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## **IMPLEMENTATION OF INNOVATIVE PROJECT ACTIVITY IN THE PROCESSES OF ECONOMIC INTERACTION AND DEVELOPMENT OF COMPETITIVENESS OF CLUSTERING WITH THE PARTICIPATION OF EDUCATIONAL INSTITUTIONS**

*The article deals with topical issues regarding the implementation of innovative project activities in the processes of economic interaction and the development of competitiveness of clustering with the participation of educational institutions. The authors investigate the role of educational institutions in the formation of an innovative environment in cluster structures and their contribution to strengthening the competitiveness of regions.*

*Approaches to the integration of education with the economy through the implementation of projects and initiatives aimed at creating innovative products and services are analysed. The research is based on the analysis of the practical experience of implementing innovations in clustered industries, as well as on the review of scientific sources on this topic.*

*A comprehensive approach to the integration of education with the economy in the context of clustering contributes to the creation of a favourable environment for the development of innovative ideas and their further commercialization. The article examines in detail the tools and methods that can be used by educational institutions to support innovative projects within clusters. Possible obstacles and challenges those educational institutions may face during the implementation of such initiatives, as well as ways to overcome them, are also highlighted.*

*The relationship between regional development tasks and the functioning of innovative and educational clusters in the context of the activation of business processes is outlined. The sequence of stages of creation of innovative and educational clusters at the regional level is given. The prerequisites for the development of innovative and educational clusters in the region have been formed.*

*The results of the study will help to expand the understanding of the processes of interaction between education and the economy in the context of the development of clustering and are of practical importance for the management of clusters and the development of economic interaction in the region.*

**Keywords:** *socio-economic development, innovative development, project management, innovative project activity, economic interaction, competitiveness, clustering mechanism, cluster.*

**Introduction.** The modern development of any country is characterized by the transition to more efficient and effective management methods, among which a special place is occupied by the stimulation of the socio-economic development of regions, which requires the use of a complex of economic, legal,

organizational, investment, innovative and other management methods and means that will increase economic sustainability and stability of each region.

Significant disparities in the economic development of the regions of Ukraine are caused by long-term violations of their key factors of competitiveness – the unsatisfactory state of the infrastructure of the region, the low level of adaptation of the workforce to market conditions, insufficient business support, the lack of adequate innovative capacity of enterprises, and, as a result, the low investment attractiveness of the territories. The complex of such problems is explained by the lack of sufficient amounts of stimulation of regional development, as well as a single mechanism of mutual coordination of the interests of all participants that ensure it.

The indicated problems are relevant not only for Ukraine but also for other countries of the world and require the search for balanced methods, forms and principles for the coordinated development of the region and its infrastructure. This is the form of coordination of interests and goals that should become cluster forms of regional development [1-6], which combine all the necessary levers and tools for the active cooperation of participants and the creation of conditions for the promising development of business processes. In addition, the implementation of the cluster approach is considered in Europe to be one of the effective means of ensuring the competitiveness of the national economy, an effective tool for achieving trends of sustainable regional and local economic growth through effective management of business processes.

**Analysis of recent research and publications.** The issues of economic clustering, formation and implementation of various types of cluster policies and cluster initiatives are among the scientific interests of many leading foreign scientists. The basic theoretical sources for this study were the scientific heritage of M. Castells (theory of the information age and network society) [7], the traditions of the scientific school of M. Porter (cluster approach to the problems of increasing competitiveness) [8], as well as publications of scientists and organizations belonging to the scientific school of H. Etzkowitz [9] and L. Leydesdorff [10] (the concept or model of the triple helix).

The methodology of studying modern cluster policy and cluster initiatives is based on the concept of competitiveness of the outstanding American economist and professor M. Porter [8]. He introduced the term “cluster” into scientific circulation for the first time and is the founder of the cluster theory. In his works, M. Porter examines the problems and trends of development, reasons and opportunities for the development of clusters. In his opinion, it is necessary to support the development of all clusters without exception, because it is impossible to predict which cluster will develop faster and which slower. Therefore, the government's policy, as noted by the scientist and his associates, according to which aid is provided only to those clusters that currently have high rates of development, is wrong. He does not propose the artificial creation of clusters from above, but in real life their detection and support by state structures and research institutes [1].

