# Digital Transformation of the National Economy Regulation in the COVID-19 Conditions

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## Abstract

The article examines the main trends of digital transformation under the impact on the state regulation of the Ukraine's economy in the context of pandemic challenges. The purpose of the article is to study the digital transformations of the national economy regulation in the COVID-19 pandemic. Within the scope of the studywere used: dialectical method, method of analysis and synthesis, monographic method, method of abstraction and formalization, statistical method, method of generalizations and graphic method. It is noted that digital transformation creates a synergistic effect, since sustainable development can best be achieved under the conditions of coordinated cooperation of participants, exchange of experience, knowledge, information and resources in the process of achieving common goals. The influence of digitalization on certain areas of the national economy, namely entrepreneurship, education, health care, and the banking sector, is analyzed. The state and prospects of the introduction of electronic government in Ukraine, which is used as a tool of state-administrative reform, have been studied. The main tasks and priority directions of the national economy regulation in the conditions of information transformations are defined.

**Keywords:** State Regulation, Regulatory Policy, National Economy, COVID-19 Pandemic, Digitalization, Digital Transformations

## Introduction

Coronavirus pandemic has an unprecedented economic and social impact on many countries of the world. This period of the national economies development is characterized by an exponential growth in the use of information technologies and their global spread in all spheres of society's life. There was an acceleration of achievement in the digital sphere through the creation and commercializationof programs and devices based on cloud computing, the spread of artificial intelligence technologies. Technological changes have led to the modernization of business activities of enterprises, both manufacturing and service providers of various levels, which led to corresponding changes in the state regulation. The introduction of new approaches to state regulation

under the conditions of digital transformation is also caused by negative socio-economic consequences, such as limiting access to the benefits of digitalization in poor countries and regions, uneven access to network technologies. Other problems have also intensified, such as the spread of fake news and cyber attacks, growing threats to the privacy and security of personal data, and large-scale production of e-waste. Therefore, the issue of state regulation Ukraine's economy development involves, first of all, achieving a balance between the benefits and costs of digitization, solving the problem of isolation of certain segments of the population against the background of low living standards and limited access to information resources, which outlined the timeliness of the study.

The purpose of the article is the analysis of digital transformations of the national economy regulation in the COVID-19 pandemic.

## Literature Review

In current economic literature (Marhasova et al., 2023; Djakona et al., 2021; Cosmulese et al., 2019), digital transformation is considered as the process of introducing digital technologies into all spheres of economic activity. Kholiavko et al. (2022), Abramova et al. (2021) and Zybareva et al. (2023) argue that this process the creation of new information business models.

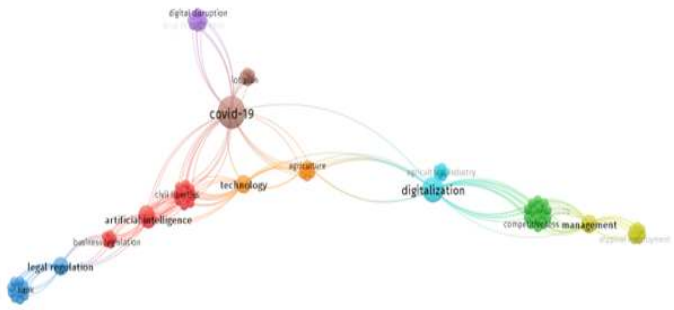
Shaposhnykov et al. (2021) and Zhavoroonk et al. (2022) prove that digital transformation is a powerful tool that can help businesses and organizations become more efficient and competitive. However, it is important to properly implement digital technologies to avoid negative consequences.

Researchers (Popelo et al., 2022; Samoilovych et al., 2021) highlight that the Ukraine's economy under the digitalizationcontext has a number of positive consequences, in particular: an increase in labor productivity - digital technologies allow automating routine tasks, which frees up time for more creative and innovative tasks ; cost reduction - digital technologies allow optimizing business processes, which can lead to cost reduction; improvement of customer service – digital technologies allow to provide customers with a more personalized and efficient service; creation new jobs in the field of IT, development of digital products and services, as well as in the field of customer service.

