

ЄВРОПЕЙСЬКИЙ ДОСВІД РОЗВИТКУ КЛАСТЕРІВ

Т.В. Андросова, Л.О. Чернишова, В.О. Козуб

Визначено суть кластера на основі узагальнення існуючих підходів до його визначення на національному та світовому рівнях. Розглянуто групи кластерів Європейського Союзу залежно від трьох найбільш вагомих індикаторів їхнього розвитку: розміру, спеціалізації та фокуса. Запропоновано кластерну модель розвитку регіону країни з урахуванням європейського досвіду розвитку кластерних систем.

Ключові слова: кластер, кластерна модель, кластеризація, вектори розвитку, бізнес-структури, синергетичний ефект, конкурентоспроможність регіону.

ЕВРОПЕЙСКИЙ ОПЫТ РАЗВИТИЯ КЛАСТЕРОВ

Т.В. Андросова, Л.А. Чернышова, В.А. Козуб

Определена суть кластера на основе обобщения существующих подходов к его определению на национальном и мировом уровне. Рассмотрены группы кластеров Европейского Союза в зависимости от трех наиболее весомых индикаторов их развития: размера, специализации и фокуса. Предложена кластерная модель развития региона страны с учетом европейского опыта развития кластерных систем.

Ключевые слова: кластер, кластерная модель, кластеризация, векторы развития, бизнес-структуры, синергетический эффект, конкурентоспособность региона.

EUROPEAN EXPERIENCE OF CLUSTERS' DEVELOPMENT

T. Androsova, L. Chernyshova, V. Kozub

The aim of the article is to substantiate the essence of a cluster and formation of the cluster model of the country's region development in terms of the experience of the cluster systems development. It is observed that clusters are the most widespread form of innovations' concentration, they demonstrate new opportunities for traditional and the newest sectors of national economies.

The scientists do not have a common approach towards defining the essence of clusters in the context of generalizing the existing developments both at the national and world levels. It is proposed to define a cluster as a local hierarchic association of technologically and geographically joined companies, financial and other business structures that created the optimal organization form of consolidating their subsidiaries for the minimization of their expenses and synergetic effect, for the increase of their competitiveness in the domestic and world markets. It is marked that the most significant processes of clusters internationalization and activation of horizontal and sectoral integration processes are observed in the European Union three groups of clusters depending on the most important indicators of their development: dimension, specialization and focus are considered in the article. The cluster model of the country's region development in terms of European experience of cluster systems development which characterizes mutual influence of foreign and national environment on the mechanism of the realization of investment and innovative regional development is proposed.

It is specified that the cluster model of the regional development should contain mutual dependence of such components as the state – region – business.

Keywords: *cluster, cluster model, clusterization, vectors of the development, business structures, synergetic effect, competitiveness of the region.*

Statement of the problem. Aggravation of competition in the global economic environment has always encouraged the major players of the international market to look for the most optimal form of producing goods and services such as techno-parks, techno-polises, innotechs, techno-zones, clusters. They accumulated considerable part of the venture capital that provided financing the so-called modern economy (biotechnology, nanotechnology, pharmaceuticals etc.). However, clusters that opened up new opportunities both for traditional and modern sectors of the national economy became the most common form of innovations' concentration. Aggravation of competition between TNCs, maintaining positions of small and medium-sized business, numerous scientific discoveries, tax benefits for innovation, policy of promotion, job creation, and the level of infrastructure development have led to significant extension of clusters in Europe, USA and Japan.

If in the early 1990s the first clusters that were formed in some areas had local character (Silicon Valley in the USA), then in the mid-1990s the first international clusters that at the beginning of the XXI century started quickly to transform towards the introduction of advanced technologies. The world regions with relevant sectoral specialization began to form on their basis. Eventually, there technological commercialization that converted clusters into global innovative and investment centers began quickly developed. The choice of the clusters concentration depends on the predominant qualities of the local infrastructure, susceptibility of local

authorities concerning organization of business, opportunities for effective lobbying of their interests, labor force quality, availability of universities, laboratories etc.

Review of the latest research and publications. Generalization of the previous developments proves the absence of a single approach of scientists to the definition of the essence of a cluster, classification and approaches concerning mechanism of the cluster development of a region.