The research of the Swedish scientist C. Ketels [11] (a follower of M. Porter) is aimed at solving the problems of economic clustering. In the community of European scientists, C. Ketels is considered a leading specialist in the field of development of cluster initiatives. In his works, he notes that during the development of programs of state assistance to the development of clusters, the greatest risk is the term of the cluster project and the high cost of cluster initiatives. The scientist emphasizes that the most effective measure to support cluster initiatives is “cluster activation”, and explains that the role of the state should be reduced to removing barriers that prevent the evolution of clusters [11].

According to the Norwegian researcher L. Orvedal [12], the main problem of the state's cluster policy is the actual definition of the presence of a cluster. According to the author, it is extremely difficult for the state to identify numerous chains of interrelationships of the internal cluster environment and to determine financial and organizational risks in the formation of cluster associations. In most cases, neither the state nor enterprises have the necessary information, which leads to the so-called problem of information asymmetry.

Prominent Ukrainian scientists-economists and specialists-practitioners (S. Sokolenko [13]; M. Voynarenko [14]; V. Dubnytskyi et al. [15]; M. Kyzym, V. Khaustova [16]; V. Liashenko et al. [17] and others) have been actively engaged in research on cluster topics in recent decades.

As a result of their research, they examined the basics of European cluster policy; an analysis of

the practice of forming innovative clusters in Germany, France, and Poland was performed. Features of the European economy clustering policy are summarized. This, in turn, expands the idea of the scope, intensity, target orientation, role of the state, measures and mechanisms of implementation of cluster policy in different European countries. Special attention is paid to the sectoral differentiation of clusters and the nature of their interaction within national and supranational formations. The main spheres and forms of interaction between Ukraine and the EU within the framework of the implementation of the cluster policy are highlighted. An interpretation of the content of cluster policy as a priority of regional policy is proposed. Based on a retrospective analysis of the activity of clusters in many regions of Ukraine, the problems of their low efficiency have been identified. At the same time, scientists have proven that cluster policy, which is formed using a program-project approach, has a potentially high efficiency [18-20]. This approach makes it possible to activate the existing internal reserves of self-development of the cluster, as well as to attract and complementarily use the resources of the territory of its location. The principles of cluster policy formation in Ukraine have been determined, the implementation of which will allow maintaining the active role of the state in regulating the pace and quality of the economic development of clusters; ensure the formation of competence centres for the innovative development of regions; to increase the level of industrial competitiveness in the conditions of globalization.

At the same time, it should be noted that researchers [21-25 et al.] pay special attention to the problems of business process management, as well as the justification of stimulating measures to achieve sustainable development of the region and the use of various forms of its provision in practice.

Despite the wide range of scientific research on the chosen topic, the multifacetedness and debatable nature of certain issues require further development. Thus, the issue of instrumental provision of stimulation of regional development and effective management of business processes remains relevant even today and requires further development of effective regulatory mechanisms.

In view of this, the purpose of this study is to develop the basics of business process management in the region based on the implementation of innovative and educational clusters.

**Methods.** The theoretical and methodological basis of the research is the position of the institutional theory, in particular the paradigm of evolutionary development; systems theory, information society, network economy, clustering; concepts of sustainable development, strategic, innovative, and project management.

