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MECHANISMS FOR MONITORING AND EVALUATING THE EFFECTIVENESS OF STATE INNOVATION POLICY

The article is devoted to the study of mechanisms for monitoring and evaluating the effectiveness of state innovation policy in the context of modern challenges in the development of national innovation systems. The relevance of the topic is due to the need to form effective tools for tracking the effectiveness of state innovation initiatives in conditions of limited resources and growing competition in global technology markets. The purpose of the work is to analyze existing approaches to monitoring innovation policy in Ukraine and to substantiate areas for improving the evaluation system based on European experience, in particular, the practices of the Republic of Poland. The study considers the main indicators and indicators used to measure the effectiveness of innovation activity, analyzes the institutional architecture of the monitoring system, and identifies key problems of a methodological and organizational nature. The results of the study indicate the need to harmonize the national monitoring system with European standards, introduce a unified methodology for collecting and processing statistical data, and strengthen coordination between responsible state authorities. Conceptual principles for improving monitoring mechanisms are proposed, taking into account the specifics of the functioning of the national innovation system and real opportunities for obtaining reliable information about the state of innovation processes in the economy.

Keywords: *state innovation policy, monitoring of innovation activity, performance assessment, national innovation system, indicators of innovation*

development, innovation statistics, public administration, European integration, Polish experience.

Problem setting. The formation of an effective state innovation policy is impossible without the creation of an effective system of monitoring and evaluating its results. In the conditions of global competition for technological leadership and limited budgetary resources, the state needs clear tools for tracking the return on investment in the innovation sphere, identifying problem areas and timely correction of political decisions. An effective monitoring system allows not only to assess the current state of affairs, but also to carry out strategic planning for the development of the national innovation system based on reliable empirical data.

World practice shows that countries with a high level of innovation development pay significant attention to building comprehensive systems for measuring innovation activity. The European Union has developed its own methodology for assessing the innovation capacity of member states through the European Innovation Scoreboard, which is based on four main dimensions and twenty-seven indicators. This system allows not only for comparing countries with each other, but also for tracking the dynamics of changes over time, and for identifying the strengths and weaknesses of national innovation systems.

For Ukraine, the issue of creating an effective system for monitoring innovation policy is becoming particularly relevant in the context of European integration and the need to harmonize national standards with EU requirements. The existing system for assessing innovation activity is characterized by certain methodological and organizational limitations, which complicate the objective assessment of the effectiveness of state measures in supporting innovation. The fragmentation of statistical information, the lack of unified methodological approaches to data collection, and insufficient coordination between various government agencies create obstacles to forming a holistic picture of the state of innovation processes in the economy.

The experience of the Republic of Poland, which has successfully integrated into the European innovation space and significantly improved its position in international innovation rankings, can be particularly useful for Ukraine. The Polish system of monitoring innovation policy combines national priorities with European assessment standards, which allows ensuring international comparability of data while maintaining the specificity of the national context. Analysis of Polish experience and European practices, combined with critical reflection on domestic realities, creates a basis for developing proposals for improving mechanisms for monitoring state innovation policy in Ukraine.

Analysis of recent research and publications. The issue of monitoring and evaluating state innovation policy attracts the attention of many researchers in the field of public administration and innovative development. A significant contribution to the development of theoretical foundations for evaluating innovation activity was made by domestic scientists, in particular, works devoted to the analysis of national innovation systems and their effectiveness. Studies by international organizations, primarily the European Commission, which annually publishes the European Innovation Scoreboard and the Regional Innovation Scoreboard, which provide a comprehensive assessment of the innovation capacity of countries and regions, deserve special attention. Methodological aspects of the formation of systems of indicators of innovative development are considered in OECD publications, in particular in the Oslo Manual. The Polish experience of monitoring innovation policy is presented in the works of researchers from the Warsaw School of Economics and analytical materials of the Ministry of Development and Technology of the Republic of Poland. At the same time, the issue of adapting European monitoring practices to the specifics of the functioning of innovation systems of countries that are at the stage of transformational transformations requires further research and scientific substantiation.

