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CLUSTER EDUCATION MANAGEMENT CONCEPT THROUGH THE PRISM OF FINANCIAL RISK OPTIMIZATION AND RESOURCE SUPPORT

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Introduction and purpose of the study. In modern conditions of the present, the concept of managing cluster entities through the prism of optimizing financial risks and resource support is impossible without a detailed study and analysis of the system for creating, organizing, and effectively operating cluster entities, which encourages innovative methods, combining the integration of production, financial, human and information resources, optimization of risk events that will ensure the implementation of an innovative breakthrough, economic recovery, and competition abilities and functioning of all social and economic spheres of the country.

The hypothesis of scientific research. The concept of managing cluster entities through the prism of optimizing financial risks and providing resources will help to counter undesirable negative economic consequences, help strengthen the competitiveness of entrepreneurs and manufacturers, make full use of the resource potential and optimize financial risks.

The aim of research: an in-depth study of the mechanism for controlling the process of clustering by cluster formations; definition, classification and optimization of financial risks and resource support, ensuring the implementation of an innovative breakthrough, economic recovery, competitiveness and functioning of all socio-economic sectors of the country, and investment – innovative attractiveness.

Methods of research: general scientific and special methods of scientific research: concretization and abstraction – for a consensus definition of the concepts of "risk"

and "cluster"; groupings – to systematize approaches to managing cluster entities through the prism of optimizing financial risks and resource support; logical generalization and comparison – to evaluate the concept of managing the process of clustering and risk optimization; analysis and synthesis – in the study of resource potential and its components.

Results: it was found that in the current conditions of constant competitive confrontations, the effectiveness of cluster entities through the prism of optimizing monetary risks and resource support should be based on continuous monitoring of areas of improvement in the management of production, financial, innovative, human and information resources.

Conclusions: the optimization of the processes of creating and using the resource potential and the formation of a production resource management system has been established. The creation of a system for managing the resource base or resource potential of cluster entities involves the identification and management of the resource potential of participants in cluster interaction, strategic opportunities that can increase the competitiveness of the cluster, and establish reserves for development. The formation of this system is due to the emergence of resource strategies, the justification of acceptable levels of risk for the use of resources, taking into account the maximum possible return.

Keywords: concept; mechanism; management; clustering; optimization; financial risks; resource support; potential; entrepreneurship; cluster.

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**КОНЦЕПЦІЯ УПРАВЛІННЯ
КЛАСТЕРНИМИ УТВОРЕННЯМИ
ЧЕРЕЗ ПРИЗМУ ОПТИМІЗАЦІЇ
ФІНАНСОВИХ РИЗИКІВ ТА
РЕСУРСНОГО ЗАБЕЗПЕЧЕННЯ**

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Вступ і мета дослідження. В сучасних мінливих умовах сьогодення концепція управління кластерними утвореннями через призму оптимізації фінансових ризиків та ресурсного забезпечення неможлива без детального вивчення та аналізу системи створення, організації ефективної діяльності кластерних утворень, яка спонукає до інноваційних методів поєднання інтеграції виробничих, фінансових, людських та інформаційних ресурсів, оптимізації ризикових подій, що забезпечать реалізацію інноваційного прориву, економічного підйому, конкурентоспроможність та функціонування усіх соціально-економічних сфер країни.

Гіпотеза наукових досліджень. Концепція управління кластерними утвореннями через призму оптимізації фінансових ризиків та ресурсного забезпечення дозволить протистояти небажаним негативним економічним наслідкам, сприяти посиленню конкурентоспроможності підприємств-виробників, повному використанню ресурсного потенціалу та оптимізації фінансових ризиків.

Мета: поглиблене дослідження механізму управління процесом кластеризації, кластерними утвореннями; визначення, класифікація та оптимізація фінансових ризиків та ресурсного забезпечення, що забезпечать реалізацію інноваційного прориву, економічного підйому, конкурентоспроможність та функціонування усіх соціально-економічних сфер країни та інвестиційно-інноваційну привабливість.