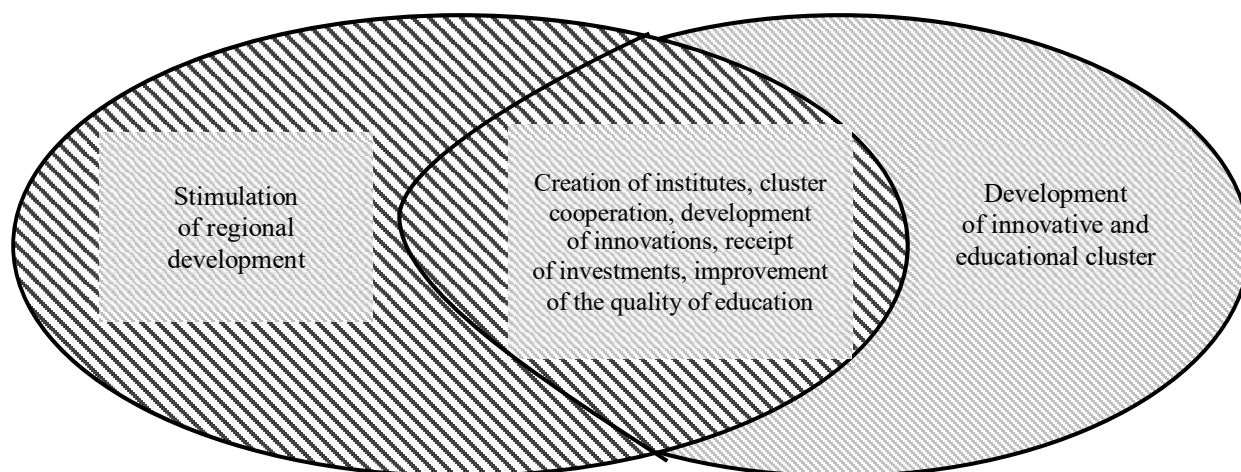
To achieve the goal, the methods of analysis and synthesis, induction and deduction, comparison, classification, system approach, structural-logical generalization were used.

**Results.** Scientists define a business process as a set of different types of activities, within which one or more types of resources are used at the “input” and as a result of this activity “at the output” a product is created that represents value for the consumer [26]. The business processes of the region represent the corresponding “inputs” and “outputs” for enterprises of specific territories and localities, consisting of various elements of business (innovation, education, potential, etc.).

To effectively manage business processes, it is necessary to understand that innovation cannot exist without education, and education, in turn, must provide quality knowledge and practical skills for the implementation of innovations. That is why it is necessary to combine them in cluster cooperation for higher opportunities to create and obtain high-quality results “at the exit”. Innovative and educational clusters (hereinafter referred to as IECs) are tools for effective management of business processes of various types of economic activity, the prerequisites and factors for stimulating regional development must be thoroughly investigated.

Solving systemic socio-economic problems of regional development accumulated in Ukraine requires the state authorities to find innovative approaches to updating mechanisms and tools for stimulating the development of regions and introducing effective management solutions. At the same time, stimulating the development of regions at the legislative level is understood as a complex of legal, organizational, scientific, financial and other measures aimed at achieving sustainable development of regions based on a combination of economic, social and environmental interests at the national and regional levels, as well as the most effective use of the potential of regions in the interests their residents and the state as a whole.

A strategic vision of the prospects for economic growth, identification of internal problems and obstacles inhibiting this process, and an adequate assessment of the potential of development resources available at the local level play a decisive role in ensuring the comprehensive balanced development of the region. Therefore, taking into account the existing tasks, it is possible to assert the similarity of the goals in the functioning of the IEC and regional development [27-31], about their unanimity in the direction of providing stimulating levers for the activation of economic processes, which are shown in Fig. 1.



**Fig. 1. – Interrelationship of tasks of regional development and functioning of innovative and educational clusters in the context of activation of business processes**

