

PRINCIPLES OF INITIATION AND ORGANIZATION OF CLUSTER ACTIVITY

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Abstract

The organization of business in cluster form represents a possibility for economic development based on innovation. Cluster system has a consistent contribution to the modernization of the economy by increasing the competitiveness of products, services and labor. This research starts from the hypothesis that knowledge of cluster creation and development phases contributes to the efficient organization of cluster management and to the enhancement of economic effects of cluster activity. The research issue is to determine the algorithm of cluster initiation and to establish the principles of its organization. The study is based on the Michael Porter's theory of competitive advantage and on the concept of regional economy promoted by Walter Isard. The scientific methods used in this article are: logical analysis, bibliographic research, and indirect observation that fit this study in the positivist epistemological approach. As a result, the mechanism for the initiation of cluster in the Republic of Moldova has been developed and the organizational principles valid for the development of the cluster activity have been established.

Keywords: *cluster, cluster management, cluster activity, innovation, competitiveness*

1. Introduction

Integration of countries into the global economy increases regional and local specialization by cooperation between companies. With globalization, appeared the necessity for affirmation in markets through competitive advantages. The specialization of supply and the concentration of resource have become imperative in the global competitive environment that has been created. In this context, clusters are a successful solution for companies, research institutions and authorities that bring benefits through intense connections, knowledge transfer, distribution networks, etc.

A new trend in recent decades is the social and green economy where prosperity is ensured by innovation, knowledge transfer and better use of resources. These priorities are set out in the Europe 2020 Strategy which sees the development of the European space through smart, sustainable and inclusive growth. Innovative development can be promoted through clusters that contribute to the modernization of the economy by increasing the competitiveness of products, services and labor.

Clusters are designed to support mainly small and medium-sized businesses and to harness their competitive advantages on the market. It is known that 90% of European countries' economy is concentrated in SMEs. The clustering process is characteristic of the developed economies; about half of these countries have concentrated their activities in clusters. There are over 2000 clusters in the European Union employing 38% of the workforce [6, p. 2]. The Republic of Moldova has an

entrepreneurial environment mainly based on SMEs, so cluster organization would be a very good solution for the development of the competitiveness of the enterprises in our country.

The importance of cluster concentration is recognized at European level. In 1990 UNIDO created the premise for economic development based on cooperation between the governments of the European states and the European private business through the cluster reunion. The Cluster Manifesto of EU countries was approved in 2006 and in 2008 was approved the European Cluster Memorandum [13]. In addition, there is a portal created by the European Commission "EU Cluster Portal" to provide support in cluster development policy and to support potential entrants in cluster activity.

2. The degree of investigation of the problem currently, and purpose of research

The benefits of business concentration have been known from Alfred Marshall. Simple knowledge transfer channels, specialization of suppliers, and workforce concentration are the main elements of superiority, seen by Marshall, for companies that are situated close to each other and operate in related areas. In 1956 Walter Isard laid the basis of the regional sciences, recognizing geographical proximity as a two-way advantage. On the one hand, Isard referred to "localization," considering the privilege of proximity of companies that operate in the same industry. On the other hand, the author considered that "urbanization" is the advantage of proximity to companies from other industries [5].

Several decades later, in 1990, Michael Porter introduced the term of "cluster" approaching the competitive advantage theory at industry level and even nation level. He defined the cluster as "a geographical concentration of companies and institutions interconnected in a certain field" [9, p. 16]. Porter (1990) argued that economic development is based not only on the factors described in the classical theory (labor, nature, capital), but also on the strategy and structure of the firm, on demand, competition and on the industrial connection (Porter's Diamond) [10].

The concept of "cluster" is used more often in the Anglo-Saxon literature; in the French-speaking literature the term "competitiveness pole" is used. Originally, there are no differences, as well as names like "industrial district" or "industrial agglomeration". In essence, the cluster can be defined as "a voluntary, territorial and sectoral voluntary association of enterprises from related sectors, aimed to improving their competitiveness and based on innovation".

