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The Governance System of Economic Innovation Development in the Context of Digitalization

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ABSTRACTS

The article is devoted to developing directions for improving the governance system of innovative development of the economy using digital technologies. The purpose of the study is to determine the development directions of the public administration system based on the current state and problems of innovative development in Ukraine. The topic's relevance is determined by the need for rapid and effective economic recovery after the war. The study used general scientific research methods, including analysis, synthesis, comparison, and grouping. The study results show that the economic innovation development governance system is not perfect. Ministries in various fields regulate all innovation processes initiated by the state. So, a single innovation strategy for the state's development and specific goals and objectives of innovative development is not set. Thus, the innovative development of the state is not coordinated, which needs further improvements. The study also shows that the state is not ready for innovative development, which requires an increase in the population ready to use digital technologies. In turn, it will increase the number of specialists in the information services field that can develop production processes. State stimulation of the IT services development will significantly accelerate economic growth, which is especially important in post-war conditions. The study's practical significance lies in its possibility to be used by the administrative apparatus to improve the economic innovation development strategy.

HIGHLIGHTS

- The article is devoted to developing directions for improving the governance system of innovative development of the economy using digital technologies.
- The topic's relevance is determined by the need for rapid and effective economic recovery after the war.
- State stimulation of the IT services development will significantly accelerate economic growth, which is especially important in post-war conditions.

Keywords: Innovation, state regulation, information services, digitalization

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The issues of innovation development management have always been a topical issue for scientific research in Ukraine and worldwide. This is due to the fact that innovation is the driving force of scientific and technological progress, economic development and civilization development. However, the management of innovative economic development in Ukraine has become especially important now, during the period of warfare between Ukraine and Russia, which has already led and continues to lead to the destruction of the economic structure and infrastructure. Under such conditions, innovation can become the only power that can quickly bring the Ukrainian economy to the pre-war level and significantly accelerate its development, which is especially important in the period of post-war reconstruction.

The current innovation management system has many weaknesses, problems and contradictions. On the one hand, innovations require significant investments of financial resources, which are extremely limited during the war. However, on the other hand, only with the help of innovations Ukraine has a chance to implement reforms in all economic sectors and become a full member of the European Union.

The potential for successful innovative economic development in Ukraine is human capital, which is able to compete in the global labor market. Ukraine has formed a powerful intellectual capital that implements its skills in foreign markets. In particular, a powerful sector of information services has been formed, which has significant potential not only for the industry development, but also for the development of the entire economy. Total digitalization in all production processes requires competent coordination and implementation of automation tools, which can be realized using own, national technologies and resources. At the same time, the possibility of realizing the state' innovative potential depends on an effective system of public administration.

The purpose of the study is to determine the development directions of the public administration system based on the assessment of the current state and problems of innovative development in Ukraine through the use of digital technologies.

It is necessary to perform the following tasks to achieve the goal in the course of the study:

- to carry out a critical analysis of the literature and legal regulation of innovation activities in Ukraine;
- to show the current state of innovation development in Ukraine and identify weaknesses and potential;
- to consider the directions of improvement of the system of management of innovative development of the economy.

Literature Review

The concept of innovation, innovation activity, and innovation policy was first used in 1967 (Androshchuk, 1997; Yang, 2021). The modern innovation development management system involves:

- applying government measures to create social, economic, legal, and organizational conditions for economic development,
- introducing environmentally friendly and resource-saving technologies;
- developing competitive products in the global market.

A well-built system for managing the innovative development of the state allows the government to implement an innovative development model and formulate an innovative strategy designed to improve current economic processes using various programs and projects (Vilgin, 2012; Skvortsov, 2019).

The analysis of scientific literature (Eichenberger, 2003; Malin & Tan, 2022) allowed us to systematize the innovation policy types and classify them according to various criteria.

According to the influence level, innovation policy forms at the state, regional, and sectoral levels and at the individual business structure level.