Методи дослідження: загальнонаукові і спеціальні методи наукового дослідження: конкретизація та абстрагування – для

консенсусного визначення понять «ризик» та «кластер»; групування – для систематизації підходів до управління кластерними утвореннями через призму оптимізації фінансових ризиків та ресурсного забезпечення; логічне узагальнення та порівняння – для оцінки концепції управління процесом кластеризації та оптимізації ризику; аналіз та синтез – при дослідженні ресурсного потенціалу та його складових.

Результати: встановлено, що у сучасних умовах постійних конкурентних протистоянь ефективність кластерних утвореннями через призму оптимізації фінансових ризиків та ресурсного забезпечення має відштовхуватися від безперервного відстеження напрямів удосконалення системи управління виробничими, фінансовими, інноваційними, людськими та інформаційними ресурсами.

Висновки: встановлено, що оптимізація процесів створення і використання ресурсного потенціалу та формування системи управління виробничими ресурсами. Створення системи управління ресурсною базою або ресурсним потенціалом кластерних утворень передбачає виявлення та управління ресурсним потенціалом учасників кластерної взаємодії, стратегічними можливостями, які спроможні підвищити конкурентоспроможність кластеру, встановити резерви розвитку. Формування цієї системи зумовлене виникненням ресурсних стратегій, обґрунтуванням допустимих рівнів ризику за використання ресурсів, ураховуючи максимально можливу віддачу.

Ключові слова: концепція; механізм; управління; кластеризація; оптимізація; фінансові ризики; ресурсне забезпечення; потенціал; підприємництво; кластер.

Formulation of the problem. In modern conditions of the present, the concept of managing cluster entities through the prism of optimizing financial risks and resource support is not possible without a detailed study and analysis of the system for creating, organizing the effective operation of cluster entities, which encourages innovative methods of combining the integration of production, financial, human and information resources, optimizing risk events that will ensure the implementation of an innovative breakthrough, economic recovery, a competitor capacity and functioning of all social and economic spheres of the country [15]. On the way to the clustering process, certain obstacles can and will arise associated with the process of implementing the mechanism of cluster associations. However, overcoming these obstacles will allow in the future to confront undesirable negative economic consequences, contribute to enhancing the competitiveness of entrepreneurs, manufacturers, making full use of the resource potential and optimizing financial risks [8]. The fact that so far there is no single methodology for assessing, analyzing and optimizing financial risks [4–5], therefore, there is a reasonable need for further study of the risk management system of business entities through the prism of optimizing financial risk taking into account their current financial state and market conditions [6]. This becomes possible only if criteria and alternative ways of optimizing financial risk are prioritized.

Analysis of recent research and unresolved part of the problem. Clustering, strategic management, optimization of risks and resource potential have been given the attention of many academic economists, both domestic and foreign: V.V. Vitlinsky, V.G. Scherbak, C. Florio and J. Fraser treat risk as an economic category, which is inherent in the activities of business entities and is associated with the perception and overcoming of uncertainty, conflict in situations of goal-setting, evaluation, management, inevitable choice. The risk has a dialectical objectively subjective structure, the qualitative and quantitative risk analysis, a system of indicators for its quantitative assessment, the main approaches to modeling, management and methods for reducing the degree of risk are defined by the conceptual aspects of riskology [1–2]. The next group of scientists: I.A. Martinyak, A.M. Sorvanets, D.A. Palekh, S.A. Pustovgar, I.Yu. Rudz, N.L. Owander, Z.V. Yurinets, M.J. Enright, S. Hammoudeh, M. McAleer, Ö. Sölvell, G. Lindqvist, Ch. Ketels. We paid attention to such issues as: the formation of a cluster policy as a mechanism for improving the infrastructure for the functioning of small and medium innovative businesses in the region; risks of formation and functioning of a cluster model of development of organizations; methods of neutralizing financial risks in business activities; economic risk assessment; factors to minimize the financial risk of an enterprise cluster; development of a risk management system for the financial services market; enterprise risk management in a cluster environment; formation of a

cluster policy of the region; HR risks in the personnel management system; uncertainty and risk in the business activities of an industrial enterprise; formation of an integrated risk management system by transnational corporations; organization of cluster activity in the direction of improving the management of production resources [3, 6].

