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INNOVATIVE DEVELOPMENT OF NATIONAL ECONOMY: CLUSTER APPROACH

ІННОВАЦІЙНИЙ РОЗВИТОК НАЦІОНАЛЬНОЇ ЕКОНОМІКИ: КЛАСТЕРНИЙ ПІДХІД

The cluster approach to the innovative development of the national economy is studied. The article considers the essence of the category "innovation cluster" from the point of view of modern management as a subsystem of the innovation system, based on the essences of its constituent definitions: "innovation", "cluster", "project-oriented economic entity", "project-oriented innovation infrastructure ». Synergetic effects as a result of cluster functioning are highlighted. A model of a project-oriented innovation cluster is proposed. The definition of "project-oriented innovation cluster" in the context of project-oriented management is given. The main strategic priorities of innovative development of the national economy are identified with the selection of the main strategies for the formation of project-oriented innovation clusters.

Keywords: *innovation, project, innovative development, cluster, national economy, project-oriented technological business, synergetic effect, development.*

Досліджено кластерний підхід до інноваційного розвитку національної економіки. У статті розглянута сутність категорії «інноваційний кластер» з точки зору сучасного управління як підсистеми інноваційної системи, виходячи із сутностей її складових визначень: «інновація», «кластер», «проєктно-орієнтований суб'єкт економіки», «проєктно-орієнтована інноваційна інфраструктура». Виділені синергетичні ефекти в результаті функціонування кластеру. Запропонована модель проєктно-орієнтованого інноваційного кластеру. Обґрунтовано, що формування стратегії підвищення конкурентоспроможності української економіки повинно базуватися на ефективних мережевих системах, широкому застосуванні принципів кластерної організації інноваційної взаємодії на макрорівні проєктно-орієнтованих суб'єктів економіки, що призведе до підвищення конкурентоспроможності проєктно-орієнтованого технологічного бізнесу, так і до підвищення ефективності економічної системи. В Україні необхідно налагоджувати якісну комунікацію між наукою і бізнесом, яку можна описати наступною формулою: «прикладна наука + проєктно-орієнтоване підприємство = проєктно-орієнтований технологічний бізнес». Дано визначення дефініції «проєктно-орієнтований інноваційний кластер» у контексті проектно-орієнтованого управління. Визначено, що синергетичними ефектами в результаті функціонування кластеру є: підвищення ефективності функціонування економічної системи; структурне вдосконалення національної економіки; ефект перетікання знань в кластері; ефект збільшення грошового потоку за рахунок додавання грошових потоків компаній, що входять в кластер; ефект спільного використання інфраструктурних об'єктів; ефект зниження трансакційних витрат; синергія кооперації, спеціалізації, інтеграції, концентрації проєктно-орієнтованого технологічного бізнесу. Визначені основні стратегічні пріоритети інноваційного розвитку національної економіки із виділенням основних стратегій формування проєктно-орієнтованих інноваційних кластерів.

Ключові слова: *інновація, проєкт, інноваційний розвиток, кластер, національна економіка, проєктно-орієнтований технологічний бізнес, синергетичний ефект, розвиток.*

Formulation of the problem. The rapid development of information technology under the influence of globalization processes leads to need to change the strategy of economic development. Globalization has become an objective reality, the main factor in the development of which is the achievement of scientific and technological progress. Thanks to modern information

technologies, the development and transfer of innovations in the global innovation space is accelerating. Current trends in the development of global innovation processes confirm the importance of rethinking approaches to the formation of drivers for further economic growth of the national economy.

Innovation processes and a new understanding of them as "successive chains of project-oriented actions, covering all stages of the innovation cycle, the process of transforming scientific knowledge into innovation that satisfies yaye new social needs of the economy" [15, p. 73], and is from the point of view of project-oriented management "the end result of the project, which is used in practice, embodied in a commercialized new or improved product / process" [16, p. 95].

