

Дослідження, розробки, проекти з питань
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MECHANISM FOR FORMING INNOVATIVE CLUSTERS

МЕХАНІЗМ ФОРМУВАННЯ ІННОВАЦІЙНИХ КЛАСТЕРІВ

***Summary.** The necessity of developing innovations for the growth of the economy and maintaining its competitiveness in the long run has been studied. It is proved that this fact is connected with the creation of the mechanism for the innovative economic development, which is a priority at both state and regional levels of management. An important place in the structure of this mechanism is occupied by innovative clusters.*

It is investigated that currently the cluster approach is considered as a new management technology that allows entities to increase the competitiveness of a particular region or industry, and the state as a whole. Partnerships within regional cluster structures, the availability of knowledge transfer channels stimulate innovative activities, promote the development of advanced technologies and the improvement of all the stages of joint economic activities. Studies show that the production structure of the cluster is more profitable than the industrial

structure, as to create an innovative product requires the integration of efforts of enterprises in different industries. When grouping companies into clusters, there is an opportunity to optimize productive and technological processes and minimize costs at different enterprises. In addition, the cluster creates the effect of the industrial scale, which is based on the specialization of cluster members, as well as the presence of the innovative core that stimulates the production of new types of products and services. As a result, all participants in regional cluster structures receive additional competitive advantages under the sway of the combined influence and specialization, which provides increased productivity and reduced production costs.

Key words: *mechanism, innovation, cluster, public policy, modernization, region, competitiveness.*

Анотація. *Досліджено необхідність розвитку інновацій для зростання економіки та підтримки її конкурентоспроможності в довгостроковій перспективі. Доведено, що цей факт пов'язаний із створенням механізму інноваційного розвитку економіки, який є пріоритетним як на державному, так і на регіональному рівнях управління. Важливе місце в структурі цього механізму посідають інноваційні кластери.*

Досліджено, що на сьогоднішній день кластерний підхід розглядається як нова управлінська технологія, яка дозволяє суб'єктам господарювання підвищити конкурентоспроможність як окремого регіону чи галузі, так і держави в цілому. Партнерство в рамках регіональних кластерних структур, наявність каналів передачі знань стимулюють інноваційну діяльність, сприяють розвитку передових технологій та вдосконаленню всіх етапів спільної господарської діяльності. Дослідження показують, що виробнича структура кластера є більш прибутковою, ніж промислова структура, оскільки для створення інноваційного продукту необхідна інтеграція зусиль підприємств різних галузей. При об'єднанні компаній у

кластери з'являється можливість оптимізувати виробничо-технологічні процеси та мінімізувати витрати на різних підприємствах. Крім того, кластер створює ефект промислового масштабу, в основі якого лежить спеціалізація учасників кластера, а також наявність інноваційного ядра, що стимулює виробництво нових видів продукції та послуг. У результаті всі учасники регіональних кластерних структур отримують додаткові конкурентні переваги під впливом спільного впливу та спеціалізації, що забезпечує підвищення продуктивності та зниження собівартості продукції.

***Ключові слова:** механізм, інновації, кластер, державна політика, модернізація, регіон, конкурентоспроможність.*

Introduction. In the modern economy, clusters are becoming one of the most effective forms of the integration of the productive, financial and intellectual capital, which ensures the formation and development of competitive advantages for the territories. The priority role of the clusters in the structure of the regional mechanism for the innovative development actualizes the importance of the problem concerning the formation of regional innovative clusters.

The purpose of the article is to develop the mechanism for the innovative clusters formation as a part of the innovative mechanism for modernizing the public policy.

Overview of the research literature. The current state of the clustering of the regions in Ukraine demonstrates that the clusters in our country not only exist, but some of them function quite successfully, creating a real positive effect on the natural and economic development of the regions. However, there are those that remain underdeveloped due to the insufficient level of the participation of the government authorities and public administration in promoting the processes of the clustering of the regions.

The world experience in forming the clustering of the regions is reflected in

the works of the foreign authors: T. Andersson, M. Enright, A. Marshall, M. Porter and others. Among the Ukrainian scientists it is worth noting the research papers of M. Voynarenko, S. Sokolenko, O. Tyshchenko, V. Fedorenko and others related to the development of the cluster structures. The works of these scientists cover the following issues: the organization and public administration regarding clusters; the competitiveness and formation of competitive advantages; determining the efficiency of the clusters and their impact on the growth of the domestic regional product, the gross domestic product, as well as the natural and economic development of the country as a whole.

Formation of a whole article. To investigate the need for the development of innovations for the growth of the economy and support of its competitiveness in the long term and to develop a mechanism for the formation of innovation clusters.