The aim of research. Explore the mechanism for controlling the process of clustering, the functioning of cluster formations; identify, group and optimize financial risks and resource support, which will allow for the implementation of an innovative breakthrough, economic recovery, achievement of competitiveness and effective functioning in all socio-economic spheres of the country, and increase investment and innovation attractiveness.

Results of the investigation. A cluster is a group of geographically neighboring interconnected companies and related organizations operating in a certain field and mutually reinforcing. A cluster is a community of economically closely related and closely located companies of related profile, mutually contributing to the overall development and growth of each other's competitiveness [7, 8]. All cluster members, by definition, interact with each other within a single value chain. An enterprise that is part of a cluster operates at risk, just like other enterprises that are not part of a cluster.

Risk is the probability of favorable and unfavorable consequences that may occur during the implementation of the selected alternative solution in the face of uncertainty [1]. There are a large number of types of risks in the risk management literature, however, such risks of cluster functioning are separately distinguished as shown in Figure 1.

To manage risk, an enterprise that is part of a cluster can carry out restructuring in order to adapt in response to changes in the external and internal environment of the enterprise. Thus, enterprise restructuring can be defined as a significant change in the composition of the company's assets, combined with large changes in its corporate strategy [8–10]. An enterprise that is part of a cluster can carry out the following types of restructuring:

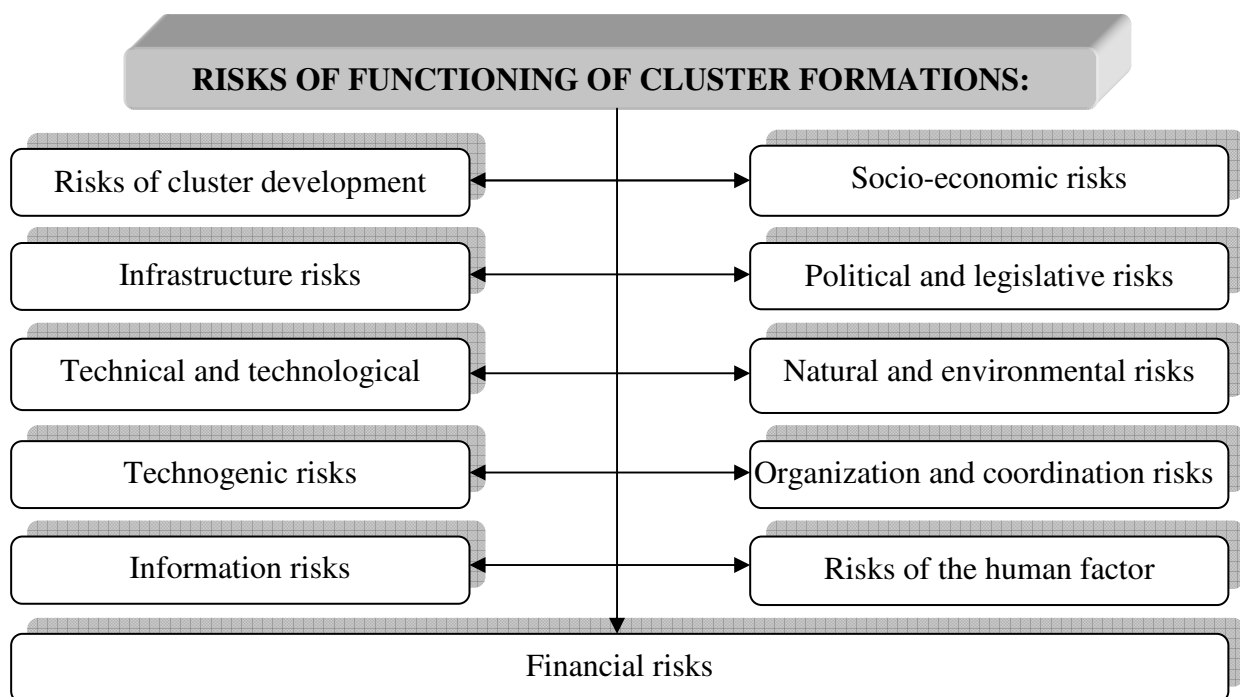
a) enterprise reorganization is a merger; joining; separation; discharge; transformations;

b) the restructuring of the enterprise, which does not affect the rights and obligations of the legal entity – this is the creation of a new structural unit, the liquidation of the enterprise unit, the merger of structural units, the creation of a subsidiary.