Formulation of the article's objectives. Analysis of existing mechanisms for monitoring state innovation policy in Ukraine, identification of their methodological and organizational limitations, as well as substantiation of areas for improving the

system for assessing the effectiveness of innovation activities based on European experience, in particular, the practices of the Republic of Poland

Presentation of the main research material. The theoretical foundations of monitoring state innovation policy are formed at the intersection of several scientific disciplines, including public administration, innovation economics, and statistics. The conceptual basis of modern approaches to assessing innovation activity is the theory of national innovation systems, proposed at the end of the last century and developed in the works of many researchers [1]. According to this approach, the innovative development of a country is determined not only by the amount of research and development spending, but also by the complex interaction between various actors of the innovation process, including enterprises, universities, research centers, government agencies and financial institutions.

The innovation policy monitoring system should take into account the multidimensional nature of innovation processes and reflect various aspects of the functioning of the national innovation system. The modern methodology for measuring innovation activity is based on the recommendations of international organizations, primarily on the provisions of the Oslo Manual, developed by the OECD together with Eurostat [2]. This document defines the basic concepts, types of innovations, methods of collecting statistical information, and principles for conducting surveys of innovation activity of enterprises. Harmonization of national statistical practices with international standards is a necessary condition for ensuring data comparability and the possibility of benchmarking national innovation systems.

The key issue in building a monitoring system is the selection of adequate indicators and metrics that would comprehensively reflect the state of the innovation sector and the effectiveness of state policy. International practice identifies several main groups of indicators of innovation activity. First, these are resource indicators that characterize the volume of investments in the innovation sector, including spending on research and development, the number of researchers and engineers, and the volume of venture financing. Second, process indicators reflect the intensity of innovation activity, the level of cooperation between various actors of the innovation

system, and the transfer of technology and knowledge. Third, performance indicators measure the direct results of innovation activity, such as the number of patent applications, the volume of innovative products, and the share of high-tech exports. Fourth, impact indicators characterize the impact of innovations on economic growth, labor productivity, employment, and the competitiveness of the economy.

The European Innovation Scoreboard is the most comprehensive tool for assessing the innovation capacity of the European Union and associated countries. The methodology of this rating has been repeatedly improved since its first publication, reflecting the evolution of approaches to understanding innovation processes. The current version of the European Innovation Scoreboard is based on four main dimensions that cover different stages of the innovation cycle. The first dimension concerns the framework conditions for innovation, including human resources, the attractiveness of research systems, and digital transformation. The second dimension reflects the investment of business entities in innovation activities, in particular R&D expenditure and innovation financing. The third dimension characterizes the innovative activity of enterprises through indicators of innovation implementation, connections, and entrepreneurial activity. The fourth dimension measures the impact of innovations on the economy through indicators of employment, sales of innovative products, and environmental sustainability [3].

An important feature of the European Innovation Scoreboard is the use of a composite index, which allows for an integrated assessment of a country's innovation capacity and for comparative analysis. Based on the values of the composite index, countries are classified into four groups characterized by different levels of innovation development. This classification allows countries to identify their own position relative to the leaders and determine strategic priorities for improving innovation indicators. At the same time, the methodology of composite indices has certain limitations related to the choice of weighting factors for individual indicators and the possibility of compensating for weak results on some indicators with strong indicators on others.

The Republic of Poland demonstrates consistent implementation of European standards for monitoring innovation activity in national practice. The Polish system for

evaluating innovation policy is integrated into the European context through participation in regular surveys of innovative activity of enterprises in accordance with the Community Innovation Survey methodology. At the same time, Poland has developed its own additional monitoring tools that take into account specific national priorities and features of the economic structure. The monitoring system is coordinated by the Ministry of Development and Technology in cooperation with the Central Statistical Office, which ensures the consistency of methodological approaches and the quality of statistical data [4].

Polish experience shows the importance of combining regular statistical monitoring with specialized analytical research to assess individual areas of innovation policy. In particular, systematic studies of the effectiveness of state innovation support programs, analysis of barriers to innovation activity of enterprises, and assessment of the functioning of innovation infrastructure are carried out. The results of monitoring are used to correct innovation strategies and optimize the allocation of budget resources between different areas of support. The transparency of the monitoring system is ensured through regular publication of reports on the state of the innovation sector and the availability of statistical data for a wide range of stakeholders.

