained the 2021 level, but the conditions for the full functioning of the digital economy improved despite the full-scale invasion of the Russian Federation. In particular, mobile tariffs and prices for phones are kept available to the public, and online access to a financial account has become widely used. Internet stores are functioning, and the international bandwidth allows expanding the market. The Internet is available in schools and in shelters, which enables the continuity of education, in particular during air raids, and thereby not suspend the development of human capital, as well as ensures the continuous functioning of the digital economy regardless of the effects of martial law and unfavourable conditions for business activity. The frequency of use of digital payments has increased despite martial law, and the development of various mobile applications continues. The number of digital payments made in rural areas is increasing. However, the statistical analysis of the data showed that investment in the latest technologies decreased, which may have negative consequences for the development of the digital economy in the near future.

A sufficiently high number of Internet users is important for the development of the digital economy. Their number in Ukraine has more than tripled over the past 10 years (Table 4). The annexation of part of the territory in 2014 did not change this dynamic. The number of Internet users in Ukraine, where military conflicts were recorded during the period covered in this study, increased much faster than in other countries.

Table 4. The number of Internet users, % of the population. *(Source: according to the [30])*

Year / Country	2000	2005	2010	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ukraine	1	4	23	35	41	46	49	53	59	63	70	75
Yemen	1	1	12	17	20	23	24	25	27	-	-	-
Mali	0	1	2	3	4	7	10	14	19	21	24	27
Sudan	0	1	2	3	4	7	10	14	19	25	26	28
Germany	30	69	82	82	84	86	88	84	84	87	88	90
Great Britain	27	70	85	87	90	92	92	95	90	91	93	95
USA	43	68	72	75	71	73	75	86	87	88	89	91

According to the data of the Swiss International Development Management Business School (IMD) in Lausanne, the changes in the digital competitiveness that Ukraine has undergone in connection with the invasion of Russian troops on its territory in 2014 were evaluated (Table 5). It was evaluated how the population of Ukraine during the studied period learned digital technologies and integrated them into government practice, private and state business models, and various processes in society.

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Table 5. Digital Competitiveness Index of Ukraine. *(Source: according to the [32])*

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
IMD	6.29	6.82	5.91	6.34	6.27	6.12	6.28	7.01	6.7	7.22	7.30

As Table 5 shows, a decrease in the IMD index was observed in Ukraine in 2013, a year before the annexation of its territories by the Russian Federation. During the entire period from 2014 to 2021, the Digital Competitiveness Index of Ukraine gradually increased and in 2021 reached 7.3, ranking the country 54th among other countries in the world.

Table 6. Global Innovation Index of Ukraine. *(Source: according to the [33])*

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Position	60	63	71	63	64	56	50	43	47	45	49	57
Index	35.01	36.1	35.78	36.26	36.45	35.72	37.6	38.52	37.4	36.2	35.6	31.0

The Innovation Index in Ukraine was the highest in 2018 (Table 6) – during the annexation of part of the territory, and the lowest in 2013. The position of Ukraine in the global ranking for the Innovation Index decreased by 8 points over the period of the full-scale invasion. The hostilities on the territory of the country resulted in a decreased scale of high-tech production, research & development, export of creative developments and high technologies, etc.

Since 2011, Ukraine has ranked 98th to 157th in the ranking of countries for the Global Peace Index (Table 7).

Table 7. Ukraine's place in the ranking of countries for to the Global Peace Index. *(Source: according to the [34])*

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Position	105	98	118	141	150	157	155	151	150	148	143	153

As Table 7 shows, the annexation of part of the territory of Ukraine by Russia affected the position of Ukraine in the ranking of countries for the Global Peace Index, thus moving it 23 positions down (from 118 in 2013 to 141 in 2914). Ukraine rapidly moved down in this ranking until 2017, and in 2018 it began to gradually rise from 155th position in 2017 to 143rd in 2021. However, the full-scale invasion caused a decrease in Ukraine's ranking on the Peace Index by 10 positions. This confirms that the frequency of deaths in the population of Ukraine as a result of terror and violent crimes committed by the occupiers has increased with the invasion of the Russian Federation.

The dependencies illustrated in Figures 1-3 were obtained by analysing the data provided in Table 1-7 and establishing a relationship between the Human Capital Index, the Network Readiness Index, the Digital Competitiveness Ranking, and the Innovation Index, on the one hand, and the Global Peace Index. At the same time, human capital remained constant during the studied period, so it is not shown on the graph.