Thus, the restructuring does not violate the relationship of the cluster enterprises and allows you to manage the risks of the enterprise and the cluster as a whole. It should be noted that enterprise restructuring is not always suitable for managing some external risks, for example, political and legislative, technological, social, etc., but, nevertheless, restructuring can be used to adapt

the enterprise as a response to the impact of an unfavorable environment (risk) [8].

Fundamental in identifying clusters is their ability to generate positive synergy based on consistent behavior and internal relationships [3, 12–14]. The occurrence of a synergistic effect in each particular cluster depends on a whole set of factors, among which the most important are: the number of participants, the number and qualifications of employed workers, the availability of resources, the presence of zones of coincidence of economic interests, the quality of management, the availability of capital and information flows, state support [3].



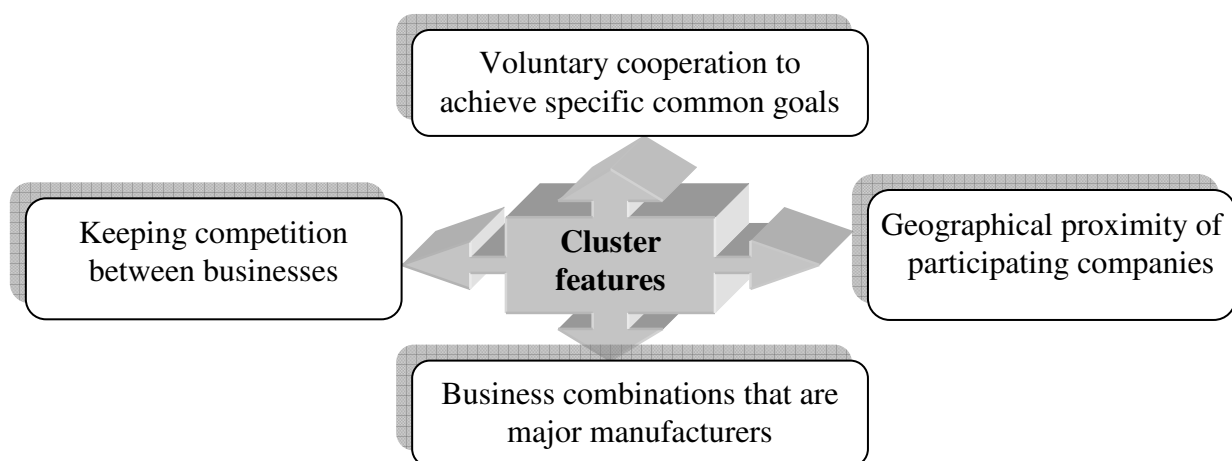
Source: supplemented by the author based on [1, 3].

Figure 1. The main types of risks of the operation of cluster associations

Modern entrepreneurship causes the spread of cluster formations, which in turn leads to the need for research and analysis of risks, their formation and functioning. In this case, the main signs of the cluster are (Figure 2).

Thus, the cluster approach to the development of business processes and regions provides obvious advantages, allows you to reduce certain risks and achieve significant effects. The risks of forming clusters of enterprises in practice are often caused by a formal attitude to their formation, which is caused not by the realization of economic necessity, but by the desire to receive certain state bonuses [3, 8, 11–13]. To identify and conduct a detailed study of the nature of the risks that affect the functioning of cluster structures, it is advisable to distribute them into general entrepreneurial and specific cluster ones. Of

course, the formation and functioning of clusters is associated with many common entrepreneurial risks that are characteristic of any organizational and legal forms of companies. Analysis of the conditions for the formation and functioning of industrial clusters allows us to identify two traditional areas of risk: the external and internal environment of the cluster, which determine the stability and effectiveness of cluster formation. In this case, environmental risks should be considered at four levels: global, national, regional and industry. Risks of the internal environment are risks arising at the micro level in the structure of a separate cluster between participants and in the business model of a direct participant enterprise. The identification of various risk levels is determined by the specifics of the clusters: attracting a significant number of participants who collaborate on the basis of the value chain of value creation, the absence of clear organizational boundaries, maintaining the organizational independence of participants, etc. [3, 8].



