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## METHODOLOGICAL APPROACHES TO MANAGEMENT OF INDUSTRIAL CLUSTERS

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**Annotation:** This article is considering methodological approaches to management of industrial clusters, the practice of which is becoming the most popular in the world community both at the international and national and regional levels. An industrial cluster can be characterized as a group of manufacturing enterprises and non-productive organizations, for which membership in the cluster is an important means of strengthening individual competitiveness. The theoretical principles of forming a model of a cluster of four blocks and the characteristic features of successful work of clusters are considered. The key approaches to clustering of industrial enterprises are substantiated: endogenous and exogenous. The support of the cluster development authorities in the context of ensuring the sustainable development of the cluster is shown. It is substantiated that clusters, unlike business networks, combine a much wider range of participants, including support institutes, manufacturing and commercial structures, including manufacturers, component suppliers, distributors, as well as regional and national governments. It is possible both industry and geographic concentration of enterprises that are part of the cluster. The schemes presented reveal the essence of the industrial cluster, reflect the investment climate on the basis of cluster technologies and demonstrate the components of the successful work of cluster associations. Several approaches to assessing the efficiency of a cluster function are considered. A separate information cluster is provided, which is a collection of enterprises that produce and provide information. The differences between industrial and informational clusters as well as their interaction, which is represented by the scheme through the intersection, are shown, and the general enterprises for the two clusters are defined. The article identifies the main factors that contribute to increasing the competitiveness of the enterprise due to clusterization. Active clustering reduces the isolation of enterprises at different levels, strengthens inter-agency relationships, leads to increased productivity and innovation.

**Keywords:** industrial cluster, information cluster, cluster technologies, network structures, investments, cluster efficiency.

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### ***Problem statement***

Transformations in modern society take place at an amazing speed. Ukraine, as well as almost all European countries, was at the crossroads of all modern processes of modern world economic development.

The components of the modern world economy are the growing interdependence between capital markets and new technologies, the rapid development of a knowledge-based economy. Economic reform programs become grounded only when they are oriented towards the development of the social

sphere, more complete satisfaction of human needs in favorable conditions of work, a comfortable social climate, and a healthy economic environment.

In the era of the network economy, humanity has a chance to unite people through networks, unite their knowledge, talents, intelligence, overcome poverty, and provide a breakthrough in wealth creation in social development. However, in order to achieve this, it is absolutely critical that there should be a policy of networking support in the country in which the economy would be able to benefit from the introduction of new technologies.

The foundation of the concept of increasing the readiness of the country's economy to networking is a favorable business environment, market conditions, regulatory framework, network infrastructure. It is on the grounds of a favorable business environment that the efficient development of network structures and their higher form – clusters.

Currently, the Ukrainian economy and most of its enterprises are in a crisis situation. In today's conditions it is necessary and urgently to consider the problems of Ukraine's participation in emerging new production systems in the most promising regional associations for the country, and also emphasizes the need to take into account Ukraine's new planetary configuration of the world and the expediency of finding ways to integrate it into the world of new dimensions.

The practice of developing industrial clusters, associated network of technological parks is becoming the most popular in the world community both at the international and national and regional levels. The policy aimed at creating industrial clusters, network structures, contributes to the implementation of the concept of modern planning of economic development. This concept confirms the departure from traditional economic development programs, previously focused mainly on the development of individual firms. The policy of cluster development is based on the recognition of the predominant importance of organic relationships between firms and industries.

#### ***Analysis of research and publications on the topic of work***

The concept of clusters was considered by foreign and domestic researchers. One of the founders of the cluster approach to the organization of industrial production is M. Porter, who defined the industrial cluster as a set of interacting industries, where one side is the buyer and the second is the supplier [1]. The problem of clustering is considered in the works of domestic researchers. V. Ilchuk and I. Lysenko [2] consider clustering as an effective way of modernizing the productive forces of problem regions and justify the expediency of forming clusters based on consideration and improvement of interactions between the government, society and the entire physical and intellectual potential of the territories.

Clusters are also devoted to the work of economists: V. Agafonov, M. Afanasiev, A. Buriak, N. Vlasova, M. Voinarenko, A. Voronov, D. Grushevskiy, M. Dryho, V.I. Dubnytskyi, B. Yernzian, R. Kachalov, K. Ketels, G. Kleiner, A. Kudinov, J. Lavrykov, E. Lurie, E.A. Monastyrniy, L. Miasnikova, N. Nagrudna, V. Osipov, O. Pechura, I. Pylypenko, S. Rozenfeld, V. Price, O. Romanova, Ya. Sylina, S.I. Sokolenko, N. Surnina, A. Tatarkin,

O. Williamson, D. Jacobs, D. Yalov, L. Young and others.

The purpose and formulation of the research problem. The purpose of the research is to substantiate the existing approaches to assessing the performance of industrial clusters.