It can be concluded based on Figure 1 that, despite the deteriorated conditions for the development of the economy, in particular the digital economy, caused by the aggression of the Russian Federation, networks continue to develop rapidly in Ukraine, which is an integral component of the development of the digital economy.

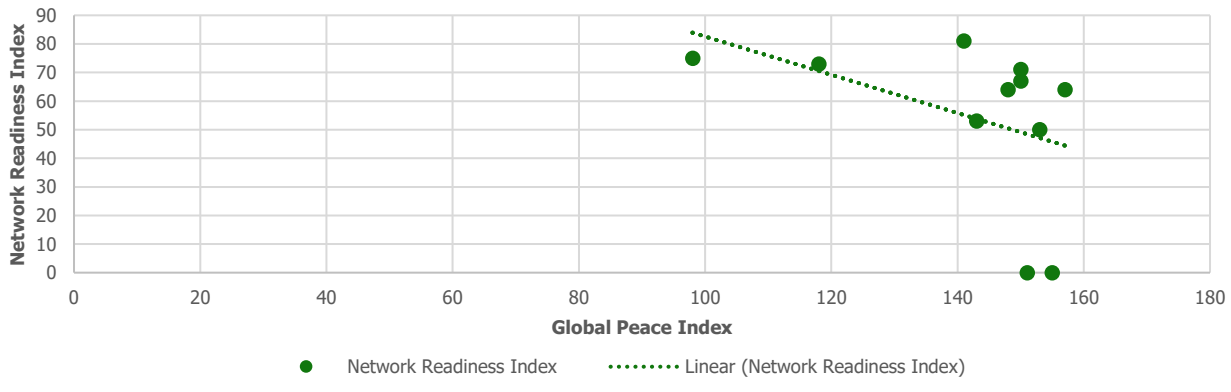

Figure 1. Correlation of the Network Readiness Index and the Global Peace Index (Ukraine 2012-2022). *(Source: created by the authors based on [34])*

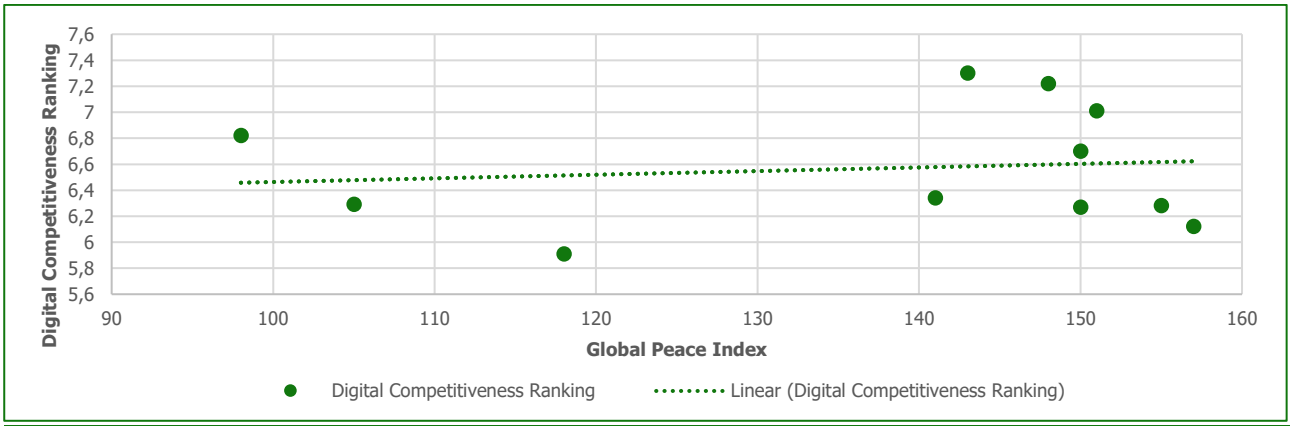

Figure 2. Correlation of the Digital Competitiveness Ranking and the Global Peace Index (Ukraine 2011-2021). *(Source: created by the authors based on [32], [34])*

As Figure 2 shows, a decreased level of security in the country did not entail a decreased level of its digital competitiveness.