Presentation of the main body of the study. The competitiveness of the regions is based on the efficiency of the economic entities operating in them. That is why the cluster approach, as an alternative to the traditional sectoral industrial policy, is an effective tool for both increasing the competitiveness of the territory and developing the social potential of the region. The cluster approach is directly related to increasing the competitiveness of the territory not only because it simultaneously affects productivity and employment, but also because it removes the contradictions between them. The level of the labour productivity in the cluster grows due to the specialization and outsourcing of non-core activities. And the level of the employment increases through the involvement and formation of new economic entities in related and supporting industries.

The world experience provides the examples of increasing the competitiveness of the territories and industrial complexes through the implementation of the cluster-oriented regional policy. The clusters are known in the field of small and medium businesses (production of furniture, footwear, food), in the field of innovations (biotechnology, telecommunications), in the large-scale industrial production (automotive industries), in the field of motorsport.

The diversity and individuality of clusters complicate their typification. There are different definitions of this form of relationships between different members of the business community and authorities. The cluster is a stable territorial-sectoral partnership of the enterprises and organizations, united by the innovative programme for the implementation of advanced productive, engineering and management technologies in order to increase the competitiveness of cluster members [1].

A cluster as a stable partnership of interconnected enterprises, institutions, organizations, and individuals may have a potential that exceeds the simple sum of the potentials of individual components. This increase arises as a result of the cooperation and effective use of the opportunities of partners in the long run, the combination of the cooperation and competition. Companies benefit from being able to share positive experiences and reduce costs by using the same services and providers.

The participants of the clusters are manufacturers and suppliers, engineering and consulting firms, research organizations and universities, credit organizations and banks, infrastructure, regional administrations, professional and public organizations.

Ongoing interaction promotes the formal and informal exchange of knowledge, the cooperation between organizations with complementary assets and professional skills. The education of the so-called "critical mass" of companies in the cluster serves as an incentive to further attraction of new companies, investments, services and suppliers to the cluster, and it also supports the formation of their own professional staff.

In general, the origin of the cluster, with rare exceptions, is carried out spontaneously, under the influence of the combination of certain factors, among which the main one can be considered as an entrepreneurial initiative. The basis for the formation of clusters is the possibility and / or necessity of the joint use of one or more unifying factors by many economic entities. These factors are the basic

technology, marketing channels, training system, system of generating know-how related to the single product direction.

Any cluster goes through a number of stages. They may not be the same for all clusters, and the pace of their development may vary. However, there is an internal logic of the way in which clusters develop, which makes it possible to distinguish some specific models. Even though the exact shape and direction will depend on certain circumstances, the cluster goes through the following stages of the life cycle [2]:

The agglomeration. The stage at which there are several companies and other representatives in the region.

The emergence of a cluster. At this stage, some members of the agglomeration begin to cooperate around the main activity and realize common opportunities through their connection.

The cluster development. In connection with the emergence or involvement of new participants in the same or related activities in the region at this stage, new links emerge between all new agents. Formal and informal institutions of the cooperation may appear. Some names, websites, general content related to the region and activities often begin to appear.

The maturity of the cluster. The stage at which the mature cluster has already reached some critical mass of agents. It also developed the connections outside its borders, with other clusters, areas of activities, and regions. There is an internal dynamic of the creation of new firms through their emergence, joint ventures, separation.

The cluster transformation. This stage is characterized by the fact that with the passing of time, markets, technologies and processes change in the same way as clusters. For a cluster to survive, be viable, avoid stagnation and disintegration, it is necessary to innovate and adapt to any changes. It can choose to transform into one or more new clusters which focus on other activities or simply change the ways in which products and services are delivered.

The peculiarity of the cluster is that it is not registered as a single legal entity and is not the only business entity. It is the emergence and development of the cluster that in some cases are carried out according to a certain scenario (for example, in the case of the active participation in the development of the cluster of authorities). Quite often there is the joint planning of economic activities by the groups of economic entities, which are temporarily united to implement joint projects.

It is fair to say that the development of the potential cluster requires the active intervention of the authorities interested in improving the efficiency of the territory's economy. In some cases, the effective development of the cluster requires little efforts, in other situations it requires the implementation of large-scale projects [3].

Another important factor in the emergence and existence of a cluster is the geographical location. The localization of the main participants of the cluster, as well as the transport and information infrastructure determine the possibility of the interaction between the participants of the cluster, namely their cooperation, exchange of technologies, ideas, and trained staff. Currently, due to the development of the transport networks and modern means of communication (Internet, e-mail), the boundaries of the clusters are expanding.