#### ***Presentation of the main research material***

The development of clusters was caused by the need to create a new class of production systems in the conditions of globalization and regionalization of economic activity. The practice of the 90s of the twentieth century demonstrated the successful work of a large number of different clusters and networks of companies, which proved their competitive advantages in comparison with traditional structures. The choice of the best territory for business activity is determined by the difficult task: to place and realize a business and its progressive ideas in the most favorable place, based on the need to create a synergistic effect from the aggregate relationship of relationships that far exceed the capabilities of an individual company.

This was made possible by the innovations in information technology that contributed to the emergence of global networking systems, as well as facilitated access to developed and emerging markets, triggered the chain reaction of international mergers and globalized consumer culture. Obviously, the value of the synergy effect will eventually increase.

Industrial clusters, known in the business world as network structures for new business ties, combine competing manufacturers and suppliers with business-oriented research institutes, public and private funding sources with government agencies for economic development, as well as with new institutes specially created for the implementation of clusterization (Fig. 1).

An industrial cluster can be characterized as a group of manufacturing enterprises and non-productive organizations, for which membership in the cluster is an important means of strengthening individual competitiveness. As a rule, a group of nonprofit organizations includes industry associations, higher education institutions, in particular universities involved in the implementation of special industrial programs, state institutions of advanced training, brokerage network structures, etc. Associates in auxiliary institutions, these organizations are often found to be the most important link in achieving cluster desirable success.

In practice, the detection and clear delineation of the boundaries of an industrial cluster often becomes an extremely difficult task. In solving this problem it is necessary to take into account the objectives of the competition policy laid down in the cluster. The main characteristics of the cluster participants may have a very wide range of

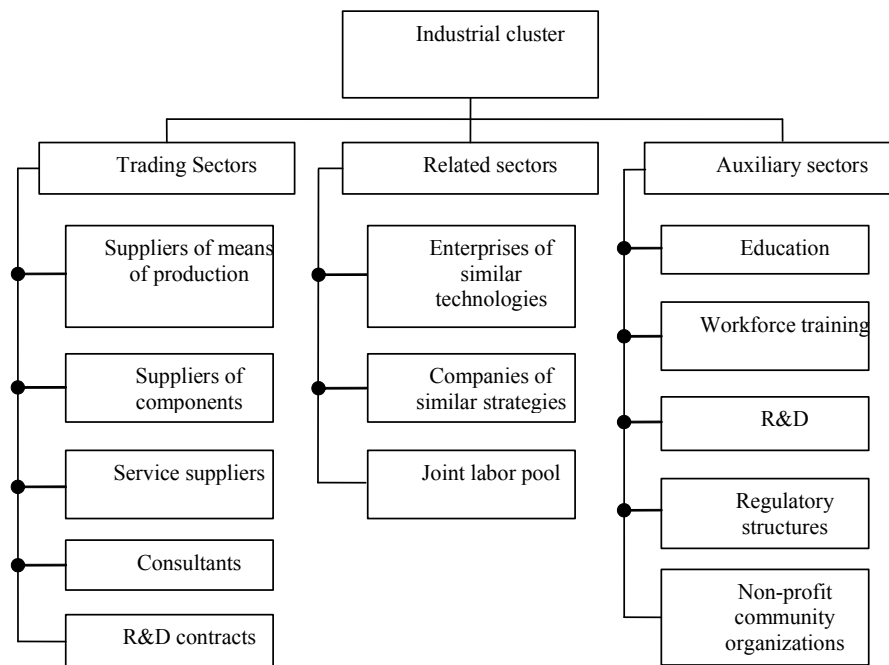


Fig. 1. Industrial cluster and interdependence of firms and institutions

differences. At the same time, the methodological framework dictates the need to apply constraints on these differences in the formation of the cluster.

If the concept of the cluster was developed in one way, and the evaluation of the effectiveness of the other, there may be serious problems and even disruptions in the implementation of the main directions of the cluster's development. Regional industrial clusters include firms that are geographically concentrated, usually within the region that is part of the metropolis with active channels for business transactions, communications and dialogue, which share the use of specialized infrastructure, labor markets and services, and any other functional economic structures.

