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FORMATION OF A CLUSTER INNOVATIVE BUSINESS MODEL IN THE CONTEXT OF ENSURING SUSTAINABLE DEVELOPMENT

The article proposes the results of a study on the formation of innovatively active enterprises according to the cluster model, justifies the practical use of this integration form to ensure sustainable development. The life cycle of cluster formation is justified, in particular, it is defined by stages: emergence (emergence of a system-forming business idea: basic technology and the presence of prospects for its commercialization), structuring the potential of the future cluster; growth (formation of a number of small business entities connected by sustainable technological chains); maturity (achievement by business entities of a scale of activity sufficient for independent functioning and maximizing the synergistic effect of interaction within the cluster); transformation of the business sector into a segment of an innovative industry cluster. Building a cluster innovative business in the context of sustainable development requires efforts to create favorable conditions for the implementation of scientific, technical and innovative activities. This requires legislative efforts not only at the level of implementing the innovative strategy of the state's socio-economic policy through the adoption and implementation of forecasts and programs of socio-economic development, targeted economic and scientific and technical programs, but also at the level of creating a legal framework for international cooperation in solving the most pressing issues of sustainable development and forming appropriate organizational mechanisms.

Keywords: *innovation; innovative enterprises; business; cluster; clustering; sustainable development; modeling; targeted program development.*

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ФОРМУВАННЯ КЛАСТЕРНОЇ ІННОВАЦІЙНОЇ МОДЕЛІ БІЗНЕСУ В КОНТЕКСТІ ЗАБЕЗПЕЧЕННЯ СТАЛОГО РОЗВИТКУ

В статті запропоновано результати дослідження щодо формування інноваційно-активних підприємств за кластерною моделлю, обгрунтовано використання на практиці даної інтеграційної форми для забезпечення сталого розвитку. Обгрунтовано життєвий цикл формування кластеру зокрема визначено за стадіями: виникнення (виникнення системоутворюючої бізнес-ідеї: базової технології та наявності перспектив її комерціалізації), структурування потенціалу майбутнього кластера; зростання (формування низки суб'єктів малого бізнесу, пов'язаних стійкими технологічними ланцюгами); зрілості (досягнення суб'єктами бізнесу масштабів діяльності, достатніх для самостійного функціонування та максимізації синергетичного ефекту взаємодії всередині кластера); перетворення бізнес-сектору на сегмент інноваційного галузевого кластера. Побудова кластерної інноваційної бізнесу в контексті сталого розвитку вимагає зусиль щодо створення сприятливих умов для здійснення науково-технічної та інноваційної діяльності. Це вимагає законодавчих зусиль не лише на рівні реалізації інноваційної стратегії соціально-економічної політики держави шляхом прийняття та реалізації прогнозів і програм соціально-економічного розвитку, цільових економічних та науково-технічних програм, але й на рівні створення правової бази для міжнародного співробітництва у вирішенні найактуальніших питань сталого розвитку та формування відповідних організаційних механізмів.

Ключові слова: *інновації; інноваційно-автивні підприємства; бізнес; кластер; кластеризація; сталий розвиток; моделювання; цільовий-програмний розвиток.*

Problem statement. Management of innovative development of entrepreneurship using a cluster structure is a set of measures to identify needs that constitute the motivational basis for the association, development and planning of specific mechanisms for organizing interaction, which will subsequently lead to the formation of an innovative industry cluster. Also, such activities should contribute to the integrated activity and coordination of the functioning of various subjects of the socio-economic environment at the regional level in conditions of joint functioning. Thus, the concept of organizing the management of an innovative industry cluster is an artificial creation of a system-like structure in which the effect of integrity is realized, but the transformation into a new economic holistic system will occur already in the process of functioning, since it is impossible to take into account the entire set of factors affecting the evolving system

Presentation of the main material. To do this, it is necessary to adhere to the following basic principles.

1. The primacy of evolutionary orientation. The organization of interaction between participants in innovative activity in an innovative industry cluster is based on this principle. It is possible to form a new cluster from scratch and then intensify its evolutionary development. Taking into account this principle will allow for the most complete use of the existing scientific and technical potential, all types of key competencies and professional experience of units for the implementation of an innovative project. Artificially created clusters, as a rule, will not have maximum consistency of scientific and research and innovation work of the units that will be part of the cluster. There will be no clearly established connections, communications and joint developments, experience of joint activities, which will accordingly negatively affect the results of the work. Within the framework of evolutionary developing clusters, work in each specific direction is carried out for a considerable time and a complete understanding of the situation is achieved.