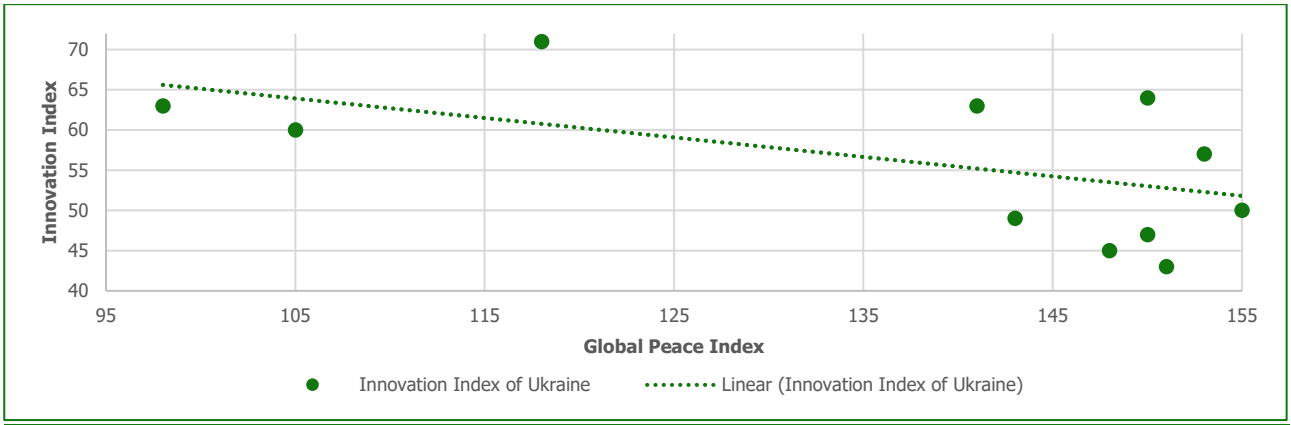

Figure 3. Correlation of the Innovation Index and the Global Peace Index (Ukraine 2011-2022). *(Source: created by the authors based on the data of the [33, 34])*

Figure 3 shows that hostilities had a negative impact on the development, production and introduction of innovative technologies in all spheres of life of the population of Ukraine. Nevertheless, as Figure 2 shows, this did not have a negative impact on Ukraine's digital competitiveness at the time of the study. But this may have negative consequences in the long run.

The analysis of the main indicators of the digital economy determined the following trends for its development:

- Keeping on human capital development. Creation of safe conditions for preserving the health and life of the country's population during hostilities, as well as ensuring continuous education. For this purpose, it is necessary to provide a sufficient number of shelters equipped with everything required, including the Internet. Conduct educational work among the country's population with the aim of clarifying the role of shelters in preserving the lives of the population and the need to observe the rules of conduct during the air-raid warning.
- Maintaining proper mobile and Internet communication during hostilities and restoring it in the shortest possible time in case of damage. Provision of the Internet and mobile communication to the same extent in both urban and rural settlements, because the population is more prone to internal migration from cities to villages than in peacetime, depending on the security and energy situation. Maintaining affordable tariffs for mobile and Internet communication for the public, as well as affordable prices for the technical means necessary for digital communication.
- Continuation of the integration of digital technologies at all levels and stages of both governmental and industrial activity, as well as in the social sphere.
- Keeping on investment in the research, development, production and introduction of innovative technologies.

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DISCUSSION

Different parameters are used for studying the development of the digital economy. For example, Human Development Index, ICT Development Index, and Global Innovation Index [35]. The following indices were used in this study: the Human Capital index; the Network Readiness Index; the share of Internet users, the Digital Competitiveness Ranking, the Innovation Index, and the Global Peace Index. For Ukraine, these parameters have undergone changes over the past 10 years. The global Human Capital index has been stable since 2010 and equalled 0.6. The Network Development Index has been growing steadily since 2014, which enabled Ukraine to move from 81st position in this ranking to 50th in 2022. The Global Innovation Index fluctuated wildly from 38.52 in 2918 to 31.0 in 2022.

It was found [35] that digital technologies enable expanding business far beyond the borders of the country while using little physical assets, platforms and resources of local partners. This can be another mechanism for the development of the digital economy of a country amid ongoing hostilities. It was proved that knowledge is one of the main parameters of human capital. Internationalization of business enables exchanging and expanding knowledge of employees from different countries. Therefore, this mechanism for the digital economy development will also support human capital through continuous training of employees. It can be implemented online through information technology.

Karintseva et al. [1] proved that the use of personal computers, mobile phones, the Internet, artificial intelligence, and cloud technologies are those digital tools which contribute to the growth of various indicators of the economy, for example, GDP per capita [18], and the growth of population welfare [36]. As this study showed, the number of Internet users in Ukraine grew during the studied period despite the hostilities, and this had a positive effect on the development of its digital competitiveness.