The emergence, active implementation and development of clusters is a new approach to the formation of an innovative economy. The cluster is a voluntary association of entrepreneurs who work closely with scientific institutions and local authorities in order to increase the competitiveness of their own products and promote the economic development of the region. The cluster approach allows us to combine all the benefits of cooperation between companies and deepen their specialization, creating a significant multiplier effect in the economy [3]. Industrial cluster – a set of firms and enterprises, associated with the only information, financial and material flows. The most important feature of an industrial cluster is the combination of competition and cooperation between participating firms. Close cooperative relationships between firms in the cluster lead to positive synergistic effects, so the success of

one firm in the cluster is inseparable from the overall cluster success [4]. The cluster model consists of four blocks:

- 1) the core;
- 2) suppliers;
- 3) consumers;
- 4) supporting infrastructure.

The main part of the cluster is the core, that is, the group of united manufacturing companies of the main product, which includes the enterprise producing the cluster product and enterprises offering the necessary services for the successful production of the final product.

In addition to the core segment of the cluster are suppliers of industrial enterprises. The impact of non-local suppliers is assessed and the development of their own suppliers is considered, thereby increasing the cluster.

The next component of the typical cluster model is consumers of the final cluster product. Consumers of the industry are divided into three groups: exports, domestic consumption, interregional supply.

The fourth block – the industrial structure includes various services, including transport and storage, educational and scientific institutions, administrative and financial support, etc. Also, the regional government, controlling the activities of the cluster and influencing it, plays an important role in the existence of this cluster.

Typical features of a successful cluster operation can usually be:

- the existence of a close relationship between

enterprises that make cluster participants more powerful than those operating alone;

- cooperation, which are incentives to find new, more sophisticated methods of work;
- orientation to the needs of the market, which is the main factor in determining the overall strategy of enterprises;
- ensuring compliance of the strategy of each individual production, the general strategy of the region’s development;
- stimulating the development of small and medium-sized businesses, the most mobile and flexible component of a market economy.

In addition, studies have shown that the conditions for the creation and operation of clusters, especially when combining small business structures, can be simultaneously the conditions for investing in promising projects based on cluster technologies.

Indeed, without an initiative it is impossible to implement even the simplest, primitive project or attract any investment; only new, original, non-standard innovative ideas can be of interest to the investor; only integration of the efforts of the authorities, business and institutions (scientific, educational, public organizations) can be a condition for successful attraction of investments into this territory (city, district, region); Without exchanging information about the potential of the region, its priorities, investment attractiveness and prospects of development it is impossible to receive any investment proposal from potential investors; and finally, only the economic interest from the invested capital can be a guarantee of the successful implementation of any real investment project (Fig. 2) [5, c. 27-31].

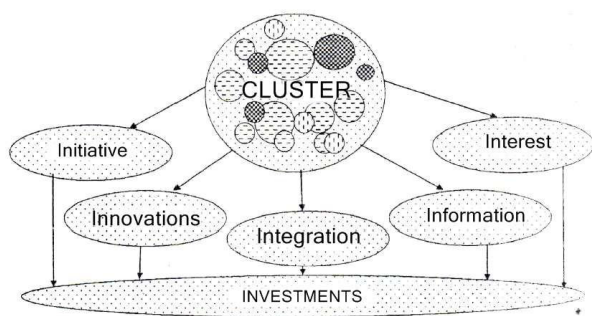


Fig. 2. Terms of investment on the basis of cluster technologies

The activity of the cluster, according to Rodionova L.M., Khayrullin R.F, should be aimed primarily at the generation of new investments, that is, the creation of «additional investments», which is the main strategy of the cluster’s development [6]. In order to assess the effectiveness of the measures taken, it is necessary to periodically assess the impact of the cluster on the development of the investment potential of the enterprise.

In fig. 3 shows the components of the successful work of cluster associations, where the first triangle, which significantly influences the formation of clusters, includes concentration, communication and competition, and the second, favorable to qualitative changes resulting from the creation of clusters – specialization, cooperation and synergy [7].