2. Development option. In the conditions of the modern business world, many traditional methods of strategic management are ineffective and ineffective due to the increased uncertainty of the external environment and the inability to clearly predict trends and directions of development. A high-tech industry cluster as a whole should have a package of strategies that cover a wide range of opportunities that develop depending on the situation. As a general rule, the most promising investment opportunities often emerge in times of high uncertainty, typically driven by technological or product innovations, shifts in consumer behavior, and similar factors. In such situations, companies usually face two main options: either make a full-scale investment immediately (betting on a favorable outcome (with the risk of significant losses if expectations aren’t met)) or delay investment until the market situation becomes clearer, which can allow competitors to gain the upper hand. However, there is often a third approach: making a relatively small initial investment to establish a foothold in the market, while preserving the option to scale up later. In high-tech industries, for example, investing in an early stage of R&D can grant the company the right to proceed with subsequent stages, all the way to product commercialization.

3. In times of uncertainty regarding industry and market development, a company may choose to invest in projects that initially show unfavorable financial indicators, driven by strategic motives. Such investments can help strengthen the company's market position and open the door to future opportunities. This approach reflects the core concept of growth (or development) options. With the help of this principle, significant competitive advantages are obtained.

4. Synergy. Here, the property of integrity of any system is of great importance. Within the framework of market-oriented interaction among participants in the process of cluster formation and actors of the industrial complex, the principle of integrity is reflected through a range of scientific,

technical, technological, and socio-economic outcomes. The primary objective of establishing any system within a partnership, and the fundamental driver for integrating its elements, is the attainment of synergistic effects. Elements in this aspect of the system analysis are various subdivisions of the research and innovation parts and enterprises of the industry cluster. These entities receive from the association an increase in their own capabilities, both in more profitable resource provision and in the efficiency of their use. Accordingly, in the following planning periods this leads to an increase in the main socio-economic results of their activities. Thus, it may be asserted that the joint functioning of heterogeneous yet interconnected elements gives rise to qualitatively new functional properties of the system as a whole (such as the capacity to generate additional income), which are not inherent in the individual properties of its separate components.

This principle assumes the orientation of strategies, schemes and mechanisms of cluster development on the emergence of qualitatively new functional properties of the system as a result of their implementation (various types of synergistic effects from the combination of elements of research organizations, industrial enterprises, investors, small innovative companies, etc.).

1. Integrativeness. The application of this principle will secure an adequate level of influence from system-forming factors that shape the potential of the centripetal forces binding the elements of a market-oriented partnership.

2. Self-financing and profitability. This principle represents a logical extension of the preceding ones and is directly linked to the fundamental economic rationale underlying the functioning of entrepreneurship under market conditions. Any schemes of interaction within the framework of a market-oriented partnership of elements of various organizations and subjects of an industry cluster are possible only if all types of costs are fully covered, as well as the total profit of all elements of a specific partnership scheme is maximized.

It should be noted that the implementation of all developed principles is possible through the creation of effective mechanisms. These mechanisms should be coherently integrated and operate in concert to facilitate the transformation of entrepreneurial ventures into ‘seed companies’ forming the foundation of an innovative industrial cluster.

Thus, the concept of organizing the management of innovation clusters is the main approach in the process of creating an innovation infrastructure, and therefore, ensuring the growth of innovation activity of industry clusters.

The concept of managing innovation clusters highlights a range of factors whose influence resembles the determinants of competitive advantage. This makes it possible, at the micro level, to identify structural components of the innovation infrastructure – drawn from elements of the business environment such as individual entrepreneurs, small firms, independent specialists, and organizational units – that effectively interact and compete with one another.

A successfully functioning business sector will occupy its niche in a high-tech industry cluster. The implementation of this concept complies with all modern principles of state financing of science-intensive business activities by creating a favorable environment for this.