Comprehensive aspects foundations of digitalization of the national economy are the focus of attention of many leading researchers, such as: Nowak et al. (2021), Ocheredco (2020), Park (2021) and Sridhar et al. (2023) and other.

In order to determine the relevance of the selected scientific issue, we conducted an analysis of the publishing activity of the world scientific community, the results of which are published in Web of Science, one of the most authoritative scientometric databases. Using the tools of the VOSviewer software product, we also created a graphic map of keywords in publications where the names "digital transformation", "economy" and "Covid-19" appeared (Fig. 1).

**Figure 1: Graphic map of keywords in the studies that contain the titles “digital transformation”, “national economy”and “Covid-19”**




| Field: Web of Science Categories | Record Count | % of 23 |
|---|---|---|
| Economics | 5 | 21.739% |
| Computer Science Information Systems | 4 | 17.391% |
| International Relations | 4 | 17.391% |
| Business | 3 | 13.043% |
| Computer Science Theory Methods | 3 | 13.043% |
| Law | 3 | 13.043% |
| Computer Science Interdisciplinary Applications | 2 | 8.696% |
| Agriculture Multidisciplinary | 1 | 4.348% |
| Automation Control Systems | 1 | 4.348% |
| Business Finance | 1 | 4.348% |

Source: systematized by the authors

The results of bibliometric analysis of publication activity showed the interdisciplinary nature of this research topic (Economics, Computer Science Information Systems, International Relations, Business, Computer Science Theory Methods, Law, etc.).

The analysis of scientific developments in the field of digitalization of the Ukraine'sl economy (Ostrovska et al., 2023; Kholiavko et al., 2019) makes it possible to clearly follow the negative consequences of digital transformation: loss of jobs - digital technologies can lead to the loss of jobs in traditional sectors of the economy; inequality - digital transformation can increase inequality in society, as access to digital technologies can be uneven; environmental problems - digital transformation will contribute to an increase in electricity consumption and other resources.

In general, the digitalization of the Ukraine's economy will lead to the creation of a more efficient, innovative and competitive economy. However, it is advisable to take into account the negative consequences of this process and take measures to mitigate them.

However, the influence of digital transformations on the state regulation of the national economic system, which gained momentum during the COVID-19 pandemic, are not widespread enough and require additional clarification.

## Methodology

Solving the task within the set goal, the following methods were used:

dialectical method - determination of priority areas of innovative development under the digitalization context;

method of analysis and synthesis - analysis the influence of digitalization on certain areas of the Ukraine's economy;

monographic method – systematization of factors determining the relevance of the E-government concept;

method of abstraction and formalization – determination of basic aspects of legal regulation of the national economy in the informationtransformations'conditions;

statistical method – research of the e-government development index(EGDI) in dynamics anddynamic fluctuations the electronic participation index (EPI);

method of generalizations – formation of priority areas of state regulation of the national economy under digitalization context;

graphic method - for visualization of research results.

## Results

In current environment, digital technologies is one of the most important elements of regulating the socio-economic development of the state. The activation of the transformation process gained importance during the Coronavirus pandemic in early 2020. Digital technologies played a key role in overcoming the effects of the Coronaviruspandemic. In the years that followed, the importance of digital technologies in all areas of the economy and society was proven, while at the same time identifying current socioeconomic problems that require urgent action.

The Internet, as a leading digital technology resource, has become a priority among other factors of socio-economic change in terms of the growing importance of the concept of sustainable development. Digitization of the Ukraibe's economy based on Internet and cloud computing is a tool for reducing the gap between countries, solving the environmental aspects burden and climate change, accelerating human well-being and increasing quality of life indicators.

However, the priority role of digitalization and information technologies in overcoming the consequences of the pandemic puts enterprises and state institutions before the challenge of reformatting the management system, introducing new management approaches based on digital tools. This is related to the simultaneous emergence of problems in the structural transformation of production processes, communication interaction both within the organization and with suppliers and consumers, insufficient infrastructure support, and technical barriers. The outlined set of problems can be solved through the rational legal regulation in the context of the introduction of innovations and the development of information support for institutions and organizations.