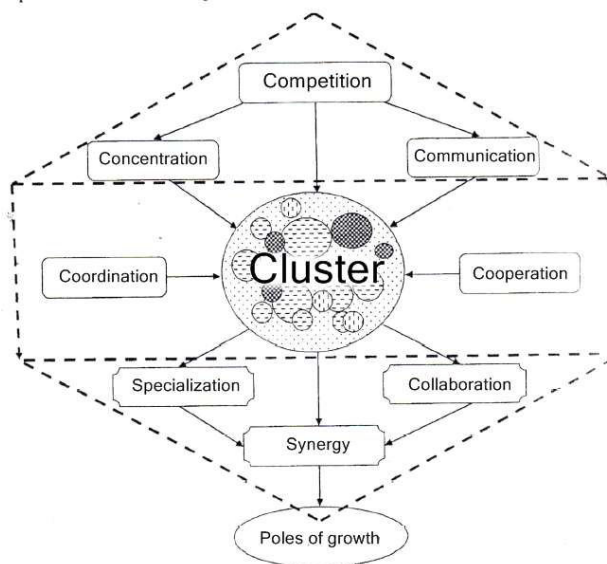


Fig. 3. Components of the successful work of cluster associations

Considering the practice of applying a cluster approach in developed and developing countries, the following important point should be noted: there are no common, universal approaches and schemes for the development of territorial-sector clusters.

In foreign and domestic practice, two main approaches to the formation of territorial-branch associations were formed. Proponents of the first approach allocate a number of factors that determine the cluster-forming potential of the territory as a whole, regardless of the type of association and without considering the specific conditions for its functioning.

Approach Yagolnitsar M.A. and Markov L.S. provides that the implementation of cluster policy measures should be carried out both on the macroeconomic (national, federal) and the meso- and the microeconomic (sub-national, regional, interregional) levels. To the tasks of cluster policy at the macro level researchers identified the creation of the most general structural regulatory, legal, socio-cultural, infrastructural and other conditions.

There are two key approaches to clustering: endogenous and exogenous [8].

The endogenous approach to clustering assumes that the formation of a cluster occurs without targeted

support from the state authorities. Under this option, the formation of a cluster occurs as a secondary result of repeated recurring economic exchanges, between economic agents that are localized in a defined territory. None of these agents can not only have a significant effect on the result, but also does not intend to match the resulting result – the cluster. However, in today's conditions it is practically impossible to identify at least one cluster that would evolve independently of measures taken by the state's economic policy. Although these instruments are characterized by varying degrees of effectiveness of the state's interference in the system of economic exchanges, there are grounds for asserting the exogenous nature of the formation and development of clusters as an important institution of a market economy, even if the state chooses an «observational» option of cluster policy [9].

External factors are very important in the context of ensuring the sustainable development of the cluster. There are two basic options for the participation of the authorities in the development of clusters:

- 1) full cycle;
- 2) fragmental support.

The full cycle option implies that the state has a long-term plan for the development of the territory, taking into account sectoral specialization and mechanisms for adjusting the initial plan, depending on the circumstances. In this case, the conditions that are created for companies that are potential leaders, «generators» of cluster development are essential.

According to the fragmentary support provided by the authorities for the development of clusters, there is an occasional influence of the authorities on the development of the cluster, rather than on individual clusters or segments based on the principle of sectoral, territorial or other affiliation.

Business networks and clusters of firms are elements of the globalization of one order. The common features in them are more than the differences between them.

The network can be defined as a group of companies that are combined to use their features, resources, specific advantages over others for the joint operation in the implementation of joint mutually beneficial development projects. Thus, through the specialization and complementing each other, the companies united in the network solve common problems and get the opportunity to achieve higher collective efficiency and productivity, successfully master the markets.

Informal (soft) networks are created if firms combine to solve a limited number of tasks, for example, for the exchange of information, ideas, educational programs (that is, when there is a lot of

firms going together and little obligation). Formal networks (solids) arise when the association puts much more serious, material goals. For example, it is planned to carry out joint export, create a joint venture in the future, etc. (that is, when a small number of firms combines and their brutal selection is carried out). The idea of a business network is not new. Their predecessors were trade associations, clubs, consortia, lobbying groups. Networks are still a product of the 90s. And those networks whose goal was production of value added, have become key components in the creation of clusters.

Clusters, unlike business networks, combine a much wider range of participants, including support institutes, manufacturing and commercial structures, including manufacturers, component suppliers, distributors, as well as regional and national governments. It is possible both industry and geographic concentration of enterprises that are part of the cluster. Within the clusters, the emergence of network structures as a social and commercial plan is practiced. First of all, it results in the effect of potentially competitive economies, as there are bullets of specialized suppliers of raw materials and components, as well as bullets of companies with innovative technologies. In addition, within clusters there are business networks of companies providing technical, administrative and financial services.

Clusters create a unique ground for the development of innovation activities, increase productivity and profitability of the sector of small and medium enterprises. In a globalized by regional structures which can not based on cluster analysis to form clusters in danger of losing competitiveness and market stability. However, clusters are often informal structures. Active clustering reduces the isolation of various companies (from small to large organizations), strengthening ties between firms, leading to increased productivity and innovation.