The innovation policy of public administration is aimed at using innovative technologies in management and national processes. It defines the priorities of innovation development, principles, regulatory framework, and the order of relations between public authorities and private organizations (Vilgin, 2012).

- Regional innovation policy defines the goals and conditions for implementing innovation activities in the region aimed at ensuring its competitiveness and optimal use of the available production resource potential.
- Sectoral innovation policy is the development of a particular industry with high potential, and its development stimulates the growth of other sectors of the economy.
- The policy of an individual enterprise is focused on the state's development of a set of measures related to the stimulation, support, and innovation development within the enterprise.

In the presence of intermediaries, innovation policy acquires a direct and indirect way for the public administration to influence the behavior of innovation actors (Benny, 2021; Burkinsky, 2007).

Direct state regulation methods of innovation processes are carried out in two forms: administrative-departmental and program-targeted. The first, the administrative-departmental form, provides direct subsidies for innovative projects' financial support through the current legislation (On innovation activity, 2012). The program-targeted form is carried out within the framework of state non-financial support for developing innovative projects. To a greater extent, it is aimed at initiating state orders for innovative products, purchasing advanced technologies from organizations, and providing guarantees for preferential loans.

Indirect methods of innovation policy, or methods of indirect action, operate through the system of legal, economic, and organizational support. With their help, taxes, credits, and customs tariffs are regulated, and appropriate depreciation and pricing policies are developed. In countries with a lower level of scientific and technological development than the EU average, as a rule, general measures are applied, which allow to support not special (privileged), but almost all sectors of the economy (Ukrainian Association of Investment Business, 2014).

The main task of the state innovation management system is to create a regulatory framework for innovation development. Legislative regulation of innovation activity in Ukraine is carried out by a series of laws that develop market competition. Normative innovation regulation should consider the deterrence of monopolies, which are the biggest obstacle to innovation development. Antimonopoly legislation provides a set of various legal documents and aims to ensure market competition and reduce monopolists' influence on the market. The current essential legal prerequisites for the state innovation policy are also contained in the Constitution of Ukraine. The initial basis of the Ukrainian antimonopoly legislation includes the following Laws of Ukraine.

- "On Protection of Economic Competition" (2011);
- "On Protection of Consumer Rights" (1991).

Regulatory activity of innovation is carried out not only in the field of legal regulation but also in the field of standardization and certification (On standardization, 2014).

Analysis of the literature has shown that the current public policy management system remains imperfect although long developed. The main problem of state regulation of innovative economic development is that innovation management is carried out only as a component of certain state regulation areas. There is no single institutional body that would combine all tasks into a single investment development program.

The directions for solving the problem remain unclear, which is why the current study becomes particularly relevant and has practical significance for public administration.

METHODS AND METHODOLOGY

The study uses general scientific methods of cognition. In particular, a critical analysis of scientific and business literature was carried out to study the theoretical foundations of state regulation in the field of innovation. Data systematization allowed the identification of previously unexplored issues and structured information about the subject of the study. Statistical analysis and comparison methods were used to conduct empirical research on the topic. Inductive methods allowed us to find the weaknesses of the domestic system of state regulation of innovative development. Finally, deductive methods allow for finding practical methods of solving current public administration problems in innovation.

The scientific novelty of the results obtained is the development of recommendations for improving the formation of state policy in innovative development through the promotion of digital technologies.

Research Results

Ukraine has only recently begun focusing on innovative economic development. This is evidenced by a considerable number of measures taken at the state level, in particular: the adoption of regulatory legislation, as well as the concept of scientific, technological, and innovative development, which provides for increasing the economic competitiveness based on the structural-innovative model of economic growth, intensive technical and technological modernization of production (Kostyuk, 2011). Despite this, domestic business structures' competitiveness and innovation potential are estimated to be relatively low globally. It is confirmed by the global innovation index data for recent years, shown in Table 1.

