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ENVIRONMENTAL ECONOMICS

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ENVIRONMENTAL ECONOMICS

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THE ECOSYSTEM OF INNOVATIVE TERRITORIAL CLUSTER DEVELOPMENT

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ABSTRACT

The national report on innovations declares that the innovative system in Russia is weak due to unfavorable environment for innovations, including problems and challenges in commercialization, infrastructure, culture, knowledge and institutions

The above-mentioned environment is of special importance for innovative territorial clusters with a large number of scientists who ensure the permanent reproduction of innovative potential. Under these conditions, the priority is to create innovative eco-environment for the development of territorial clusters successful in the global market.

The purpose of the study is to identify the favorable conditions for innovative development of ecosystems and to specify the characteristics of eco-environment for innovative clusters.

The research methods included both qualitative – literary review and methodical recommendations study – and quantitative methods – the statistics analyses and processing of data on innovative territorial clusters functioning.

The authors have shaped the concept of innovative environment as well as distinctive characteristics of an industrial cluster environment in general and innovative cluster eco-system in particular. Another finding is evaluation and proposing the best methods for innovative territorial clusters development and management

As a result, the research has identified the following favorable conditions for the creation of innovative eco-environment: high innovation activity of businesses, high research activity of the innovative process participants, and large innovation potential, state support for innovations.

As for the challenges, these included low investment attractiveness of innovations due to long-term payback and high risk; lack of competitive environment; insufficient demand for scientific research as well as lack of investments in innovative capacity and insufficient system of innovative activity motivation and management.

Keywords: innovative development, ecosystem, innovative infrastructure, eco-environment, innovative territorial clusters.

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INTRODUCTION

At the present stage of the Russian economy development, special attention is paid to the creation and development of innovative ecosystems. The authors of the article support the criteria for a successful innovation ecosystem presented by the Russian Venture Company (RVC) [1].

The focus is on the commercialization of innovations, where the commercial result is expressed in the unity of three main transactions: customized R & D, a small innovative enterprise, licensing. Another essential point is ensuring a consistent, inextricable transformation of an idea into a deal by agents of innovation ecosystem, being experts united in networks of interaction.

Moreover, successful innovation ecosystem can create a suitable environment for commercialization, which stimulates the active interaction of the parties interested in the process of innovation commercialization.

As has been said above, the ecosystem focuses on the commercialization of innovation. However, the role of the innovation environment is much wider.

METHODS AND MATERIALS

The research methods included both qualitative – literary review and methodical recommendations study – and quantitative methods – the statistics analyses and processing of data on innovative territorial clusters functioning.

The literature under consideration presents a variety of different approaches to the concept of "innovation environment" [2], [3]. However, scientists have not been able to agree on unequivocal definition, as they consider innovative systems of different levels.

The Institute for Innovations in Infrastructure and Investments, in conjunction with the Chamber of Commerce and Industry of the Russian Federation, developed the recommendations "Entrepreneurial Environment in the Subjects of the Russian Federation: Innovation Aspect" as part of a research project. The Methodical recommendations study have revealed that the main focus is on the innovation of the state and the population, since regional authorities are key stakeholders determining the quality of the innovation environment of a specific subject of the Russian Federation [1].

At the same time, the regional population, being an important participant in the innovation process, perceives the innovation activity of the business in a positive way and influences the favorableness of the innovation environment.

Figure 1 presents the conditions for the innovation development of ecosystems, including state and institutional support for innovation, market conditions that promote the production and consumption of innovations and together represent a favorable innovation and investment climate.

Particular attention should be paid to the conditions conducive to the consumption of innovation, otherwise, no commercialization process will take place.