Clusters are a true child of globalization, increasing the role of regions, creating prerequisites for the flow of foreign investment, training a wide range of entrepreneurs and the powerful development of small and medium enterprises, increasing flexibility and mobility of companies, creating a wide range of network structures. Clusters at the same time act as a forum in which the dialogue between business, government and academia is conducted on ways of developing competitive advantages within the city, province, state, country and even at the supranational level. In conditions of the rapid development of complex export-oriented network structures (Fig. 4), interacting with each other and combining production processes into one, simultaneously carried out the differentiation of labor on a global scale, expressed in the existence of innumerable individual forms.

In the modern economy, the growing role of

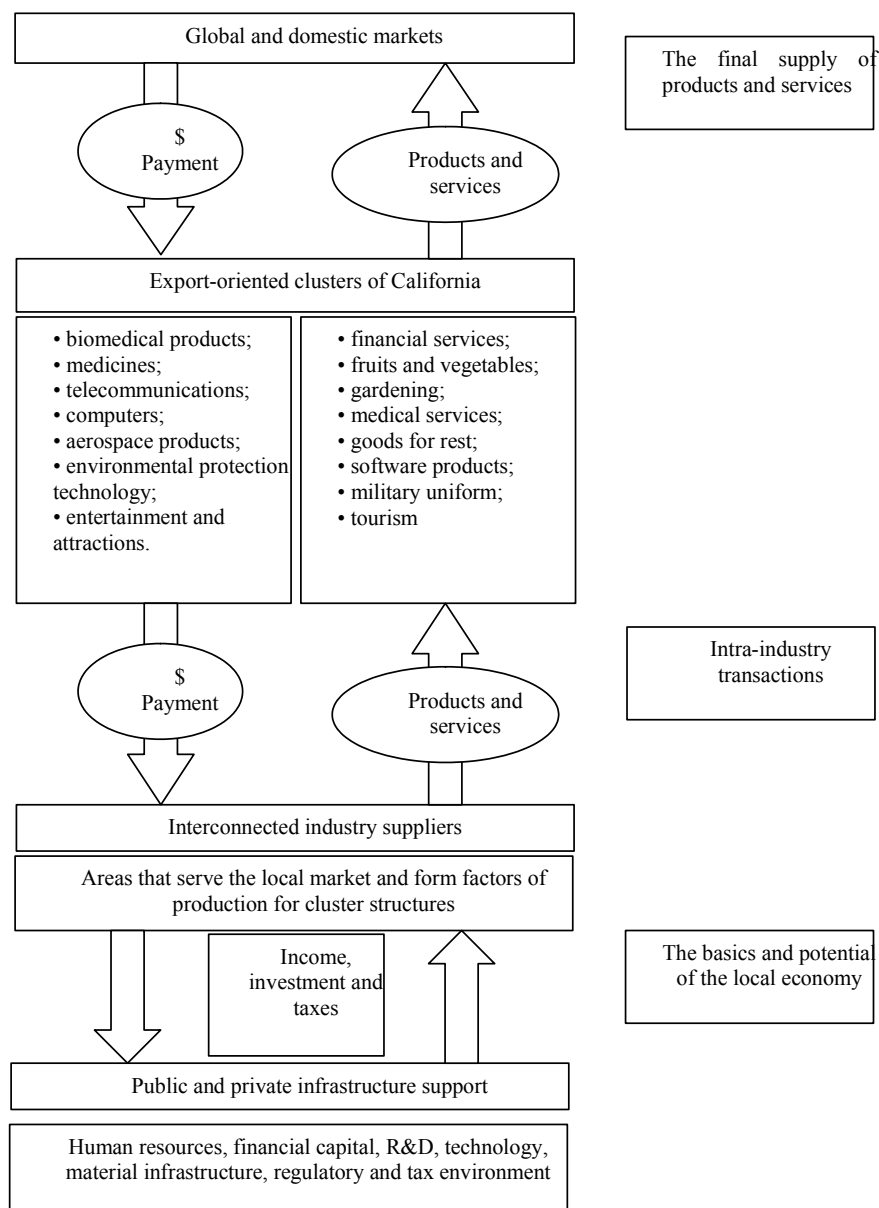


Fig. 4. Modern export-oriented economy, based on clusters that stimulate economic activity

information is not stopped. Information includes data, the meaning of economic indicators used in economic processes and in making economic decisions.

There are several approaches that assess the effective functioning of the cluster. These approaches are described below.