The methodological principles of monitoring state innovation policy involve the use of both quantitative and qualitative research methods. Quantitative approaches are based on the analysis of statistical indicators of innovation activity, which allows tracking the dynamics of changes over time and making international comparisons. Qualitative methods include expert assessments, case studies of successful innovation projects, analysis of the institutional environment, and regulatory barriers. Combining different research methods provides a more complete understanding of the factors affecting the effectiveness of innovation policy and allows taking into account the contextual features of the functioning of the national innovation system [5].

Analysis of the existing system of monitoring state innovation policy in Ukraine indicates the presence of a certain institutional and methodological basis for assessing innovation activity, but this system requires further development and harmonization with European standards. The main source of official statistical information on

innovation activity in Ukraine is the State Statistics Service, which conducts an annual survey of innovation activity of industrial enterprises. This survey is based on methodological approaches defined in the Oslo Manual, which ensures a certain level of international comparability of data. At the same time, the coverage of the survey is limited mainly to the industrial sector, while innovation activity in the service sector, which plays an increasingly important role in the modern economy, remains insufficiently studied.

The institutional architecture of the innovation policy monitoring system in Ukraine is characterized by a certain fragmentation of powers between different government bodies. The Ministry of Education and Science is responsible for monitoring the development of the scientific sphere and the efficiency of using budget funds for scientific research. The Ministry of Economy collects information on the implementation of industrial development programs and support for high-tech industries. The National Academy of Sciences assesses the effectiveness of the activities of subordinate scientific institutions. Such a distribution of monitoring functions creates challenges for forming a holistic picture of the state of the national innovation system and complicates the coordination of political decisions in the field of innovation [6].

The system of indicators used to assess innovation activity in Ukraine includes several main groups of indicators. Resource indicators include the amount of expenses for research and development work as a percentage of gross domestic product, the number of employees involved in scientific research and development, and the amount of state funding for scientific and technical activities. Indicators of innovation activity of enterprises characterize the share of innovatively active enterprises in the total number of industrial enterprises, the structure of innovation expenses by direction, and sources of innovation financing. Result indicators reflect the volume of innovative products sold, the number of protection documents received for intellectual property rights, and the export of high-tech products.

The dynamics of the main indicators of innovation activity in Ukraine over the past five years demonstrate ambiguous trends. The share of research and development

expenditures in gross domestic product remains at a level significantly lower than the average European indicators, and fluctuates within about six-tenths of a percent. For comparison, the average value of this indicator for the countries of the European Union exceeds two percent, and the leaders of innovative development invest more than three percent of gross domestic product in research and innovation. The share of innovatively active industrial enterprises in Ukraine demonstrates a tendency to fluctuate and is approximately fifteen percent of the total number of industrial enterprises, which is also significantly inferior to European indicators, where more than half of enterprises carry out innovative activities [7].

The quality of statistical data on innovation activity in Ukraine is subject to certain limitations related to methodological and organizational factors. The statistical survey of innovation activity is based mainly on continuous observation of large and medium-sized enterprises, while small enterprises, which can play an important role in the innovation process, are covered by a sample method. This creates risks of underestimating the real scale of innovation activity in the economy. In addition, enterprises do not always correctly interpret the concept of innovation, which can lead to the distortion of statistical data. Insufficient motivation of respondents to provide complete and reliable information, especially regarding the financial aspects of innovation activity, also affects the quality of statistics.

The lack of a unified methodology for assessing the effectiveness of individual instruments of state support for innovation makes it difficult to compare the effectiveness of different programs and initiatives. Different state agencies and ministries may use their own approaches to determining the success criteria for projects that have received state support, which makes it impossible to objectively compare the effectiveness of different policy areas. The reporting system on the use of budget funds for innovation activities often focuses on formal indicators of the development of funds and the number of implemented projects, while the assessment of the real economic and social effects of state investments remains insufficient [8].

A comparative analysis of the positions of Ukraine and Poland in the European Innovation Scoreboard allows us to identify the main problem areas of the national

innovation system and determine priority areas for improvement. Poland has significantly improved its innovation indicators in recent years and moved to the group of countries with an average level of innovation development, approaching the average European values. Ukraine, which has the status of a candidate country for accession to the European Union, demonstrates significantly lower indicators in almost all dimensions of innovation capacity. The largest gap is observed in indicators of enterprise investment in research and innovation, the level of cooperation between business and scientific institutions, and the volume of venture financing of innovative startups.