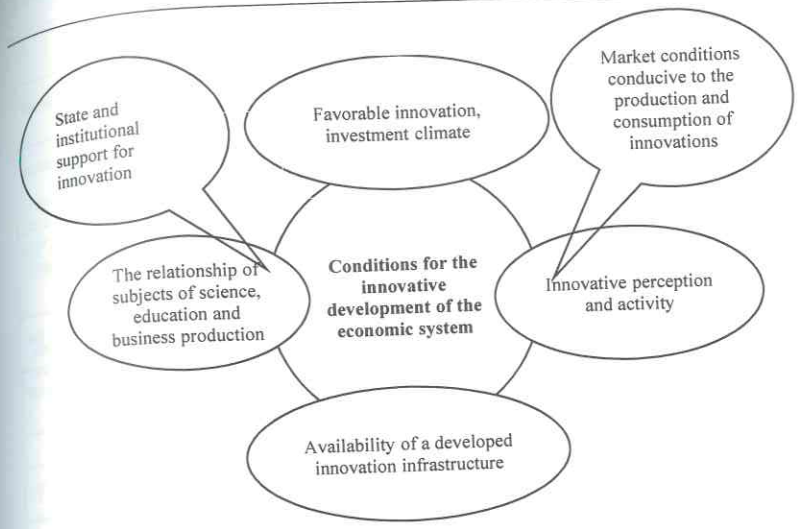

Figure 1 – Conditions for innovative development of ecosystems

Table 1 presents the summary of conditions that can influence the creation of an innovative ecological environment. The horizontal perspective represents the negative and positive aspects in the pairing relationship.

Table 1 – Conditions affecting the formation of innovative ecological environment

Conditions conducive to the formation of innovative ecological environment	**Conditions hindering the development of innovative ecological environment**
High business innovation activity	Low investment attractiveness of innovations due to long payback period and high risk. Lack of competitive environment
High scientific research activity of participants in the innovation process	Insufficient level of demand for scientific research. Low Quality of scientific research
High innovation potential	Lack of investment to realize the innovation potential. Lack of innovation management system
State support of innovation activity	Challenges and barriers to the implementation of innovation development programs due to a weak existing mechanism for stimulating innovation, insufficient funding
State funding of innovations	Lack of necessary financial sources. High costs of commercialization of innovation
Innovative infrastructure to support innovation activity	Inconsistency in the actions of government, business, science, education, financial organizations, society

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Successful implementation of innovation policy	Low interest of agents in the implementation of innovation
Rigorous information support system at all stages of innovation	Underdeveloped informational links of innovation participants
Rigorous system of statistical accounting and monitoring of innovation results in the region, country	Inconsistency of statistical data and criteria for evaluating the effectiveness of innovation activities
Favorable conditions for the commercialization of scientific research and development	Lack of financial leverage and incentives for scientific research
Demand for innovation	Lack of innovative susceptibility on the part of stakeholders
High competitiveness of innovative products	High risks associated with innovation activity
The mode of most favored arranged for innovative enterprises	Insufficient regulatory support defining benefits for innovative enterprises

The conditions hindering the development of the innovation environment deserve special attention. The complex of scientific methods made it possible to identify the interdependence of favorable conditions and barriers to innovation related to financing and motivating stakeholders as a prime priority.

The analysis based on statistical methods indicated, that the availability of an innovation infrastructure is another prerequisite for innovation activity.

The analysis of regulatory documents and data from official publications has revealed that innovative development of clusters makes the priority for the support from the Ministry of Economic Development of Russia [4], [5].

The key difference between the cluster innovation environment is in ensuring the continuity of the innovation process through closer interaction of cluster members throughout the research and production chain of creating an innovative product in contrast to the industrial cluster environment that brings together participants in the production cycle to create a value chain [6] (Figure 2).