Digital transformation forms the emergence of a synergistic effect, since sustainable development can best be achieved under the conditions of coordinated cooperation of

participants, exchange of experience, knowledge, information and resources in the process of achieving common goals. This is especially important for state regulation of the national economy in developing countries.

We will analyze the role of digitalization processes on certain areas of the national economy. Thus, business structures during the activation of thedigitalization development get the opportunity to access the implementation of innovative initiatives under the sustainability aspects and become a priority component of the implementation of the entire innovation chain: from the preparation of project proposals to the direct implementation of innovations in the production process. On the part of the state, appropriate measures should be developed that will contribute to the effective commercialization of innovations under the pandemic challenges context. The goal of such state policy should be primarily the achievement of competitive advantages of enterprises and their adaptation to the relevant aspects of the digital economy. The results of the enterprises' functioning in various fields of industry testify to the multidirectionality of the effects of digital end-to-end technologies under the sustainability context. In particular, real-time tracking of industrial accidents, reduction of logistics costs, online sales. Virtual reality technology is actively used in the training of employees aimed at increasing the effectiveness of their actions in real situations. There is a gradual transition of companies to ESG - standards (Environmental, Social, and Corporate Governance), which are used by socially responsible investors to check potential investments. Based on compliance with environmental criteria, it is determined how active the enterprise is in the field of environmental protection and energy efficiency activities; compliance with social criteria implies consistency and parity in relations with employees, consumers, suppliers and society. The criteria of corporate governance directly involve the management of the company, management style and methods, shareholder rights, audit and internal control.

Restrictions on movement during the pandemic, a change in the format of communications contributed to the development of e-commerce as a form of implementing business processes based on the interaction of subjects through Internet technologies. Since 2020, certain segments of the e-commerce market have experienced rapid development, in particular:

- trade in goods (online retail);
- trade in services;
- trade in digital content;
- electronic payments.

At the same time, the following models are used: B2B - company-company (Business-to-Business) and B2C - company-consumer (Business-to-Consumer). These models provide the majority of transactions on the Internet through trading platforms, exchanges, auctions and portals.

Digital technology will contribute to the significant development of the banking sector through the introduction of e-banking and e-money, expanding access to financial services, primarily in rural areas, and contributing to increased energy efficiency and reduced electricity costs.Under the influence of digitalization and the extend of information technologies, both the structure of the banking services market, methods and tools of their provision and communication with consumers are changing. To search for new markets and consumers of services via the Internet, the idea of digital marketing was developed and implemented, which involves the use of leading network technologies and helps to improve the financial performance of banks. Pandemic challenges only intensified the process of including digital marketing, which is the main component of the development strategy of most leading domestic banks.

In the field of health care, digitalization made it possible to widely use digital technologies in the professional activities of doctors, drawing up treatment protocols, conducting examinations, monitoring the course of the disease, conducting online consultations of patients from different regions. In the work of health care institutions, digital technologies contribute to the optimization of the process of receiving patients and providing medical services.

The education system was able to ensure continuity of educational services by introducing digital technology during the pandemic, followed by the introduction of

distance education. However, the further implementation of digital innovations involves the formation, as a result of the appropriate state policy, of conditions for investing in inclusive ICT infrastructure and supporting interaction, based on public-private partnership in the context of further diffusion of innovations and exchange of experience.

The main strategic emphasis of innovative development in the digital transformation contextwere formed during the pandemic and continue to be implemented further, since the digital economy has created conditions for reforming all spheres of the Ukraine's economy. Among the priority instructions, such items should be listed:

1) acceleration of progress in the sphere of broadband Internet distribution, the possibility of constant access to information resources independently of the territory of residence, based on the criteria of availability, acceptability and quality;
2) the spread of digital literacy among all levels of society, including the elderly, and the inclusion of relevant competencies in the basic skills of primary and secondary education;
3) promotion of measures and efforts to increase cyber protection and ensure information security in the digital sphere.