The added value in the final product for industrial clusters plays a key role and is an important criterion for the development of a cluster. Often, added value arises through the introduction of innovations to obtain a positive effect by the end user. This approach can be viewed as an approach whose goal is to improve the cluster's activities so that at the output for the final consumers the quality of goods and services is top notch and the range of

products provided is diverse. At the same time, the goal is also to achieve an increase in the cost of business units of the industrial cluster.

With this approach, enterprises of industrial clusters interact with each other more closely in various areas (logistics, sales, procurement, etc.), using information technology. This interaction generates a reduction in the level of conflicts between enterprises and brings closer to equality of interests. Achieving equality of interests is possible by considering and applying the principle of equality in the rate of profit. The rate of profit is the ratio of the profit received for the year to the total advanced capital. The application of this principle will ensure the equality of the economic interests of all enterprises in the cluster. The profit of all enterprises included

in the cluster is calculated by the formula (1):

$$\Pi p = \frac{R \times (OPF + OC)}{100}, \quad (1)$$

where  $R$  – is the average profitability of products,  $OPF$  – the main production assets that were used in the production of products,  $OC$  – the standard of working capital.

The cluster management approach is called process approach and involves the accumulation and concentration of resources with the most efficient way to use them in order to achieve the goals. Business processes, ensuring the implementation of management functions, involve the submission of descriptions of these functions, taking into account the causal relationships, which distinguishes the process from functional approach. These approaches complement each other and the result of their integration should be an effective organizational structure of the functional area and the order of interaction between structural subdivision.

The economic efficiency of cluster activities is influenced by the correct distribution of investments. Using the law of the balance of distribution of material resources, for the cluster we obtain the formula (2):

$$K_{\alpha}^{\beta} = (K - K^{\beta}) \times \exp\left(\frac{h_{\alpha} - f_{\alpha}}{r}\right), \quad (2)$$

where  $K_{\alpha}^{\beta}$  – is the optimal share of the resources of each enterprise included in the cluster, number  $\alpha$ ;  $K - K^{\beta}$  – the need for resource  $\beta$ , taking into account the deduction of surplus production;  $h_{\alpha}$  – rate of return;  $r$  – is the interest rate;  $f_{\alpha}$  – a possible negative effect of the scale.

The negative effect on the scale of production is reflected in an increase in marginal costs with an increase in production and depends on the volume of consumed resource  $\beta$ .

Evaluation of the effectiveness of the economic cluster can be made using information on cash flows (3):

$$E_k = \frac{\sum_{i=0}^T \frac{DP_i^t}{((1+d) \times (1+p))^t} - \sum_{i=0}^T \frac{DO_i^t}{((1+d) \times (1+p))^t}}{\sum_{i=0}^T \frac{K_i^t}{((1+d) \times (1+p))^t}}. \quad (3)$$

where  $E_k$  – is the efficiency of the cluster, which is considered;  $DP_i^t$  – cash flow received by the  $i$ -th

enterprise for a certain period of time  $t$ ;  $DO_i^t$  – cash outflow carried out by the  $i$ -th enterprise for the period of time  $t$ ;  $K_i^t$  – capital investments made by the  $i$ -th enterprise for a certain period of time  $t$ ;  $d$  – annual bank deposit interest rate;  $p$  – is the annual rate of inflation.

When assessing the coefficients of significance of enterprises from an economic point of view, considering the economic indicators, it is necessary to estimate the values of the necessary indicators, not taking into account the enterprise that is being considered, which will allow us to define an algorithm for directional search for the optimal structure. The significance of an enterprise that is part of an industrial cluster is estimated relative to the loss of any performance indicator. For example, it is impossible to quantify the innovation potential. But the significance of enterprises in terms of innovation potential can reach a high level, since their high scientific potential can influence the introduction of innovations in the cluster and increase competitiveness.

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Information cluster – is a aggregate of enterprises producing and providing information. The core of the information cluster consists of mass media (magazines, newspapers, Internet communities, television, etc.), information and marketing agencies, reference services, etc. In addition to the core, the information cluster includes a focal point and non-profit partnerships to support entrepreneurship. The composition of buyers and enterprises of the information cluster is different from industrial cluster. These may be different consumers of different fields of activity and different firms and enterprises from different clusters.

The interaction of the industrial cluster with the information is presented on Fig. 5.

Figure 5 shows the intersection of the industrial and information cluster, where government institutions and structures are common, etc.

Both in the industrial as in the information

cluster, there is a non-stop movement of both the core components and the subsidiary companies.