*Source: developed by the authors*

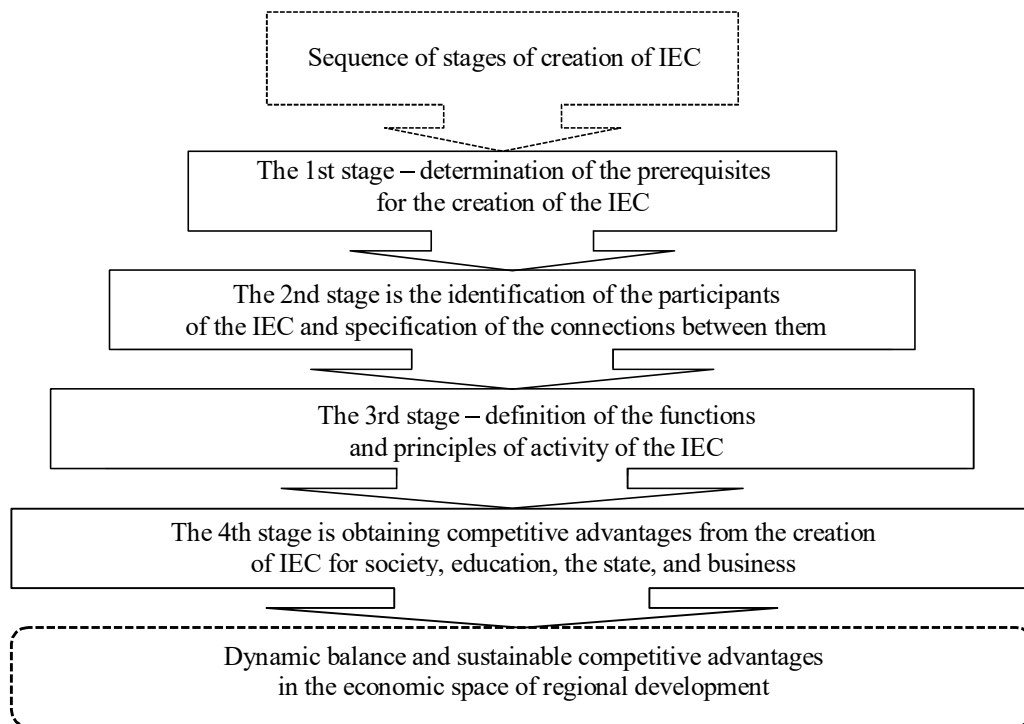
Therefore, ensuring at the regional level the conditions for the creation and further effective functioning of the IEC will allow simultaneously launching of the process of stimulating regional development. That is, IEC can be considered a trigger of regional development, and therefore their creation, support and ensuring effective functioning should be given sufficient attention both by scientists and by regional authorities and local self-government bodies.

At the same time, it should be noted that the regional innovation policy should be aimed at the formation of regional IECs as the basis of the innovative educational and scientific systems of the region since it is in them that the best conditions for the innovation process and social progress are formed. In this context, regions with high scientific and educational potential are of particular interest, within which research institutes, technology parks, educational conglomerates and other forms of scientific and educational cooperation are successfully operating, as they a priori have accumulated a significant stock of developments ready for commercialization. It is based on such territories that it is necessary to create and develop regional IECs.

The main difference between the IEC and other forms of economic associations is that the participants of the cluster do not go for a complete merger, but create a mechanism of effective interaction, which allows them to maintain the status of a legal entity and at the same time cooperate with other business entities that form the cluster, go to a level external to the cluster.

Taking into account the above advantages of clusters, it can be argued that the IEC is a dynamic system that provides self-development based on the realization of a synergistic effect. Contributing to the formation of the initial system of connections in the region for the production of innovative products, the cluster policy determines the nature of technological advancement at certain stages, creating conditions for the development of the scientific research base in the region and increasing production, educational and scientific potential.

In connection with this, it is necessary to define the main functions, principles and conditions of the operation of the IEC, which will act as an effective stimulus for the regional development of the economy. At the same time, their formulation should be based on a clear sequence of creation and further development of the IEC in the region (*Fig. 2*).