To overcome the aforementioned obstacles, state authorities at all levels should make great efforts to achieve an appropriate level of economic, social, and environmental sustainability and progressive structural reforms based on the active adoption of information technology. This also applies to the reform of administrative systems based on e-government.

Public administration in society aims to coordinate and unify people, and the form of interaction between public institutions and society depends on social processes and their maturity. To ensure effective communication between society and the state, it is advisable to apply innovative information and management technologies; in other words, the concept of e-government includes adapting public administration to the technologies of the information society. In this context, e-government is used as a tool for national administrative reform. The main idea of the project is to implement changes in the system of administrative authorities in the direction of improving the efficiency of their functioning, openness of information, and optimal provision of public services. Factors that determine the relevance of the e-government concept include:

- the introduction of "electronic government" helps to ensure the appropriate level of efficiency of public administration, increases the level of transparency of the functioning of state authorities.

- new channels of political communication between the state and society are being formed, resulting in an increase in the level of public trust in the government.

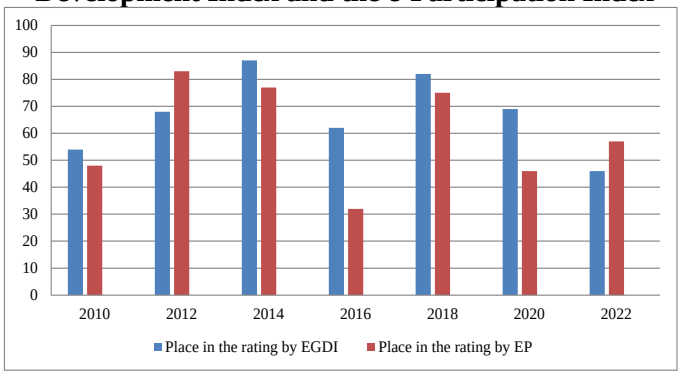
The E-Government Development Index is used to assess the degree of readiness of the state to implement the concept of "electronic government" and the implementation of relevant electronic services. Thisspecified complex indicator is calculated once every 2 years on the basis of the methodology of the United Nations Department of Economic and Social Affairs, which combines three sub-indices - Telecommunication Infrastructure Index (telecommunication sub-index), Human Capital Component (sub-index of human capital development), OnlineService Index (subindex of the online government services development). Another comprehensive indicator characterizing the level of e-government implementation is the electronic participation index (EPI), which includes such components as:electronicinformation, electronicconsultation and electronicdecision-making.

Figures 2-3 show the dynamics of the E-Government Development Indexand the E-Participation Indexin Ukraine and the change in the ranking among other countries of the world for the period 2010-2022.

According to statistical information, the E-Government Development Index in Ukraine during the period of the COVID-19 pandemic improved significantly compared to previous periods, in 2022 its value was 0.803 compared to 0.711 in 2020 and 0.616 in 2018. It is a positive fact that despite russia's military aggression, Ukraine was able to continue reforms in the field of electronic government and electronic democracy, which is one of the requirements for joining the EU. So, in 2022, this allowed Ukraine to take 46th place. As for the E-Participation Index, Ukraine reached its highest value in 2020, which is due to the

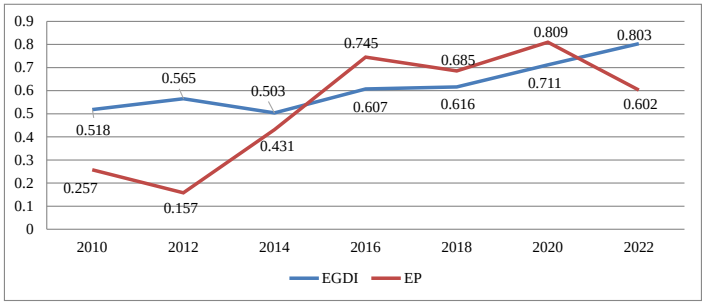
introduction of a digital passport, the Diya electronic system and the transfer of a certain number of public administration services to an electronic format. In 2022, the value of the E-Participation Index decreased due to military operations to 0.602, and the greatest progress during this year was achieved in terms of the electronic participation development in management decision-making by state authorities. Consequently, the COVID-19 pandemic created the conditions for a clear understanding by the state authorities and society of the importance of electronicgovernment in terms of increasing the efficiency of management processes, the openness of state authorities and increasing the level of democratization of society. Currently, in Ukraine, the stage of "establishment" is changing to the stage of "interaction" regarding the offer of public services based on interactive interaction.