The works of the famous western scholars B. Harrison, S. Sabel and M. Porter were devoted to the research of clusters. Russian researchers of the theory of clusters are Zh. Mingaleva and S. Tkacheva, and the national ones are S. Sokolenko and V. Chuzhykov. The ambiguity of interpretations of the nature of a cluster and the processes of cluster internationalization caused a more detailed analysis of this issue.

The objective of the article is to substantiate the essence of a cluster and formation of the cluster model of the development of the country's region in terms of European experience of cluster systems development.

Presentation of the research material. The Italian researcher J. Bekattini, who proposed the new substantiation of the industrial region that is based on the famous concept of A. Marshall, clarifies and supplements it with a localization component, made especially important contribution to the theory of clusters.

Michael Porter, who formulated several definitions of the term, is considered to be the most active supporter of the cluster model of development. In 1993 he stated: "Clusters are concentrated according to the geographical characteristics groups of interrelated companies, specialized suppliers and service providers; companies in the respective industries and the organizations related to their activities (e.g. universities, standardization agencies and trade associations) in particular fields that compete but at the same time cooperate" [1, p. 206]. Further Porter in the monograph "Competitiveness" presents two definitions of clusters. The first one defines a cluster as "... a system of interrelated companies and institutions that are greater than the simple sum of summands" [2, p. 275]. The second concept states that "Cluster or industrial group is a group of companies that are geographically adjacent to each other, interrelated with each other and associated with those organizations that operate in a certain area, and those that are characterized by community in activities and interactions" [2, p. 207].

Russian researchers of the theory of clusters Zh. Mingaleva and S. Tkacheva define a cluster as an industrial complex that is formed based on territorial concentration of networks of specialized suppliers, major producers and consumers linked by the processing chains, and is an

alternative to sectoral approach [3, p. 97]. However, such definition of a cluster does not consider some important components, including investments, innovations, and the degree of adaptability of the area that deprives it of the system content.

The national researcher S. Sokolenko who understands it as a "network industrial group of close geographically associated companies and organizations that cooperate with them, work together in a certain kind of business and those that are characterized by common activities and complementarity of each other" [4, p. 123] suggested quite nonstandard definition of a cluster. However, it is possible to agree with this approach on two conditions. The first is that the term "an industrial group" can be associated only with the industry, and, thus, this definition denies the existence of, for example, recreational or financial clusters, though they are already established in the world. If an industrial group is interpreted as a combination of businesses, investment funds, banks, etc., then the question of the local clusters existence arises where the influence of financial-industrial groups is not perceived to the extent that it would be necessary for its further consolidation. The second condition is the lack of a cluster efficiency criterion, i.e. assessment of what exactly makes a simple association and if relates to the effect of vertical and horizontal integration. Therefore, there arises quite a reasonable question of minimizing costs, maximizing profits, more efficient use of local infrastructure and, finally, optimization of transaction flows.

Thus, in view of the above mentioned it could be concluded that there is a lack of common approaches to defining a cluster both at the national and global level. That is clusters exist objectively, significant resources are accumulated there, but every author understands them in their own way. In particular, some scientists believe that these are innovative investment groups of companies, and others identify a cluster as an industrial complex that is located in a particular area.

In the European Union (EU) there was made an attempt to standardize the definition of a cluster that is associated only with competitiveness and innovation since 2008. In particular, the system document of the European Commission [5] states that clusters are "groups of independent enterprises-initiators (small, medium and large) as well as scientific research organizations involved in a particular sector or region the activity of that is focused on the development of innovative activity by promoting intensive interaction, common use of resources, sharing knowledge and experience as well as efficient promotion of transfer of technologies, networking and information among the enterprises within the cluster" [5, p. 9]. This identification of clusters at the international level

allows clearly defining those effects that may (or may not) be obtained in the process of implementation of a project:

- cluster should not necessarily be identified as super technologies because improvement of the existing ones can quickly enough provide a firm with an access to the global markets due to the development of new qualities of a product or its low price;

- there is a strong demand for the manufactured products not only at the local, national, but also at the international markets;

- each firm that is a part of the cluster keeps competing both within this formation and beyond;

- local and national governments comprehensively contribute to the formation and development of the clusters, creating at that the necessary infrastructure;

- cluster model is a risky form of business and requires a system evaluation of the complications that arise after its introduction.