Source: supplemented by the author based on [1, 3].

Figure 2. The main signs of the cluster

Moreover, the creation and functioning of cluster formations is accompanied by a number of risks that can be considered purely cluster, and which create the possibility of more consistent and detailed management of cluster risks (making decisions on creating a cluster, choosing partners, planning and implementing a cluster project, assessing cluster synergy). Along with these risks, there may be risks directly related to the implementation of state cluster policy in the region (risks of choosing the wrong priorities for financing cluster policy measures from budget sources; risk of insufficient coordination of activities when implementing cluster projects at the national and local levels, low level of participation of executive bodies authorities in the implementation of cluster projects; risk of insufficient financial and organizational support for cluster projects; ri inefficiencies of monitoring the implementation of cluster

policy, due to the lack of a clear system of indicators to measure their effectiveness) [3, 12].

The causes of cluster risks are: the presence of different, sometimes conflicting, interests of the enterprises participating in the cluster network; the lack of a sufficient level of economic trust between partners gives rise to non-transparency of actions and incomplete information; different levels and quality of development of organizational structures of participating enterprises; the discrepancy between ethical and business standards of behavior of leaders and curators of cluster initiatives is manifested in the difficulties in achieving entrepreneurial compromises; the high dependence of the effectiveness of the functioning of the cluster network on the quality of institutional conditions: the legal basis for ensuring compliance with business agreements, the level of entrepreneurial culture, and the quality of social capital; the impact of a significant number of economic, organizational, technological, infrastructural, institutional, etc. factors on the activities of cluster enterprises. Based on this, it can be argued that in the context of clustering, a balanced and efficiently functioning risk management system is needed, based on the development of a regional cluster policy of the state [3, 14].

However, the solution of specific issues of their implementation faces many difficulties, such as: failure to meet the deadlines for the fulfillment of obligations by the parties, lack or insufficiency of the necessary resources, untimely or incomplete input of infrastructure objects of the cluster, long preparation of project documentation for the construction of various objects, underdeveloped transport infrastructure and things like that. The solution to these issues will be facilitated by the beginning of the necessary comprehensive and systematic approach to building a risk management system.

In modern conditions, enterprises in the cluster can use various methods to reduce risk that affect economic activity [4]. In the practice of foreign countries, an effective way to optimize cluster risks is the creation of venture capital enterprises and the conclusion of agreements on joint activities for especially risky projects, in particular innovative ones. The reduction or avoidance of organizational risks in a cluster network certainly contributes to [3]: a clear (legal) distribution of work and responsibility between project participants; diversification of activities and business areas, which means an increase in the number of technologies, the expansion of the range of goods and services used, orientation to various consumer groups; diversification of investments, which provides for the return on the benefits of implementing several relatively small investment projects, which requires attracting significant resources and reserves of organizations; distribution of risks over time (by stages of work), which allows to improve control. Thus, risk management should be considered as an important component of strategic cluster

management, the task of which is to identify and assess risks and manage them (Table 1).

Table 1

Grouping of cluster associations by a risk assessment method based on the principle of extrapolation of trends in a certain indicator for a certain period of time in the past

The limits of the indicator	Sphere of risk	Depending on the performance of the enterprise for a certain period (or level of losses), the risk factor is calculated as the ratio:			
		capital of the enterprise to the sum of its assets	the amount of losses up to the value of the enterprise's own funds	the expected values of losses and revenues	the difference between planned and actual results before planned
Cluster grouping by result					
0	risk-free	Category A clusters			
0–0,25	minimum				
0,25–0,5	increased		Category B clusters		
0,5–0,75	critical			Category C clusters	
0,75–1	catastrophic				

Cluster associations of category "A" – those whose activities are practically risk-free;
Cluster associations of category "B" – those whose activities are with acceptable risk;
Cluster associations of category "C" – those whose activities are questioned given the degree of risk.