**Figure 2: Ranking of Ukraine among other countries of the world according to the e-Government Development Index and the e-Participation Index**




Source: compiled by authors based on E-Government Knowledgebase (https://publicadministration.un.org/egovkb/en-us)

**Figure 3: Dynamics of changes in the EGDI e-government development index and the EPI e-participation index for the period 2010-2022**



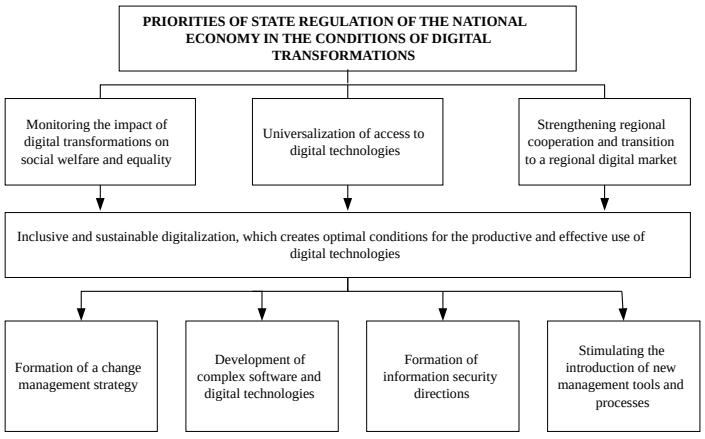

Source: E-Government Knowledgebase (https://publicadministration.un.org/egovkb/en-us)

The main tasks of state regulation of the national economy under the digitalization contextare:

- modernization of management and legal mechanism of state regulation in the field of electronic interaction;
- fight against illegal content distributed in the global network and strengthening of cyber protection;
- protection of intellectual property rights in the field of electronic communications;
- creation of effective information exchange system in the digital space between all state institutions, taking into account the digital government system;
- development of effective countermeasures against information and psychological attacks;
- optimization of the communication code of information interaction by improving the work of technical support;
- raise the level of liability in cases of copyright infringement.

For almost three years in a row, under the conditions of the pandemic, regulatory and legal regulation of the Ukraine'seconomy under theinformation transformations context should be carried out on the basis of the principles of justice and sustainability, which should be institutionalized and expanded (Fig. 4), which is laid in the basis a comprehensive approach to the development of priority areas of state policy.

**Figure 4: Priority areas of state regulation of the national economy under the digital transformations context**




**Source: systematized by the authors**

The mechanisms of state assistancefor the use of digital technologies by state institutions and organizations, business structures, and the population should become priority directions for the development of state regulatory measures implemented through the development of the paradigm of electronic document flow and electronic government.At the same time, the prerequisites for legal support of the introduction of the digital economy system into the life of society are being created.

At the same time, it is important to single out significant restrictions, the influence of which became quite influential during the pandemic. These, in our opinion, should include the strengthening of the digital divide as a result of the uneven socio-economic development of individual regions and territories; the difficulty of implementing control for privacy violations; changes in the labor market characterized by a decrease in the number of jobs as a result of the introduction of digital technologies and changes in the demand for professional abilities and developed competencies.

## Discussion

We agree with Zhang et al. (2022) that the Coronavirus pandemic influenced the digital transformation of national economies. The pandemic accelerated the digital transformation of economies in many countries around the world. This is because the pandemic has created a need for remote work, training, and customer service. This has led to increased demand for new digital technologies.