Having generalized the presented definitions and interpretation of a cluster we suggest the following definition: a cluster is a locally-hierarchical association of technologically and geographically related companies, financial and other business structures that have created optimal organizational form of consolidation of their units within particular regions in order to minimize costs, obtain synergetic effect and, thus, increase their competitiveness at the national and global markets.

The most indicative processes of the clusters internationalization and activation of horizontal and sectoral integration processes are observed in the European Union. These trends may lead to significant changes in the existing today clusters due to their further differentiation according to the sizes and regulation models. Understanding this, European clusterization experts have tried to distinguish the groups of clusters depending on the three most important indicators of their development by offering an appropriate four-stage ranking similar to the hotel "star level" – 0; 1 *; 2 *; 3 * – based on three main indicators:

- 1) the size that characterizes the ratio of employment in the cluster and in the EU as a whole, the most important difference is 10 per cent excess of standardized rate among leading regions of the EU;

- 2) specialization that is determined if the region within the European division of labor is distinguished by specific cluster category among 10% of successful EU regions with high level of employment in the related production (in this case it refers to the localization of reproduction processes that Europeans identify by effective employment that can be more informative basis for developing an appropriate ranking than other analytical models in a market economy);

3) focus, if the major share in the structure of region employment falls onto the cluster, in particular, if the cluster is included in the TOP-10% clusters of similar category that are characterized by the largest share of employment in this region.

The results of such ranking are presented in Table [5].

The Table shows that the share of "higher" (three-star clusters) in the EU economy is not significant and is estimated in the range of 8%. Instead, one-star clusters are an absolute majority in the EU (66%).

Especially important element of cluster models localization (1–3 stars) can be considered their territorial congestion that is 20.6% of the EU cluster surface. However, the level of such area concentration for 3-star clusters should be even higher.

Table

Classification of EU clusters

Category of clusters	The number of regional clusters	The share in the total number of clusters of the region, %	The share in the potential of the area, %
3 stars	155	7,68	1,58
2 stars	524	25,98	5,34
1 star	1338	66,34	13,65
Total, 1–3 stars	2017	100	20,57
The total number of potential areas of cluster development	9804	–	100

The evolution of a cluster development can be directly associated with the action of the main driving forces of modern economy that includes the impact of competitors, changes in the markets, the level of infrastructure, overall culture level and performance of the institutional (national and supranational) bodies of the European Union.

The successful operation of a modern cluster largely depends on favorable or unfavorable imposition of the appropriate vectors of development that can lead to the intensification of the synergetic effect of production or, on the contrary, to the rapid and irreversible destruction, although innovative, but highly risky model of the modern economy.

Extensive research of the authors [6, p. 29–40] concerning bilateral interaction between the cluster and its external environment in terms of the present day allows suggesting the cluster model of the country's regional development (Fig.).

The model presented describes the mutual influence of vectors of external and internal environment on the mechanism of realization of investment and innovative development of the regions.

The most important issue in the model is the behavior of competitors at the market of specialized products and carrying out certain policies with the use of appropriate modes of regulation on behalf of the state and supranational structures. In view of this, the impact that the external environment has on the cluster under conditions of its maturity, may be adequate to the influence that the cluster itself has this environment changing, transforming it and creating additional synergetic effect.