The formation of a strategy to increase the competitiveness of the Ukrainian economy should be based on efficient network systems, widespread application of the principles of cluster organization of innovation cooperation at the macro level of project-oriented economic entities, which will increase the competitiveness of project-oriented technology business and increase economic system efficiency. In Ukraine, it is necessary to establish quality communication between science and business, which can be described by the following formula: "applied science + project-oriented enterprise = project-oriented technology business."

Analysis of recent research and publications. M. Porter in the theory of national preferences noted the importance of microeconomic support for innovation through industrial clusters, which are specific to each economy [12]. Issues related to the phenomenon of the cluster in the formation of an innovative model of the region's economy were studied by A. Butenko and E. Lazareva [2]. They considered the problem of creating an innovation cluster as a subsystem of the regional innovation system in order to increase the efficiency of its individual elements and the economy of the region, the intensification of innovation processes. S. Sokolenko dealt with the problems of clustering in the global economy, the formation and functioning of network production cluster systems in the context of modern theories of economic development in his research [14]. He comprehensively analyzed the processes of development of such systems in the global economy, clarified the problems of self-sufficiency of cluster mechanisms that can overcome the crisis in the economy. I. Dezhina [5] dealt with innovation clusters as tools of innovation policy, she studied foreign experience in using the mechanism of technological platforms and their role in regional and sectoral innovation development, identified the relationship between technological platforms and innovation clusters. V. Dubovik was engaged in the cluster approach as a means of activating innovation activity in the national economy [6]. Peculiarities of cluster development strategy of regions and the country as a whole were studied in the work of I. Zhurba [7], where it is determined that the main stage of cluster policy formation is the development of cluster strategy, which according to the principles of multilevel formation should be developed at different levels of government. The analysis of the role and influence of clusters on self-organization and self-development of the country's innovation infrastructure in conditions of limited financial resources was conducted by A. Knyazevych and I. Britchenko [8]. The application of the cluster approach to innovative development has been studied by such scientists as O. Makarov, O. Sobolev, V. Ivanov [9], in their monograph they consider clustering as a mechanism for implementing the innovation process and an effective tool for economic growth. Peculiarities of application of design and cluster approaches in providing innovative development of the city are investigated by T. Mamatova and I. Chikarenko [10]. V. Melnyk in his work [11] considers the cluster model of the economy in terms of world experience and its prospects for Ukraine, he emphasized the importance of the cluster as an important universal tool for improving the competitiveness of the economy and effective development of modern global economy. O. Tishchenko in his study [17] identifies two approaches to understanding the goals and objectives of the cluster form of industrial organization as a vector of economic development.

Despite the presence of numerous theoretical developments, the issues of forming a cluster model of project-oriented innovative development of the national economy remain studied in fragments and require further scientific substantiation. In addition, they need to deepen the study of the formation of a model of project-oriented innovation development of the national economy, which should be based on effective network systems, widespread application of the principles of cluster organization of innovation interaction of project-oriented economic entities.

Formulation of the goals of the article. The main purpose of this work is to outline the prospects for the formation of a cluster approach to the innovative development of the national economy.

Presenting main material. It is widely known that the formation of innovation clusters that ensure the integration of science, technology and

production is a recognized method that provides scientific, technical and economic development at the micro, meso and macroeconomic levels [1].

According to the Law of Ukraine "On Innovation", innovation is an activity aimed at using and commercializing the results of research and development and determines the release of new competitive goods and services [13]. The object of innovation is innovation. The subjects of innovation are individuals or legal entities that carry out innovation activities and (or) attract property and intellectual property, invest their own or borrowed funds in the implementation of innovation projects.

The definition of "cluster" has different meanings in different countries and in different researchers. Clusters are used in various economic systems, production and innovation systems, to increase the competitiveness of these systems, structural changes in the economy.

M. Porter gives the following definition of a cluster: "A cluster, or industrial group, is a group of close, geographically interdependent companies and related organizations that operate together in a particular type of business, are characterized by common activities and complement each other" [12 , with. 258].