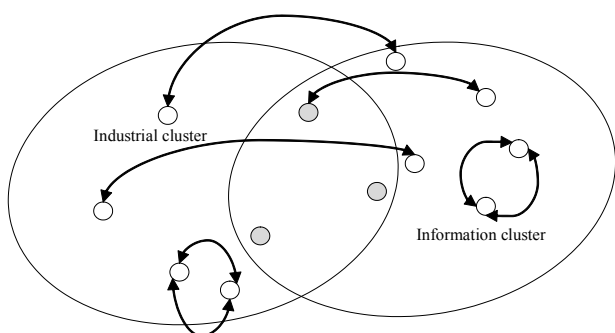


Fig. 5. The interaction of industrial and information clusters

One of the important purposes of clustering – is to increase the competitiveness of each company that is included in the cluster, increase the competitiveness of production and the stable functioning of the elements of the entire system. The share of final products in the total sales of similar products is the main indicator of competitiveness. The approach related to the competitiveness of enterprises links finding effective ways to interact with suppliers and the efficiency of the cluster. Considering these interactions as chains of individual elements, one can increase competitiveness.

The industrial cluster focuses on intra-sector competition. At the same time, a cluster can consist of different actors, resources and activities, which are combined together for the development, production and sale of various types of goods and services. In contrast to a regional cluster, it has a tendency to have wider boundaries, possibly covering the entire region or country [11].

Consequently, the main factors contributing to increasing competitiveness through clustering are the following:

- in clusters, competing enterprises begin to cooperate, increasing the economic potential of each enterprise ultimately;
- the additional competitive advantages of the cluster members are derived from the created favorable geographical position;
- effective cluster activity provides an opportunity to attract international investment;
- obtaining a synergistic effect.

The use of industrial clusters implies that the cluster's implementation as a form of enterprise organization will be economically efficient for all participants, for example, cluster enterprises expect their cost, profitability or profit to rise.

Not only for enterprises, but also for regions, the creation and functioning of a cluster provides a number of indicators:

- 1) increasing the competitiveness of enterprises

in the industrial cluster;

- 2) an increase in the production of goods and services;
- 3) faster development of the innovation sector of the economy;
- 4) increase in the number of enterprises and companies in the region;
- 5) employment growth;
- 6) the growth of investment in the regional economy.

### Conclusions

Based on the results of work on the consideration of approaches to the formation and management of an industrial cluster, it is advisable to formulate a conclusions.

Both in the information and in the industrial cluster, there is an uninterrupted movement of not only the main elements of the cluster, but also the auxiliary enterprises.

In general, an analysis of approaches to the formation of clusters in the economic system makes it possible to draw two important conclusions: 1) when studying the preconditions for territorial-branch associations to take into account both the factors of macro and microeconomic assistance to the formation of new forms of business associations; 2) cluster policy is an integral part of regional economic policy, and thanks to the use of instruments of industrial, innovation and investment policies, it allows to form a qualitatively new set of competitive advantages of the territory.

In our time, questions about sustainable economic growth in the region and raising the level of competitiveness are relevant and significant, since the growth of competitiveness is associated with an increase in innovation and investment activity. The use of the cluster approach can improve the competitiveness of the regional economy.

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## МЕТОДИЧНІ ПІДХОДИ ДО УПРАВЛІННЯ ПРОМИСЛОВИМИ КЛАСТЕРАМИ

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В роботі розглядаються методологічні підходи до управління промисловими кластерами, практика розвитку яких стає найбільш популярною у світовому співтоваристві як на міжнародному, так і національному та регіональному рівнях. Промисловий кластер можна охарактеризувати як групу виробничих підприємств і невиробничих організацій, для яких членство в кластері є важливим засобом посилення індивідуальної конкурентоспроможності. Розглянуто теоретичні засади формування моделі кластера з чотирьох блоків та визначено характерні риси успішної роботи кластерів. Обґрунтовано ключові підходи до кластеризації промислових підприємств: ендогенний та екзогенний. Показано підтримку владою розвитку кластерів в контексті забезпечення стійкого розвитку кластера. В роботі обґрунтовано, що кластери, на відміну від ділових мереж, поєднують значно ширше коло учасників, зокрема інститути підтримки, виробничі і комерційні структури, серед яких виробники, постачальники компонентів, дистриб'ютори, а також регіональні і національні уряди. Можлива як галузева, так і географічна концентрація підприємств, що входять у кластер. Надані в роботі схеми розкривають сутність промислового кластера, відображають умови інвестування на засадах кластерних технологій та наочно демонструють складові успішної роботи кластерних об'єднань. Розглянуто декілька підходів до оцінювання ефективності функціонування кластера. Виділено окремий інформаційний кластер, який являє собою сукупність підприємств, які виготовляють та надають інформацію. Показано відмінність промислового та інформаційного кластерів, а також їх взаємодія, яка відображена на схемі за допомогою перетину, та визначено загальні підприємства для двох кластерів. В роботі визначені основні фактори, які сприяють підвищенню конкурентоспроможності підприємства за рахунок кластеризації. Активна кластеризація зменшує ізолюваність підприємств різного рівня, зміцнює міжфірмові зв'язки, веде до зростання продуктивності та інноваційності.