Source: systematized by the author on [22].

At the same time, the risk management system should also include a program for monitoring the implementation of tasks, an assessment of the effectiveness of the measures taken, as well as a system for collecting and analyzing information at all levels of the cluster organization.

It should be noted that the cluster mechanism is considered as an innovative complex based on the concentration of production, financial, social and information resources, the activities of which enable the state to establish the pace of development of the main types of economic activity and ensure a worthy place for the country in the international division of labor [15].

The process of functioning and development of clusters, achieving the strategic goals of clusters require substantiation of effective and efficient management decisions to ensure production, financial, human, informational and other types of resources. Improving the management of the resource base is

primarily due to the constant innovative development of enterprises, regions and the country as a whole, as well as the state of management, which is the most valuable resource [15, 17–21].

To increase the efficiency of the organization of cluster activities, it should be expedient to: optimize the processes of creating and using the resource potential, the formation of a production resource management system. The creation of a system for managing the resource base or resource potential of cluster entities involves the identification and management of the resource potential of participants in cluster interaction, strategic opportunities that can increase the competitiveness of the cluster, and establish reserves for development. The formation of this system is due to the emergence of resource strategies, the justification of acceptable levels of risk for the use of resources, taking into account the maximum possible return [15–17].

The organization of the resource management system should be carried out at all levels: strategic, tactical and operational. Resource base management at a strategic level is impossible without taking into account the processes that occur in the environment. Also, as part of the development of tools and means for organizing a resource base management system, it is advisable to consider support processes at the regional and state levels.

The ambiguous solution to this is the complex problem of evaluating the functioning of clusters. The solution to this issue may include several consecutive directions: cluster identification (priority assessment), cluster activity assessment, setting and measuring the relationship between the implementation of the cluster policy and its influence on the cluster (its elements), determining the relationship between the cluster activity and its influence on the development of the territory, the formation of a single base for comparing the activities of diverse clusters [15].

Conclusions and suggestions. In the course of the study, it can be noted that resource potential is an important aspect of ensuring the strategic development of clusters, which should take place in an appropriate form, based on resource strategies. The development of resource strategies should contribute to the solution of the following tasks: establishing the long-term needs of the participants in the cluster interaction in production resources; development of progressive norms of resource consumption; the formation of measures and actions for the optimal use of production resources; application of optimal ways of implementing resource strategies. The main tasks of the concept of managing cluster entities through the prism of optimizing financial risks and resource support must determine:

✓ review, improvement and development of an effective regulatory framework for the development of various types of clusters, in particular innovative ones, due to the implementation of financial, tax, depreciation and

customs policies, coordination of the adoption and implementation of regulatory acts in time for the further development of regional infrastructure;

✓ stimulation of cooperation between the private and public sectors, ensuring the process of cooperation and integration of all entities of the cluster mechanism,

✓ the introduction of clear and effective actions for the commercialization of innovations, strengthening the innovative ability of territories;

✓ implementation of an effective system for managing production resources of cluster interaction participants;

✓ development and implementation of a clustering strategy at the state level, regional programs and projects for the formation of innovative clusters;

✓ ensuring the functioning of a regional network of consulting centers, information retrieval systems, developing a number of skills in the formation and improvement of the functioning of the information, marketing and financial support system, legal advice centers for the protection of intellectual property rights, etc.;

✓ development of cooperation of Ukrainian clusters with similar associations of other countries at different levels.

Also, it should be noted that one of the elements of the successful development of all organizational structures is highly qualified personnel and top management. It is important to organize the training of specialists in strategic management, strategic and technological change management, in particular intellectual property rights; the formation of a new training complex for managers and personnel involved in clusters; the creation of motivational mechanisms for financing training costs and the like.

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