**Fig. 2. – The sequence of stages of creation of IEC at the regional level**

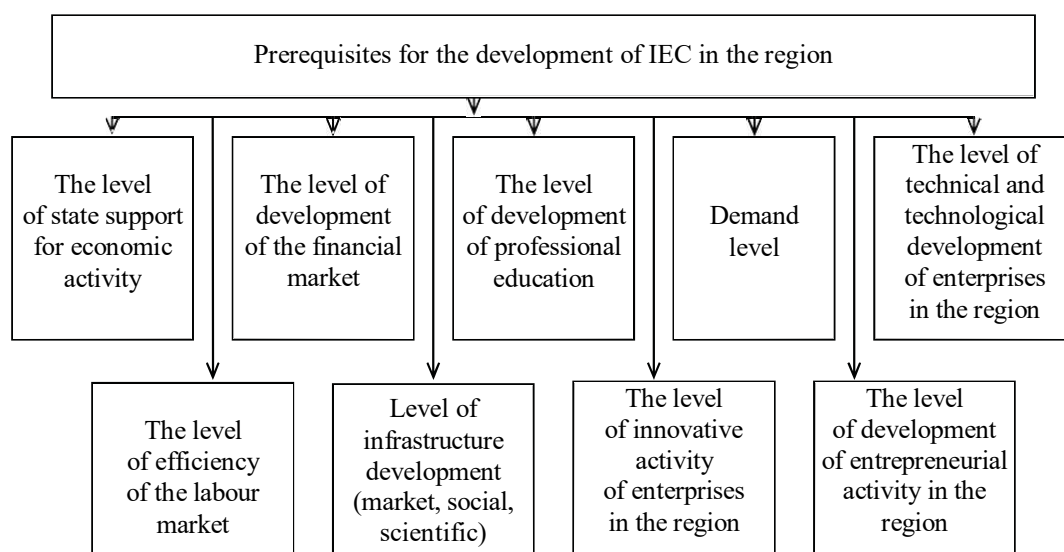
*Source: developed by the authors*

At the same time, the effectiveness of the progress of each stage will depend on the influence of socio-economic prerequisites, which determine the rates of clustering of the regional economy and must be taken into account in the first stage (*Fig. 3*).

The first prerequisite should be the level of state support for economic activity, which implies the presence of institutional foundations where the state government and business entities interact with each other to generate income and enrich the economy, thus significantly influencing the innovative component of the region and its economic growth. The Government of Ukraine has developed some projects and orders of regulatory documents on the need for clustering. However, official grounds for the intensive introduction of the cluster approach, which would determine the fundamental principles of the formation and functioning of clusters, were never created. This led to the fact that attempts to independently identify and structure clusters in individual regions do not bring the maximum possible effect.

The second prerequisite is the level of infrastructure development, which implies the presence of the necessary institutions for the effective and uninterrupted functioning and development of the cluster, which significantly accelerates the development of the final intellectual product. For example, the creation of business incubators, technology parks and other infrastructure facilities creates a favourable environment for the development of a cluster and provides the necessary support at all stages of its development.

The third prerequisite is related to the level of development of professional education, which provides cluster participants with highly professional and competitive specialists, and therefore should be based on a continuous process of improving the quality of educational services in the region. The level of education and the availability of professional training according to the specifics of the cluster's activities in the region provide employees with the opportunity to regularly improve their qualifications, acquire new professional skills, and adapt to the needs of the market.



**Fig. 3. – Prerequisites for the development of IEC in the region**

*Source: developed by the authors*

The fourth prerequisite is determined by the level of demand for a certain type of product or service, which is determined by the needs of the market and its participants, motivates business entities to implement innovative solutions and focus on customer needs, thus stimulating healthy competition. Therefore, it is the demand that stimulates the cluster to create a product that meets the current and future needs of the regional market.

The level of technical and technological development of the region's enterprises is the fifth prerequisite, which consists of the use of the latest technologies in production to increase the level of productivity and financial and economic efficiency. At the same time, it should be noted that the ability to develop, adopt and use the latest technologies under the current conditions of social and economic development of Ukraine is one of the most important competitive advantages of economic entities.

The effectiveness of the labour market determines the sixth prerequisite for the creation of the IOC and is characterized by ensuring the rapid movement of highly professional and competent workers from one sector of the regional economy to another, which stimulates their most effective use in the region and cluster and creates the necessary initiative for the maximum productive implementation of each person's professional knowledge, skills and skills.

The seventh prerequisite is related to the level of development of the financial market, which should redistribute resources towards the most efficient business entities and investment projects with a high probability of making a profit. The financial market, functioning properly, creates special products and methods of their use by the existing needs of the participants of cluster associations from such sources as loans, the securities market, venture capital, etc.

The level of innovative activity of the region's enterprises is the eighth prerequisite, and it consists of the fact that cluster participants must develop and implement the most modern products and technological processes to maintain competitive advantages. For this, the state and business must provide adequate support, direct sufficient investment in scientific research, and high-quality research institutes, cooperate in conducting research between universities and businesses, protect intellectual property, etc.

The ninth prerequisite is determined by the level of development of entrepreneurial activity in the region, which affects the efficiency of the production of goods and services, which, in turn, increases productivity and increases the competitiveness of the region. When companies and suppliers are united in clusters and are geographically close to each other, overall efficiency increases, more opportunities for innovation arise, and the number of barriers to creating new types of business decreases.

**Conclusions.** As a result of the study, it was established that the formation of cluster policy and

the implementation of cluster initiatives are becoming of the priority areas of strategic development in most European countries today. Ukraine is no exception. The cluster approach to regional programs and projects of sustainable development of economic regions in Ukraine is increasingly being used.