According to the developed concept, the ITC acts as an element of the innovation infrastructure, which provides favorable activities for the structural elements of the cluster. This type of support consists in the formation of material and intangible conditions that create competitive advantages for business entities within the ITC. Among these are: production and technological (CCC equipment, optimal leasing schemes for expensive equipment, technological infrastructure), rental (preferential rental of production and office premises) and intangible (consulting assistance on intellectual property protection, legal and other consulting services). Another strategic direction of the ITC's activity is associated with the optimization coordination of strategies of various business entities operating within the cluster. Also, according to this direction, information support is provided to the top management of business entities of the cluster. This will

ensure more systematic and optimal joint functioning and competition within the cluster. Information support includes consulting assistance in forming the structure of business entities, their connections with other elements of the cluster. It is also envisaged to coordinate the process of competition of these elements in order to maximize the scientific, technical and commercial effect of competition within the framework of the potential innovation cluster.

Support for the formation of favorable demand parameters also involves the search for new and expansion of existing markets for the cluster's products, assistance in obtaining government orders by business entities of the cluster. As a result of this industry focus and more favorable operating conditions, the ITC will become a kind of center of concentration of business entities, which in one way or another will positively influence each other and mutually strengthen competitive advantages.

The concept of organizing the management of innovation clusters is purposefully implemented on the basis of ITC and includes several stages. These stages are characteristic of all socio-economic systems and make up their life cycle.

The life cycle of an innovation cluster is a set of stages of the cluster's existence from the moment of its emergence (the stage of emergence) to the moment of the transformation of the cluster elements into a set of independent successfully functioning business entities and their integration into a high-tech industry cluster.

The life cycle of an innovation industry cluster includes the following four stages:

1) emergence (the emergence of a system-forming business idea: basic technology and the presence of prospects for its commercialization), structuring the potential of the future cluster;

2) growth (the formation of a number of small business entities and connected by sustainable technological chains);

3) maturity (achieving by business entities the scale of activity sufficient for independent functioning and maximizing the synergistic effect of interaction within the cluster);

4) transformation of the business sector into a segment of an innovative industry cluster.

Constructing an innovative economic model and an information society necessitates the establishment of favorable conditions for the effective implementation of scientific, technological, and innovative activities. This requires legislative efforts not only at the level of implementing the innovative strategy of the state's socio-economic policy through the adoption and implementation of forecasts and programs of socio-economic development, targeted economic and scientific and technical programs, but also at the level of creating a legal framework for international cooperation in solving the most pressing issues of social development and the formation of appropriate organizational mechanisms.

The practical implementation of the strategic course for the innovative development of Ukraine should be based on the awareness of the need for coherent integration of the state’s targeted impact on economic development with the market mechanisms of its functioning. The state should be the organizer and participant of active innovative transformations in the economy of Ukraine.

In the context of globalization of national economic development, enhancing competitiveness through innovation acquires strategic significance.

For any government, the pursuit of an innovation-driven development path and the formulation of state innovation policy begin with the identification of imperatives, which are the fundamental elements of public policy that serve as its starting point and determine its key directions.

The experience of technologically advanced countries demonstrates that a well-designed mechanism for justifying and defining priorities at the state level, together with reliable monitoring of their implementation, is a prerequisite for the effectiveness of innovation policy.

Priority areas are shaped by national economic, political, environmental, and other factors.

They are realized through major cross-sectoral projects and programs aimed at creating, developing, and disseminating technologies capable of fundamentally transforming the technological foundation of the economy.

As world experience shows, the formation of an innovation system is impossible without the active participation of the state. It is worth considering that the role of the state in the formation of an innovative economy is much greater than in the regulation of ordinary economic policy. That is why it is necessary to provide for the development of a strategy for the transition to an innovative model of development based on the use of scientific planning methods at all levels of management and increasing the level of innovation culture.

Conclusions. Based on this, the author has identified generalized strategic imperatives for effective management of innovative development of entrepreneurship in Ukraine:

- adaptation of the innovation system of Ukraine to the conditions of globalization and increasing its competitiveness;
- reorientation of the innovation production system to market demand and the consumer;
- creation of attractive conditions for creators of innovations, stimulation of innovative activity of entrepreneurship;
- systemic approach in management of innovative development, informatization of society.

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