Voronkova et al. [13] found that the digital economy contributes to technological development. At the same time, it is a geopolitical, geo-economic and geo-cultural phenomenon. No country in the world has, however, achieved a higher 80% of socio-economic, informational and innovative development.

The impact of emergency situations on the digital economy was studied. Li et al. [2] found that the 2020 pandemic has accelerated the transition of many companies to online service provision (for example, digital banking). Also, big data technologies are gradually gaining importance in the production processes of many industries. Artificial intelligence is widely used in business and society. Active business systems are platforms that connect buyers, sellers, e-commerce service providers, etc. In Ukraine, the annexation of part of the territory in 2014 coincided with the growth of the parameter of global digital competitiveness from 5.91 in 2013 to 6.34 in 2014 and reached an indicator of 7.3 in 2021.

Big data technologies are also gradually gaining importance in the production processes of many industries. Artificial intelligence is widely used in business and society. Active business systems are platforms that connect buyers, sellers, e-commerce service providers, etc. The annexation of part of the territory of Ukraine in 2014 coincided with the growth of Global Digital Competitiveness from 5.91 in 2013 to 6.34 in 2014 and reached an indicator of 7.3 in 2021.

It was established that direct foreign investments, the rate of human potential development, the distance between countries, and political stability had an impact on the rate of socioeconomic infrastructure development. External conflicts and military tensions have a negative impact on foreign investments [12]. Besides, the country's economy can be affected by its involvement in globalization or deglobalization processes [37].

Limitations of the study. This study does not compare the state of the digital economy development in different regions of Ukraine in terms of GDP of the region per capita and net profit of enterprises located on its territory, as well as changes in the population of the region during the studied period, average monthly wages in the region, etc.

CONCLUSIONS

Despite the rapid development of innovative technologies that improve the population's level and life expectancy, there are still conflicts on the planet that are trying to be solved by military means. This leads to destruction, destruction of the population, and the decline of the economies of the warring countries. This paper examines the impact of the war that has been ongoing in Ukraine since 2014 on the leading indicators that characterize the development of the digital economy. It was revealed that the human capital of Ukraine had not undergone significant changes over the past 10 years. The number of network subscribers has increased, which is a positive factor in developing the digital economy. The country's digital competitiveness also increased during the military conflict on its territory. A decrease in the development and introduction of innovations has been established, which in the near future may negatively affect all spheres of human life and activity, including reducing the pace of development of the digital economy. The directions for developing the digital

economy during hostilities on the country's territory are proposed, which is of practical importance for countries in extreme conditions. Future research should focus on identifying the impact of internal and external migration, which is an integral attribute of war, on developing the country's digital economy.

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НАПРЯМИ РОЗВИТКУ ЦИФРОВОЇ ЕКОНОМІКИ В УМОВАХ ВОЄННИХ КОНФЛІКТІВ

Метою цієї роботи було встановити напрями розвитку цифрової економіки під час воєнних конфліктів на прикладі України. Використана методологія статистичної обробки даних Світового банку та інших офіційних джерел. Розглянуто індекс людського капіталу, індекс готовності мереж, індекс цифрової конкурентоспроможності, індекс інновацій. Також досліджено їхню залежність від глобального індексу миру. Виявлено, що, незважаючи на анексію частини території та повномасштабне вторгнення РФ, цифрова економіка України не знизила свого рівня розвитку, оскільки не знизився рівень готовності мереж порівняно з довоєнним періодом. Також не зазнали змін індекс розвитку людського капіталу та інтенсивність запровадження цифрових технологій в усі сфери життя й галузі виробництва. Виявлено деяке зниження інвестицій у наукові дослідження та винаходи, що може мати в подальшому негативний уплив на розвиток цифрової економіки. Проведене дослідження дозволило окреслити напрями розвитку цифрової економіки під час воєнних конфліктів. До них належать збереження людського капіталу та його розвиток, упровадження інновацій на всіх етапах трудової діяльності; підтримка та швидке відновлення умов, необхідних для цифрової активності. Результати цього дослідження мають теоретичне та практичне значення, оскільки дозволяють розширити методику дослідження розвитку цифрової економіки в екстремальних умовах. Робота має обмеження, зумовлені відсутністю деяких статистичних даних за 2022 рік, викликаною несприятливими умовами для отримання достовірних даних.

Ключові слова: цифрові технології, цифрові економічні платформи, людський капітал, інноваційні технології, сталий розвиток, індекс миру

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