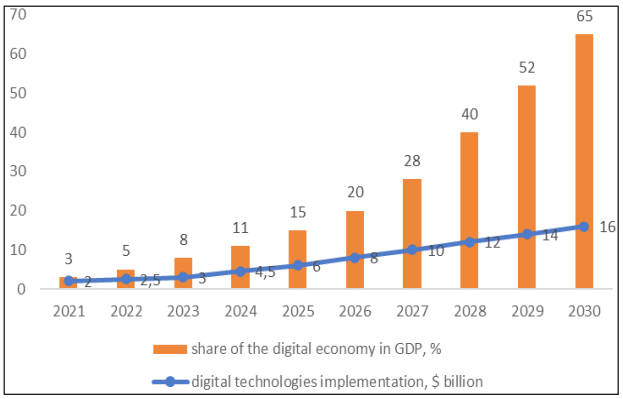
Table 1: Ukraine's place in the competitiveness ranking by the digitalization level

Indicator	2019	2018	2017
	Place (total 141)	Place (total 140)	Place (total 137)
R&D expenditures, % of GDP	67	56	76
ICT implementation	78	77	NA
Innovation capacity	60	58	61

Source: *Compiled by the author based on Schwab (2019).*

Fig. 1 shows that if the state stimulates the development of digital technologies, then by 2030, innovative products will account for 65% of the entire economy. However, for this to happen, in 2024, it is necessary to produce and consume $4 billion of innovative products in the Ukrainian market, and by 2030 the figure should reach about $16 billion. At the same time, the study (Ukrainian Institute of the Future, 2020) notes that innovative technologies are expressed to a greater extent by digital technologies in various sectors of production and marketing.

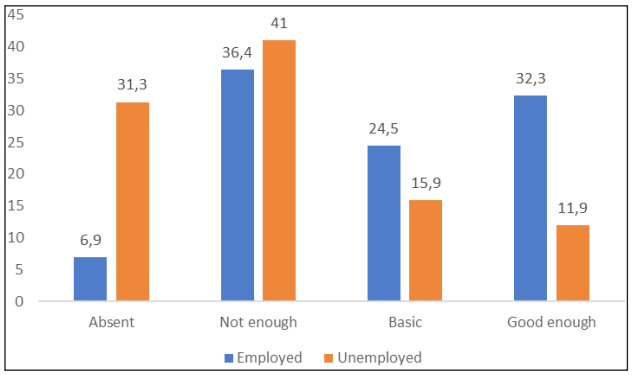
It should be noted that it is impossible to rapidly boost the state's innovation level without an adequate intellectual level of the people. To a greater extent, the readiness for innovative development is determined by the ability of the population to use digital technologies.



Source: *Compiled by the authors based on (Ukrainian Institute of the Future, 2020).*

Fig. 1: Innovation implementation and its impact on Ukraine's GDP by 2030

On average, about 56.8% of employed people in Ukraine have an adequate and above-average level of information skills, while about 43.3% do not. Therefore, the digital skills level directly affects employment status.



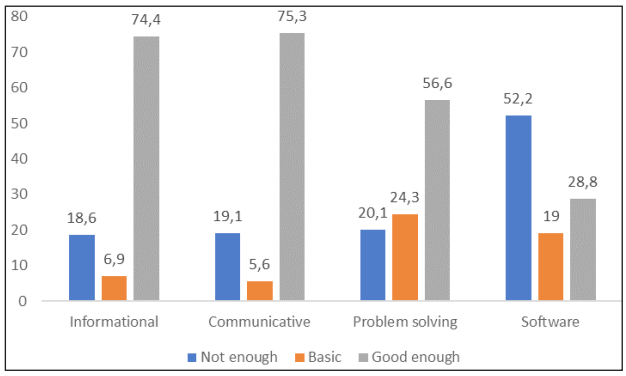
(Ministry of Digital Transformation of Ukraine, 2019).

Fig. 2: Comparison of digital skills among the employed and unemployed population of Ukraine

About 74.4% of the population has communication skills using Telegram, Messenger, WhatsApp, Viber, and Skype. This number of people also knows how to receive and send emails independently, download created material, text, photos, and software, make calls, publish messages on social networks, participate in online consultations or voting, and maintain profiles on social networks.