The relations of business entities within the cluster network are the strategic alliance, the members of which:

- develop a common strategy or, at least, a common goal, exchanging ideas and know-how;
- firms that form a network, act as a single entity of the competition, encouraging cooperation to achieve a common goal, more efficient use of resources, reducing transaction costs and costs for controlling material flows, but at the same time giving all partners independence in business;
- the strategic center of the network becomes the largest company, which, in cooperation with external firms, contains the long-term contracts that go beyond

the usual subcontracting relationships.

These centers form a strategy, develop key competencies for partners, coordinate their activities, organize technology transfer and know-how, borrowing ideas from partners to create new technologies;

- in contrast to the usual system of the strategic management, based on a linear model of the behavior of firms, the strategy of technological networks centralizes self-organizing processes on a dynamic basis, which does not provide a stable balance. The strategic center collects and analyzes the information about new consumer requirements, new technologies, including related industries, resources available in the global market, actions of competitors and on this basis, together with the partners, selects a set of the network activities, which allows flexible responses to market requests and to produce maximum added value;

- the functions of managing inventory flows in the network are usually transferred to the special firm.

As a rule, clusters are aimed at achieving the following goals [5]:

- increasing the competitiveness of cluster members through the implementation of new technologies;

- reducing costs and increasing the efficiency of relevant knowledge-intensive services due to the effect of synergies and unification of approaches in logistics, engineering, information technologies, quality management etc .;

- providing employment in the context of reforming large enterprises and outsourcing;

- consolidated lobbying of the cluster members' interests in various authorities.

Among the factors that motivate the integration of various forms and organizations into the cluster, we can note the following:

- agreed requirements for its suppliers and dealers;
- reduction of costs for the implementation of new technologies due to the effect of scale;

- more effective nature of collective innovations in knowledge-intensive industries, including co-design in the vertical integration and horizontal cooperation in outsourcing;
- increase of the potential market of engineering and consulting services, in particular for small enterprises, due to the introduction of subcontracting in complex projects and programmes implementation;
- expanding access to the information about market needs and promoting small business products and services to the market of large enterprises;
- increasing the capacity of the enterprises, including small ones, to attract investments and grants;
- more efficient system of reaching out to foreign partners and new markets.

An important distinguishing feature of the cluster is the factor of the innovative orientation. Clusters are usually formed where the "breakthrough" progress in the field of machinery and production technology and subsequent entry into new market niches is carried out or expected. In this regard, many countries, both economically developed and those just beginning to form a market economy, are increasingly using a cluster approach to support the most promising areas and forms of business, in the formation and regulation of their innovative systems.

The benefits for business from the development of the cluster as a whole are to increase efficiency and reduce costs in current activities and market development, increase flexibility and innovative potential in creating new products and technologies.

Businesses benefit from the cluster membership through:

- increasing the efficiency of the supply system for raw materials, components and constituent parts, more successful use of subcontracting;
- the availability and quality of specialized services;
- the access to various financial resources (for example, sources of risky financing for new technology companies in the cluster of information

technologies);

- the availability and quality of opportunities for R and D;
- the availability of specialized and productive human resources;
- building a network of formal and informal relations for the transfer of market and technological information, knowledge and experience;
- the creation of the system for the identification of collective benefits and dangers, the formation of the common vision and productive strategy of the cluster development;
- the creation of the system for business power relations.

The cluster theory is used to shape the economic policies of many countries around the world, as well as their regions. The cluster policy is an important component of national economies. The cluster policy means the measures aimed at increasing the competitiveness of the clusters in the region by involving the cluster firms in this process, as well as the government agencies and research institutes. The cluster policy largely determines the microeconomic policy of the state, and its development takes into account regional, investment and other aspects that affect the development of small and medium-sized businesses.

In many foreign countries (Finland, Germany, Japan, China etc.) the clusters have already been formed in various industries (mechanical engineering, construction industry, forestry etc.), which operate successfully and allow us to judge not only the need for clusters formation, but also the effectiveness of their work both by the cluster members and within the region or the country as a whole.

The realization of the clustering potential in increasing the competitiveness of the regional economy is achieved through the formation of the comprehensive mechanism for managing the regional socio-economic development [5].

The management of the regional development in the most general terms means the change management, which ensures its competitiveness in the context of the globalization on an innovative basis. It is worth noting that the latter, in its turn, in modern conditions is the most achievable thing based on the use of the cluster

approach, as clusters lay the foundations for improving the competitiveness of the region.