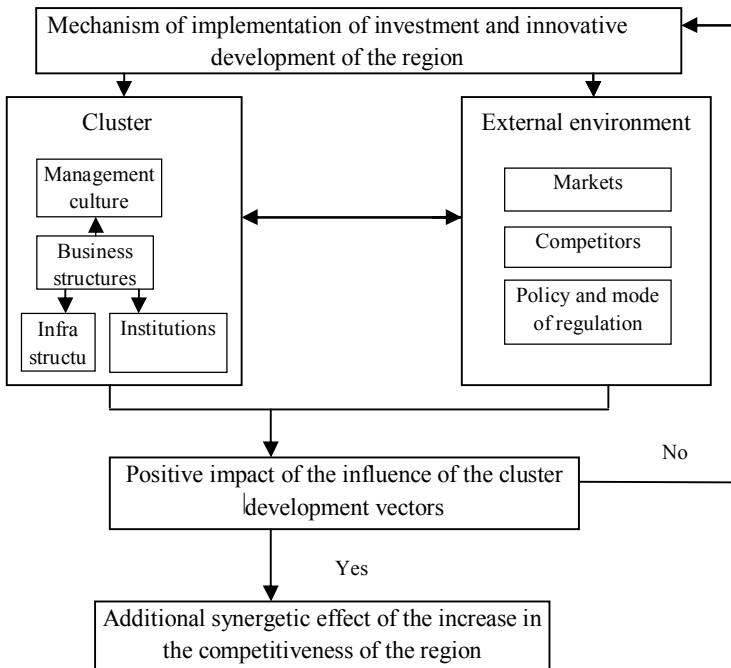


Fig. The cluster model of the country's regional development

The positive impact of these vectors forms a stable demand for products and services that are produced at the local, national and international markets that increases the level of competitiveness of the region.

Conclusion. Thus, clusters are the most wide spread form of the innovations concentration, they open up new opportunities for traditional

and new sectors of national economies. In view of this, the cluster model of region development should include interdependence of the following components: state – region – business. Due to clusterization, the state with the local authorities acts as a catalyst of innovative improvements in the region that lead to the change in specialization and strengthening focus on the global markets of goods and services.

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Андросова Тетяна Василівна, канд. екон. наук, проф., кафедра міжнародної економіки, Харківський державний університет харчування та торгівлі. Адреса: вул. Клочківська, 333, м. Харків, Україна, 61051. Тел.: 0671055566.

Андросова Татьяна Васильевна, канд. екон. наук, проф., кафедра международной экономики, Харьковский государственный университет питания и торговли. Адрес: ул. Клочковская, 333, г. Харьков, Украина, 61051. Тел.: 0671055566.

Androsova Tetiana, Candidate of Sciences (comparable to the academic degree of Doctor of Philosophy, Ph.D.), Professor, department of international economics, Kharkiv State University of Food Technology and Trade. Address: Klochkovska str., 333, Kharkov, Ukraine, 61051. Tel.: 0671055566.

Чернишова Лариса Олексіївна, канд. екон. наук, доц., кафедра міжнародної економіки, Харківський державний університет харчування та

торгівлі. Адреса: пр. Ілліча, 101, м. Харків, Україна, 61019. Тел.: 0974523011; e-mail: melnik_lara@mail.ru.

Чернышова Лариса Алексеевна, канд. екон. наук, доц., кафедра міжнародної економіки, Харківський державний університет харчування та торгівлі. Адрес: пр. Ильича, 101, г. Харьков, Украина, 61019. Тел.: 0974523011; e-mail: melnik_lara@mail.ru.

Chernyshova Larisa, Candidate of Sciences (comparable to the academic degree of Doctor of Philosophy, Ph.D.), Associate Professor, department of international economics, Kharkiv State University of Food Technology and Trade. Address: pr. Lenin, 101, Kharkov, Ukraine, 61051. Tel.: 0974523011; e-mail: melnik_lara@mail.ru.

Козуб Вікторія Олександрівна, канд. екон. наук, доц., кафедра міжнародної економіки, Харківський державний університет харчування та торгівлі. Адреса: вул. Танкопія, 31/2, м. Харків, Україна, 61091. Тел.: 0677055426; e-mail: kozub.viktoria@mail.ru.

Козуб Виктория Александровна, канд. екон. наук, доц., кафедра міжнародної економіки, Харківський державний університет харчування та торгівлі. Адрес: ул. Танкопия, 31/2, г. Харьков, Украина, 61091. Тел.: 0677055426; e-mail: kozub.viktoria@mail.ru.

Kozub Victoria, Candidate of Sciences (comparable to the academic degree of Doctor of Philosophy, Ph.D.), Associate Professor, department of international economics, Kharkiv State University of Food Technology and Trade. Address: Tankopiya str., 31/2, Kharkov, Ukraine, 61091. Tel.: 0677055426; e-mail: kozub.viktoria@mail.ru.

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ТЕНДЕНЦІЇ РОЗВИТКУ СВІТОВОЇ АКВАКУЛЬТУРИ ГІДРОБІОНТІВ РОСЛИННОГО ПОХОДЖЕННЯ

О.Б. Чернега, І.В. Дітріх, М.С. Бондарчук

Розглянуто динаміку змін світової аквакультури гідробіонтів рослинного походження. Визначено основні види водних організмів та водоростей, що вирощуються. Охарактеризовано програми підтримки