Thus, it is necessary to help people to acquire the knowledge that will allow them to work in the innovative sphere. In this way, the population

can solve the unemployment problem, as well as participate in modern innovative projects.



(Ministry of Digital Transformation of Ukraine, 2019).

Fig. 3: Structure of digital skills among the population of Ukraine

However, it should be admitted that in the conditions of war with Russia, building a state system of innovation development management is pretty difficult. Almost all budget funds are directed to military operations; therefore, it is almost impossible to develop the economy by innovative methods. Economic recovery after the war becomes problematic if traditional methods of public administration carry it out. At the same time, the post-war reconstruction of Ukraine opens up exceptional opportunities for radical modernization of the country's economy and structural reforms. At the same time, innovation policy should be directed toward digitalization and automation of production processes (Snigova, 2022).

In early March 2022, Ukraine's government began working on forming a number of specialized Funds for the restoration of the country in connection with Russia's armed aggression (Snigova, 2022). At the same time, the innovative focus of the program, following the recommendations of the National Council for the Restoration of Ukraine, is carried out in the following areas:

1. development of small and medium-sized enterprises;
2. structural transformation of the economy based on post-industrial development, access to modern advanced technologies within the framework of international technical assistance;
3. ensure the digital economy's and IT industry's stable functioning (IT Ukraine Association, 2022).

According to the authors, the development of information technology is the main driving force for the innovative development of Ukraine. The main areas of digitalization implementation are medicine, marketing, education, public services, and culture. The promising areas of digitalization should be supplemented with business, financial markets, and production processes. According to the authors, the strategic task of generating $1 trillion for the Ukrainian economy is quite ambitious for the current government since, to solve it, it is necessary to create a favorable climate for the development of the information sector. Therefore, modernization, transformation, and innovation in Ukraine's digital development administration are under threat.

The current practice of interaction with individual entrepreneurs in the field of information technology is questionable, as the state plans to adjust the market of the information sector, forcing companies to hire employees and accordingly increasing the tax rate from 5% to 45% (22% - social tax deduction, 18% - employee income tax). Such a taxation system is unfair and inappropriate for the digital technology sector, as 5% of real income (on average, UAH 80,000) is the threshold amount entrepreneurs are willing to pay to stay in Ukraine (Shevchenko, 2022).

Under the current economic strategy, the possibility of innovative development remains open due to the lack of specialists. Today, higher education institutions intensively train specialists in IT. As a result, they can become highly qualified specialists only after 5-7 years of experience. Thus, in the near future, the labor market in the field of information technology will experience an acute shortage of personnel, which will also suspend the rapid development of the industry (Osadchuk, 2022). Today, 53% of the population believes they need digital skills training, which public institutions can provide. At the same time, many people would like to take professional courses rather than basic ones to change their jobs or improve their skills (Ionan, 2021).

It is necessary to form state support not only in job creation but also in the field of training, which will help solve the problem of the population's unpreparedness for innovation. Such training programs focus on innovative models of economic development. Innovative centers should be created

for specialists in the innovation sphere to get a job. For example, these can be centers of information technology or other automation and robotics projects that will concentrate intellectual capital. Furthermore, the quantity and quality of jobs in specific sectors should be coordinated and strictly planned, considering market needs and international cooperation in innovative services. At the same time, these goals should take into account the interests of the state and the geo-economic strategy of creating its labor market, which will ensure the reproduction of the economy (Prokhorov, 2022).

DISCUSSION

All the identified problems and developed directions for improving the innovation development management system form the basis for further discussions. A large number of researchers believe that in order to improve the system of innovation development management, the state lacks a centralized innovation fund that would be able to organize, stimulate, and create preconditions for innovative development at the state, regional, and business levels. At the same time, the activities of such a body would be aimed at stimulating specific sectors of the economy with the highest innovation potential and at the overall development of innovative entrepreneurship in Ukraine (Burkinsky, 2007).