It also confirms Ostrovska et al.'s (2023) idea that in the manufacturing sector, digital transformation has led to automation of production processes and the use of 3D printing and other technologies The COVID-19 epidemic has exacerbated this trend, as companies are now facing a situation where access to the labor force The COVID-19 epidemic exacerbated this trend, as firms needed to adopt new technologies to ensure continuity of production in a context of limited access to labor.

We support Zybareva et al. (2023) that in the trade sphere, information transformation has led to the development of e-commerce, mobile marketing and other technologies. Sharing the ideas of Djakona et al. (2021), digital transformation has led to the development of remote work, cloud technologies and other technologies. The COVID-19 pandemic made this trend inevitable, as companies needed to allow to work remotely to their employees.

In general, the scaling of COVID-19 has greatly accelerated the development of digital technologies. This process is likely to continue as digital technologies become increasingly important in all areas of economic activity. Governments around the world are taking measures to support the digital transformation of their national economies. These measures include:

- creation of a regulatory framework – governments implement a regulatory framework that has a significant impact on the rapid development of the digital economy;
- financing of digital projects - governments fund digital projects that promote digitization;
- development of digital infrastructure - state investment in digital infrastructure, which is the basis for the digital economy.

## Conclusion

Optimizing the digitization process and obtaining positive resultsdue to the introduction of information innovations requires state regulation of all aspects of socio-economic development, primarily due to the formation and initiation of short-term and long-term projects for managing the benefits and risks of digital transformations and eliminating existing limitations.

It is appropriate to pay attention to information technology trends and take into account potential risks and threats, as well as to introduce measures to stimulate systemic changes aimed at the restoration and further development of various spheres of the national economy. Directions for increasing the efficiency of transformational processes are based on the implementation of digital innovation systems, new information technologies, communication innovations, which will further contribute to the flexibility of the functioning of thestate regulation system of the socio-economic development of all spheres of the national economy.

Digital transformation processes involve the active use of

digital technologies with the aim of radically changing products and services, as well as approaches to their implementation in order to meet consumer needs. Pandemic processes of COVID-19 contributed to the implementation of new ones directions for improving the efficiency of innovative systems of digital transformation. Changes in different spheres of Ukraine's economy led to the emergence of new management business models, the creation of modern internationalization strategies, the improvement of networks and the selection of markets. State policy in this area should contribute to the formation of inclusive and sustainable digitalization, which creates conditions for overcoming the crisis and further effective implementation of digital technologies.