Cluster policy should be built taking into account a set of prerequisites that create a favourable environment for effective development and involve all possible participants of such an association. If there is a favourable environment for the creation of an IEC, then the next stage is the need to determine its main participants who will function together within the cluster, because the success of its development depends on the coordinated actions of potential participants. Science, education, business and authorities are the main participants of the IEC, and how the interests of each of them are combined and what functional connections are established between them will determine the effectiveness of the functioning of such a cluster and its vital activities.

At the same time, it is worth noting that cluster policy, like any process, needs constant improvement taking into account modern requirements. In this regard, it is advisable to:

- include cluster policy in the list of national and regional priorities of socio-economic development and create an appropriate high-quality legislative and regulatory framework;
- apply the concept of thrifty innovations for the successful organizational development of cluster formations, since this concept emphasizes the internal resources of enterprises participating in clusters as the main source of competitive advantages;
- to strengthen international cooperation to stimulate the active participation of the cluster in changing its institutional environment, promoting the spread of progressive ideas and technologies;
- to create an information environment of the cluster to stimulate joint research projects, including with the participation of leading institutions of higher education and research institutions, to promote the improvement of the efficiency of communications and interaction in the cluster.

Thus, an important condition for the construction of the IEC in Ukraine is the purposeful cooperation of practice-oriented fundamental science, design and construction developments, and innovative industrial technologies. The leading role in this activity should be played by human capital, thanks to which the development and implementation of new innovative ideas and their further implementation in business processes are carried out.

**Prospects for further research in this direction** are to substantiate conceptual provisions and develop specific practical recommendations for the formation of regional cluster policy in the context of smart specialization and post-war modernization of the economy of the regions of Ukraine.

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## **ВПРОВАДЖЕННЯ ІННОВАЦІЙНОЇ ПРОЕКТНОЇ ДІЯЛЬНОСТІ В ПРОЦЕСИ ЕКОНОМІЧНОЇ ВЗАЄМОДІЇ ТА РОЗВИТКУ КОНКУРЕНТОСПРОМОЖНОСТІ КЛАСТЕРИЗАЦІЇ ЗА УЧАСТЮ НАВЧАЛЬНИХ ЗАКЛАДІВ**

*У статті розглядаються актуальні питання щодо впровадження інноваційної проектної діяльності в процесі економічної взаємодії та розвитку конкурентоспроможності кластеризації за участю навчальних закладів. Автори досліджують роль закладів освіти у формуванні інноваційного середовища в кластерних структурах та їх внесок у посилення конкурентоспроможності регіонів.*

*Проаналізовано підходи до інтеграції освіти з економікою шляхом реалізації проектів та ініціатив, спрямованих на створення інноваційних продуктів і послуг. Дослідження базується на аналізі практичного досвіду впровадження інновацій у кластерних галузях, а також на огляді наукових джерел з даної теми.*

*Комплексний підхід до інтеграції освіти з економікою в контексті кластеризації сприяє створенню сприятливого середовища для розвитку інноваційних ідей та їх подальшої комерціалізації. У статті детально розглянуто інструменти та методи, які можуть бути використані навчальними закладами для підтримки інноваційних проектів у кластерах. Також висвітлено можливі перешкоди та виклики, з якими навчальні заклади можуть зіткнутися під час реалізації таких ініціатив, а також шляхи їх подолання.*

*Окреслено взаємозв'язок завдань регіонального розвитку з функціонуванням інноваційно-освітніх кластерів у контексті активізації бізнес-процесів. Наведено послідовність етапів створення інноваційно-освітніх кластерів на регіональному рівні. Сформовані передумови для розвитку інноваційно-освітніх кластерів в регіоні.*

*Результати дослідження сприятимуть розширенню уявлень про процеси взаємодії освіти та економіки в контексті розвитку кластеризації та мають практичне значення для управління кластерами та розвитку економічної взаємодії в регіоні.*

**Ключові слова:** соціально-економічний розвиток, інноваційний розвиток, проектний менеджмент, інноваційна проектна діяльність, економічна взаємодія, конкурентоспроможність, механізм кластеризації, кластер.

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