The creation of an Innovation Fund is also recommended in Ukraine. There are attempts to create such a fund, but the actual activity of the fund is far from the set goals - real innovative development of the economy.

Today in Ukraine, for example, there is the Research Foundation of Ukraine, which started in 2018 following the Law of Ukraine "On Scientific and Scientific-Technical Activity" (https://nrfu.org.ua).

The fund's primary goals are to stimulate the development of fundamental and applied scientific research, build research infrastructure, and promote scientific and scientific-technical cooperation between different scientific institutions. However, despite all these achievements, the problem of separating science from innovation still exists. Theoretical scientific research today is primarily not implemented in practice because stimulating scientific development should be accompanied by financial and organizational work aimed at real economic recovery using the results of scientific research.

At the level of formation of the labor market, it is necessary to create preconditions for training personnel that meet the requirements of the time. It can take place within the framework of higher education. However, it should be in the format of an incubator, where students receive not only theoretical knowledge but also work them out on real projects. In this format, it is advisable to rapidly develop dual education when manufacturing enterprises order specialists in a particular field and with certain knowledge and skills. At the same time, students will have the opportunity to work out the theoretical foundations in practice and prepare for the realities of the production process already in the process of studying.

Equally important is the introduction of an in-depth study of a foreign language. Today, the commercial market is filled with courses that teach a foreign language, but there are not enough measures from the state to study a foreign language. Therefore, English of "above average" level should become not a commercial product but a mandatory skill for every specialist. In turn, the state should promote the development of spoken language, for which clubs should be formed with the participation of volunteers - native speakers in each community. Such clubs allow people to overcome the language barrier and gain practical skills to work in an international environment.

The fund's main task is to find national and international investors ready to participate in financing innovative projects in Ukraine under state supervision and state guarantees.

Today IT market shows how convenient it is for entrepreneurs to pay taxes on their income through the already-established mechanisms and instruments of the financial sector. Banking institutions offer the service of automated deduction of the single tax on income. Accordingly, the formation of entrepreneurs' reporting should be automated. If such a system is applied to innovative businesses, it will be able to concentrate directly on the production process, and taxation will become accessible, simple, and easy. Accordingly, all business processes will be transparent, which will simplify the procedure of supervision over the results of innovative business.

The process of stimulating the development of innovation takes place through the development of market competition and the introduction of various financial subsidies and benefits for companies engaged in producing innovative products. State guarantees in the form of innovation risk insurance play an important role in stimulating innovation. The state has good tools to coordinate and monitor innovation processes so that the innovation risk is reduced and financial resources are channeled efficiently and for their intended purpose.

CONCLUSION

Today, Ukraine's innovation policy is based on the creation of institutions focused on improving industrial efficiency using digital technologies. At the same time, the focus should be on finding disruptive innovations that can rapidly accelerate economic development. Today, IT is considered to be such an industry. It can work independently, forming a significant export potential for the country and creating innovative products for the international market. Focusing on innovative technologies is not only a priority for Ukraine. Many countries have used this experience in building innovation development strategies (Manjunatha *et al.* 2021; Neligan *et al.* 2022; Fuzhan, 2019).

The activity of innovative development depends on the readiness of the population to use innovations, which are mainly formed by digital technologies. But, unfortunately, the study results showed that today the population is not ready to use innovative technologies, as it does not have sufficient digital literacy.

Digital technologies in Ukraine are being created quite progressively. However, they are aimed at meeting the needs of other countries. In contrast, the entire labor potential of our country could solve the problems of digitalization and automation using domestic resources. Therefore, the state should create preconditions for developing and disseminating innovative technologies in all spheres of production. First, it is necessary to change the management system of innovative development, which should have clearly defined goals and objectives. Second, creating an independent innovation fund would allow us to solve these problems.

The practical significance of the obtained results lies in the possibility of applying the study results in the formation of strategies for the innovative development of Ukraine in the post-war reconstruction period.

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