As S. Sokolenko notes, "A cluster is a voluntary association of firms in a certain field of entrepreneurship, interconnected technologically and, as a rule, on the basis of geographical proximity" [14, p. 19]. A cluster can contain a small or significant number of firms of different sizes in various proportions.

From the point of view of the project-oriented approach, the innovation cluster as a subsystem of the innovation system can be defined as a set of project-oriented cluster entities that have their own project-oriented management structure, they include: innovation development entities, innovation projects; subjects of realization of innovations, innovative projects; project-oriented innovation infrastructure which is a "set of interconnected and interacting project-oriented economic entities that use a project-oriented management structure with extensive use of project management methods, organize their activities on the basis of innovative developments" [18, p. 113].

Thus, innovation clusters should be considered as an essential factor to explain the empirical phenomenon of spatial concentration of innovation. They are important systems for ensuring the competitiveness of project-oriented subjects of the national economy, they have become drivers of innovative development in many countries around the world.

Entities in the cluster will win the competition by sharing positive experiences and reducing costs by sharing resources. This phenomenon is defined as a synergistic effect of clusters. By optimizing the synergetic effect, coordinating their actions within the cluster, the cluster entity has the opportunity to achieve a sustainable competitive advantage. Synergy is defined as the benefit obtained from combining two or more elements in such a way that the productivity of the resulting combination is higher than the sum of its individual elements [4].

Synergetic effects as a result of the functioning of the cluster are: increasing the efficiency of the economic system; structural improvement of the national economy; the effect of knowledge flow in the cluster; the effect of increasing cash flow by adding cash flows to companies in the cluster; the effect of sharing infrastructure facilities; the effect of reducing transaction costs; synergy of cooperation, specialization, integration, concentration of project-oriented technological business.

Project-oriented innovation cluster is a network form of organization of project-oriented technological business, which provides close partnerships (interaction, cooperation) between the main project-oriented entities of sectoral, regional and / or interregional level (enterprises, research, educational institutions and organizations, public authorities) for the development and timely commercialization of the results of innovative development projects, increasing the competitiveness of the economic system, improving quality component export potential towards forming proyektno-oriented economy Ukraine for its integration into the global innovation space.

You can identify the following basic strategies for the formation of project-oriented innovation clusters: penetration, support, reinforcement and reinforcement.

The choice of strategy for the formation of project-oriented innovation cluster is made using tactical areas of integration convergence of the level of innovation development of Ukraine with the level of development of leading innovation countries and affects the results of such a cluster in terms of achieving synergies from the interaction of project-oriented economic entities. In general, it is considered appropriate to identify several basic strategies in this context: penetration, support, reinforcement and strengthening.

The basis of the penetration strategy is the desire to penetrate new markets or significantly strengthen their position in the global market in accordance with the requirements of the global innovation space. The support strategy is focused

on preserving the state of the elements of the functional subsystem of the design potential, taking into account the identified synergetic determinants. A characteristic feature of the reinforcement strategy is the containment of further destruction of the components of the functional subsystem of the design potential by enhancing the positive impact of synergetic determinants. During the implementation of the reinforcement strategy, the elemental composition of the functional subsystem of the design potential is increased.

Conclusions and suggestions. The appropriate choice of strategy for the formation of project-oriented innovation cluster occurs when applying tactical directions of integration convergence of the level of innovation development of Ukraine with the level of development of leading innovative countries and affects the results of such cluster in terms of achieving synergies from the interaction of project-oriented economic entities. Determining the strategic priorities of project-oriented innovation development of the national economy determines the choice of strategy for the formation of project-oriented clusters.

The approach to the formation of a cluster model of project-oriented innovation development of the national economy, which in contrast to the existing ones is based on the identification of the main subsystems of project potential (functional, resource, organizational, project) to achieve the goals of innovative development of the national economy, allows to develop practical recommendations. Project-oriented innovation clusters in different sectors of the economy and to form strategies for their development.

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