At the same time, Ukraine has certain competitive advantages, in particular, a high level of education of the population and the availability of qualified scientific personnel. The share of the population with higher education in Ukraine is quite high by international standards, which creates the potential for the development of a knowledge-intensive economy. However, this advantage is not fully realized due to insufficient demand for innovations from business, weak links between science and production, and the outflow of qualified specialists abroad. The experience of Poland shows that improving innovation indicators requires an integrated approach that combines increased funding for science and innovation with reforming the institutional environment, developing innovation infrastructure, and stimulating demand for innovation [9].

The improvement of the system of monitoring of the state innovation policy in Ukraine should take place in several directions, taking into account European experience and national characteristics. The primary task is to introduce a unified methodology for collecting and processing statistical data on innovation activity, which would ensure full compliance with international standards and the possibility of participating in European comparative studies. This involves expanding the scope of statistical observation to the services sector, improving the tools for surveying the innovative activity of enterprises, and introducing additional modules to study specific aspects of innovation activity, such as digital business transformation, environmental innovations, organizational and marketing innovations.

An important direction is to strengthen institutional coordination between various government bodies responsible for certain aspects of innovation policy. It seems advisable to create a coordination mechanism at the level of the Cabinet of Ministers of Ukraine, which would ensure consistency of approaches to monitoring, avoidance of duplication of functions, and effective exchange of information between departments. Such a coordination body could also provide methodological guidance for the monitoring system and ensure the preparation of consolidated analytical reports on the state of the national innovation system for the needs of strategic planning and management decision-making.

The introduction of regular assessment of the effectiveness of individual instruments of state support for innovation based on unified methodological approaches will allow optimizing the use of limited budget resources and increasing the effectiveness of innovation policy. Such an assessment should include an analysis not only of the direct results of the implementation of support programs, but also of indirect effects, such as the creation of new jobs, attracting private investment in innovation, and the development of international cooperation. It is also important to take into account the time lag between the implementation of state investments and obtaining tangible economic results, which is a characteristic feature of innovation activity.

The development of digital monitoring tools and the creation of a single information platform on the state of the innovation sector can significantly increase the effectiveness of the assessment system. Such a platform could integrate data from various sources, including official statistics, administrative registers, and the results of specialized research, and provide access to information for a wide range of users, including government agencies, the scientific community, business, and the public. The transparency of the monitoring system contributes to increasing the accountability of state institutions and involving stakeholders in the process of innovation policy formation.

Adaptation of the European Innovation Scoreboard methodology to the Ukrainian context requires taking into account the specifics of the national statistical base and the real possibilities of obtaining the necessary data. Not all indicators used in the European ranking can be calculated on the basis of available statistical information. Therefore, the harmonization process should be gradual and provide for a consistent expansion of the list of indicators as the statistical observation system improves. At the same time, even partial integration into the European Innovation Scoreboard will allow Ukraine to obtain an objective assessment of its innovation capacity in the European context and determine strategic priorities for achieving the goals of innovative development.

Conclusions. The conducted study of mechanisms for monitoring and evaluating the effectiveness of state innovation policy allows us to formulate a number of important conclusions regarding the state and prospects for the development of this system in Ukraine. An effective monitoring system is an integral part of a successful innovation policy, as it provides an objective information basis for making management decisions and allows for the timely identification of problem areas. International experience, in particular the practice of the European Union and the Republic of Poland, demonstrates the importance of a comprehensive approach to evaluating innovation activity.

Analysis of the existing monitoring system in Ukraine indicates the presence of basic elements for assessing innovation activity, but this system requires further improvement. The main areas of improvement include harmonization of the methodology for collecting statistical data with international recommendations, strengthening institutional coordination between state authorities, and introducing systematic assessment of the effectiveness of individual instruments of state support for innovation. Adaptation of the European Innovation Scoreboard methodology to the Ukrainian context can be an important step towards integrating the national innovation system into the European research and innovation space, which will ensure

international comparability of indicators and determine strategic development priorities.

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