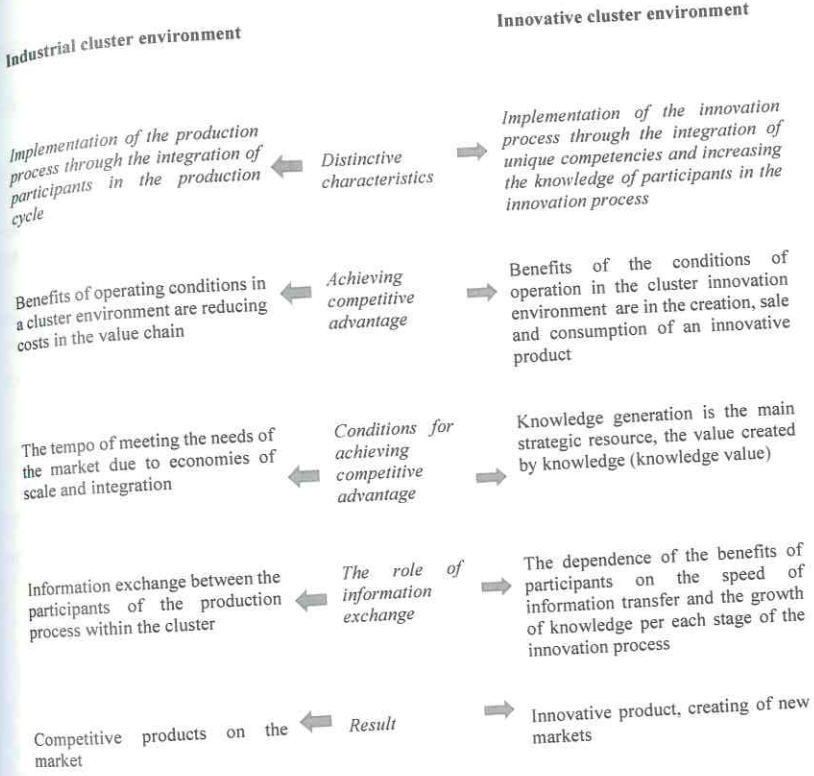

Figure 2 – Characteristics of the concepts of "innovative cluster ecology environment" and "industrial cluster environment"

RESULTS

The study has the disclosed the concept of *innovative environment*, its components and the advantages of participants in innovative regional clusters with a developed innovative environment. These studies also allowed establishing that the distinctive characteristics of the innovation ecological environment of a territorial innovation cluster are [7]:

1. The basis of the cluster's innovation ecology is the research and development core, the "think tank" for developing breakthrough technologies based on fundamental and applied research.

2. The ability to facilitate and strengthen the interaction of research and industrial sectors, to ensure the acceleration of the innovation cycle from development to commercialization of research results, to carry out the entire scientific and technological chain from basic research to the production and sale of new products with a global orientation.

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3. Concentration of scientific and creative teams that are innovative and initiative, capable of generating innovations that create an intellectual product.

4. Implementation of training in accordance with the high requirements of the innovation cluster.

5. An important aspect is the creation of favorable conditions for the staff and specialists of the cluster, with a focus on meeting their needs and improving their living standards.

Considering the concept of *innovative ecological environment* with respect to the cluster, new characteristics emerge that determine its specificity, uniqueness, specificity and significance for the innovative development of cluster structures.

The most significant result was the identification of the benefits of cluster members functioning in the innovative ecological environment, namely:

- open doors to new members, a mobile internal structure and the ability to quickly restructure;
- integration around a joint project idea, coordinating the work of network platforms;
- obtaining a synergistic effect;
- satisfaction of economic, scientific, industrial, commercial interests of the participants;
- acceleration of the innovation process and obtaining results for each of the stakeholders, participants in this process;
- building up professional knowledge and competencies;
- Improving the living standards of cluster personnel.

CONCLUSION

Thus, the revealed distinctive characteristics of the cluster's innovative ecological environment and the definition of the benefits of the interaction of the participants in this environment made it possible to specify the concept of "innovative ecological environment" with respect to the innovative cluster.

The following definition is proposed: "cluster innovation environment is a set of conditions created for the expanded reproduction of innovation potential, special knowledge, competencies, human capital and innovation cluster products, with a developed innovation and social infrastructure, a system of cluster communications ensuring the continuity of the innovation process" [8].

Considering the importance of the infrastructure for the cluster innovative development in the conditions of the knowledge economy the dependence of competitiveness on the creative class, creating and shaping the innovative ecological environment, is growing. Innovators are the drivers who have a significant impact on the innovative development of clusters.

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