The management of the regional development can be considered as the management of mutually agreed programmes (projects) for the development of all spheres of life in the region according to the priorities supported by the population, the state and regional interests accepted on execution on a legal or contractual basis, which imply the use of the necessary resources, with certain measures and deadlines. The main purpose of such management is to create conditions for every able-bodied citizen that allow them to maintain their own well-being and family welfare through their work and entrepreneurship, in the context of strengthening the targeting of the social support from the state, especially for vulnerable groups. In this definition, the development projects of all spheres of life in the region should be understood, first of all, as the development projects of all the subsystems of the region - economic, social and environmental, which are aimed at improving the quality of life in the region [6].

In view of the above, managing the development of the region will mean the change management in all the subsystems of the region (economic, social, environmental), carried out by authorities and administrations together with other stakeholders using the cluster approach, and aimed at improving the quality of life in the region.

Conclusions. The development potential of the region is determined by the set of the resources and opportunities for their targeted use in the conditions of instability and uncertainty of the external environment. Depending on the content of the resources, the appropriate types of potentials are formed, which require structuring in terms of the possibilities and effectiveness of the management functions. This will contribute to the systematic approach in solving the problems of the region and ensuring the planned and balanced development of its components.

Literature

1. Гнатенко Є.Ю. До питання формування інноваційних агровиробничих кластерів. *Економічний вісник Запорізької державної інженерної академії*. 2018. Вип. 2 (14). С. 25-31. URL: <https://dspace.znu.edu.ua/jspui/bitstream/12345/889/1/7.pdf> (дата звернення: 30.09.2023).
2. Гуменюк О. Кластери як організаційна структура інноваційно-інвестиційної моделі розвитку промисловості. *Актуальні проблеми економіки*. 2007. № 2. С. 9-19.
3. Марухленко О.В. Кластери – інструмент регіонального розвитку. *Право державного контролю: збірник наукових праць*. 2017. Вип. 2, № 4 (29). С. 157-163.
4. Марухленко О. Критеріальний апарат кластеризації регіонів України за стадією інвестиційної залежності до розвитку соціального потенціалу. *Науково-виробничий журнал Держава та регіон. Серія: «Державний контроль»*. 2019. № 3. С. 82-87.
5. Левковець О. М. Кластерна форма організації інноваційного процесу: проблеми застосування в Україні. *Економіка: проблеми теорії та практики: зб. наук. праць*. 2010. Вип. 264: в 9 т. Т. VII. С. 1880-1893.
6. Kotnik P., Petrin T. Implementing a smart specialisation strategy: An evidence-based approach. *International Review of Administrative Sciences*. 2017. Vol. 83, № 1. P. 85-105. doi: <https://doi.org/10.1177/0020852315574994>

References

1. Hnatenko, Ye.Iu. (2018). Do pytannia formuvannia innovatsiinykh ahrovyrubnychykh klasteriv [The question of the formation of innovative agriculture industrial clusters]. *Ekonomichnyi visnyk Zaporizkoi derzhavnoi inzhenernoi akademii*, 2 (14), 25-31. URL:

- <https://dspace.znu.edu.ua/jspui/bitstream/12345/889/1/7.pdf> [in Ukrainian].
2. Humeniuk O. (2007). Klasteri yak orhanizatsiina struktura innovatsiino-investytsiinoi modeli rozvytku promyslovosti [Clusters as an organizational structure of the innovation-investment model of industry development]. *Aktualni problemy ekonomiky*, 68, 2, 9-19 [in Ukrainian].
 3. Marukhlenko, O.V. (2017). Klasteri – instrument rehionalnoho rozvytku [Clusters as instruments of regional development]. *Pravo derzhavnoho kontroliu: zbirnyk naukovykh prats*, 2, 4 (29), 157-163 [in Ukrainian].
 4. Marukhlenko, O. (2019). Kryterialnyi aparat klasteryzatsii rehioniv Ukrainy za stadiieiu investytsiinoi zalezhnosti do rozvytku sotsialnoho potentsialu [Criteria apparatus for clustering the regions of Ukraine by the degree of investment attractiveness for the development of their social potential]. *Naukovo-vyrobnychiy zhurnal Derzhava ta rehion. Seriya: «Derzhavnyi kontrol»*, 3, 82-87 [in Ukrainian].
 5. Levkovets, O. M. (2010). Klasterna forma orhanizatsii innovatsiinoho protsesu: problemy zastosuvannia v Ukraini [Cluster form of innovation process organization: problems of application in Ukraine]. *Ekonomika: problemy teorii ta praktyky: zb. nauk. Prats*, 264, 1880-1893 [in Ukrainian].
 6. Kotnik, P., Petri, n T. (2017). Implementing a smart specialisation strategy: An evidence-based approach. *International Review of Administrative Sciences*, 83, 1, 85-105. doi: <https://doi.org/10.1177/0020852315574994> [in English].