**Ключові слова:** промисловий кластер, інформаційний

кластер, кластерні технології, мережеві структури, інвестиції, ефективність діяльності кластера.

## МЕТОДИЧЕСКИЕ ПОДХОДЫ К УПРАВЛЕНИЮ ПРОМЫШЛЕННЫМИ КЛАСТЕРАМИ

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В работе рассматриваются методологические подходы к управлению промышленными кластерами, практика развития которых становится наиболее популярной в мировом обществе как на международном, так и национальном и региональном уровнях. Промышленный кластер можно охарактеризовать как группу производственных предприятий и производственных организаций, для которых членство в кластере является важным средством усиления индивидуальной конкурентоспособности. Рассмотрены теоретические основы формирования модели кластера из четырех блоков и определены характерные черты успешной работы кластеров. Обоснованно ключевые подходы к кластеризации промышленных предприятий: эндогенный и экзогенный. Показано поддержку властями развития кластеров в контексте обеспечения устойчивого развития кластера. В работе обосновано, что кластеры, в отличие от деловых сетей, объединяющих значительно более широкий круг участников, в частности институты поддержки, производственные и коммерческие структуры, среди которых производители, поставщики компонентов, дистрибьюторы, а также региональные и национальные правительства. Возможна как отраслевая, так и географическая концентрация предприятий, входящих в кластер. Представленные в работе схемы раскрывают сущность промышленного кластера, отражающих условия инвестирования на основе кластерных технологий и наглядно демонстрируют составляющие успешной работы кластерных объединений. Рассмотрены несколько подходов к оценке эффективности функционирования кластера. Выделен отдельный информационный кластер, который представляет собой совокупность предприятий, производящих и предоставляющих информацию. Показано отличие промышленного и информационного кластеров, а также их взаимодействие, которая отражена на схеме с помощью сечения, и определены общие предприятия для двух кластеров. В работе определены основные факторы, способствующие повышению конкурентоспособности предприятия за счет кластеризации. Активная кластеризация уменьшает изолированность предприятий разного уровня, укрепляет межфирменные связи, ведет к росту производительности и инновационности.

**Ключевые слова:** промышленный кластер, информационный кластер, кластерные технологии, сетевые структуры, инвестиции, эффективность деятельности кластера.

METHODOLOGICAL APPROACHES TO MANAGEMENT OF INDUSTRIAL CLUSTERS

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*Annotation: This article is considering methodological approaches to management of industrial clusters, the practice of which is becoming the most popular in the world community both at the international and national and regional levels. An industrial cluster can be characterized as a group of manufacturing enterprises and non-productive organizations, for which membership in the cluster is an important means of strengthening individual competitiveness. The theoretical principles of forming a model of a cluster of four blocks and the characteristic features of successful work of clusters are considered. The key approaches to clustering of industrial enterprises are substantiated: endogenous and exogenous. The support of the cluster development authorities in the context of ensuring the sustainable development of the cluster is shown. It is substantiated that clusters, unlike business networks, combine a much wider range of participants, including support institutes, manufacturing and commercial structures, including manufacturers, component suppliers, distributors, as well as regional and national governments. It is possible both industry and geographic concentration of enterprises that are part of the cluster. The schemes presented reveal the essence of the industrial cluster, reflect the investment climate on the basis of cluster technologies and demonstrate the components of the successful work of cluster associations. Several approaches to assessing the efficiency of a cluster function are considered. A separate information cluster is provided, which is a collection of enterprises that produce and provide information. The differences between industrial and informational clusters as well as their interaction, which is represented by the scheme through the intersection, are shown, and the general enterprises for the two clusters are defined. The article identifies the main factors that contribute to increasing the competitiveness of the enterprise due to clusterization. Active clustering reduces the isolation of enterprises at different levels, strengthens inter-agency relationships, leads to increased productivity and innovation.*

**Keywords:** industrial cluster, information cluster, cluster technologies, network structures, investments, cluster efficiency.

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