## References


- Abramova, A., Filyppova, S., Vdovenko, N., Kotelevets, D., Lozychenko, O., Malin, O. (2021). Regulatory policy transformation in conditions of nonstationary economy in eastern European countries: practical approach. International Journal of Computer Science and Network Security, 21(10), 39-48. https://doi.org/10.22937/IJCSNS.2021.21.10.5.
- Cosmulese, C.G., Grosu, V., Hlaciuc, E., Zhavoronok, A. (2019). The Influences of the Digital Revolution on the Educational System of the EU Countries. Marketing and Management of Innovations, 3, 242-254. http://doi.org/10.21272/mmi.2019.3-18.
- Djakona, A., Kholiavko, N., Dubyna, M., Zhavoronok, A., Fedyshyn, M. (2021). Educational dominant of the information economy development: a case of Latvia for Ukraine. Economic Annals-XXI, 192(2), 108-124. https://doi.org/10.21003/ea.V192-09.
- E-Government Knowledgebase. URL: https://publicadministration.un.org/egovkb/en-us.
- Kholiavko, N., Popelo, O., Melnychenko, A., Derhaliuk, M., Grynevych, L. (2022). The Role of Higher Education in the Digital Economy Development. Revista Tempos E Espacos Em Educacao, 15(34), e16773. https://doi.org/10.20952/revtee.v15i34.16773.
- Kholiavko, N., Shkarlet, S., Dubyna, M. (2019). Information Economy: Management of Educational, Innovation, and Research Determinants. Marketing and Management of Innovations, 3, 126-141. http://doi.org/10.21272/mmi.2019.3-10.
- Marhasova, V., Kholiavko, N., Popelo, O., Krylov, D., Zhavoronok, A., & Biliaze, O. (2023). The Impact of Digitalization on the Sustainable Development of Ukraine: COVID-19 and War Challenges for Higher Education. Revista De La Universidad Del Zulia, 14(40), 422-439. http://doi.org/10.46925//rdluz.40.24.
- Nowak, D., Dolinskyi, L., Filipishyna, K. (2021). Digital Challenges in the Economy and Their Impact on Regional Development. Economics. Ecology. Socium, 5, 39-47. http://dx.doi.org/10.31520/2616-7107/2021.5.4-5.
- Ocheredco, O. (2020). The improvement of the investment attractiveness of industrial enterprises in the convention of the COVID-19 pandemic. Access journal, 1(2), 131-145. https://doi.org/10.46656/access.2020.1.2(5)
- Ostrovska, N., Krylov, D., Pohrebniak, A., Pereguda, Y., Stetsiuk, V. (2023). Digitalization as an Imperative of the Development of Business Processes in the Conditions of the Intensified Global Competitiveness. Revista De La Universidad Del Zulia, 14(41), 766-783. https://doi.org/10.46925//rdluz.41.43.
- Park, J. (2021). Governing a Pandemic with Data on the Contactless Path to AI: Personal Data, Public Health, and the Digital Divide in South Korea, Europe and the United States in Tracking of COVID-19. Partecipazione E Conflitto, 14(1), 79-+.https://doi.org/10.1285/i20356609v14i1p79.
- Popelo, O., Tulchynska, S., Revko, A., Butko, M., Derhaliuk, M. (2022). Methodological Approaches to the Evaluation of Innovation in Polish and Ukrainian Regions, Taking into Account Digitalization. Comparative Economic Research. Central and Eastern Europe, 25(1), 55-74. https://doi.org/10.18778/1508-2008.25.04.
- Samoilovych, A., Garafonova, O., Popelo, O., Marhasova, V., Lazarenko, Yu. (2021). World

experience and ukrainian realities of digital transformation of regions in the context of the information economy development. Financial and credit activity: problems of theory and practice, 3(38), 316-325. https://doi.org/10.18371/fcaptp.v3i38.237462.

- Shaposhnykov, K., Kochubei, O., Grygor, O., Protsenko, N., Vyshnevska, O., Dzyubina, A. (2021). Organizational and Economic Mechanism of Development and Promotion of IT Products in Ukraine. Estudios de economia aplicada, 39(6). https://doi.org/10.25115/ eea.v39i6.5264.
- Sridhar, A., Balakrishnan, A., Jacob, M.M., Sillanpaa, M., Dayanandan, N. (2023). Global impact of COVID-19 on agriculture: role of sustainable agriculture and digital farming. Environmental Science and Pollution Research, 30, 42509–42525. https://doi.org/10.1007/s11356-022-19358-w.
- Zhang, J., Zhao, W., Cheng, B., Li, A., Wang, Y., Yang, N., Tian, Y. (2022). The Impact of Digital Economy on the Economic Growth and the Development Strategies in the post-COVID-19 Era: Evidence From Countries Along the "Belt and Road". Front. Public Health, 10, 856142. https://doi.org/10.3389/fpubh.2022.856142.
- Zhavoronok, A., Chub, A., Yakushko, I., Kotelevets, D., Lozychenko, O., Kupchyshyna, O. (2022). Regulatory Policy: Bibliometric Analysis Using the VOSviewer Program. International Journal of Computer Science and Network Security, 22(1), 39-48. https://doi.org/10.22937/IJCSNS.2022.22.1.7.
- Zybareva, O., Shylepnytskyi, P., Ozarko, K., Kravchuk, I., Nahorniuk, O. (2023). The organizational and economic mechanism of attraction of digital technologies in the innovation activity of companies in the conditions of international competition. Revista de la Universidad del Zulia,14(39), 415-431. http://dx.doi.org/10.46925// rdluz.39.23.