Types of institutions that can be grouped into clusters are presented in two interpretations. The first is called "triple helix" and refers to the structure of a cluster that must be organized by research and development institutions (universities, laboratories), industrial companies (especially SMEs), and local, regional and central public authorities. The second interpretation is called "four clovers" and comes to complete the triple helix approach with a catalyst institution [7, p. 44-45].

The importance of the innovation-based industry development has been recognized worldwide. In recent decades, we have witnessed at the recognition of the benefits of clustering in the Republic of Moldova as well. But there is a problem that we have delineated in our country, namely the lack of a clear mechanism of initiation and carrying out of a cluster activity. Insufficient information on the opportunities for organizing cluster activity and the lack of an algorithm of actions that would guide potential willing to join clusters are the main issues in this area. The present study identifies

the phases of cluster creation and determines the basic principles of managerial activity in the cluster.

Previously, cluster-based studies have been developed, including clustering guides, but they do not contain a unified description of the steps to be followed in such a process. In 2015, Lithuanian experts conducted a feasibility study on cluster development in the Republic of Moldova [3]. In this study, a cluster development algorithm has been developed. Taking into account that the industrial enterprises of the Republic of Moldova are very little informed about the mechanism of initiating and developing a cluster, the authors considered useful to present a scheme of this mechanism. This scheme was developed to help companies avoid mistakes and protect themselves from losses.



Figure 1. Logical sequences of the development process of a cluster

Source: Clustering Developing and Promotion of Innovations in Moldova [3, p. 15]

There is a Guide to Creating and Organizing the Clusters Activity in the Republic of Belarus [6], which presents the three basic phases of the cluster creation and organization process: (1) formation of the initiative group; (2) organization of the joint meeting and decision on cluster creation; (3) organization of cluster functions execution.

Aspects regarding the development of cluster activity are also found in the Guide drafted by the Department of Commerce and Industry of England [1]. It is oriented towards public authorities that are concerned with cluster development policies at regional level.

We consider that the existing studies do not contain a comprehensive description of all phases of cluster initiation, which makes necessary an in-depth study of this field in order to elaborate a detailed algorithm for creating a cluster in the Republic of Moldova.

3. Methods and materials applied

In order to achieve the goal proposed in this study and to solve the delimited problem, we used the scientific abstraction, the bibliographic research method, the comparative analysis method, the synthesis and the logical research. In the paper there were used documents of cluster policies issued in the Republic of Moldova and other states, international studies and reports as well as guides to organizing cluster activity which exist in other countries.

In the Republic of Moldova, actions in the direction of promoting an industry based on innovative clusters were undertaken in 2013. The National Innovation Strategy "Innovations for Competitiveness" 2013-2020 and the Concept of cluster development of the industrial sector were approved. There are also a number of policy documents that support the development of cluster activity such as the 2015 Industry Development Strategy, the Governance Program "European Integration: Freedom, Democracy, Welfare", the Strategy for the Development of the SME Sector 2012-2020 and the Regional Development Strategy 2013-2015.

The utility of this study is emphasized by the fact that in Moldova there is no document drafted which concerns the cluster initiation process. We believe that this research can be used to develop a methodological guide on the creation and organization of clusters in the Republic of Moldova.

4. Results obtained and discussions

Cluster formation principles. Organizing cluster activity involves the interconnection of different companies and institutions, which implies a relation between participants on the basis of some principles. First, any association takes place due to the *principle of voluntary participation*. Each participant in the potential cluster is free to decide to be or not to be a member of a cluster. Secondly, clustering is based on the *principle of territorial localization*, which implies the concentration of a large number of participants on the territory of the same region (city, locality). Another important principle is *self-organization*, which means that participants are free to choose the form of organization, the fields of collaboration, the directions and the development strategies in the cluster. *The rational relationship between cooperation and competition* is also a principle of organizing cluster activity. Cluster's members carry out joint projects in areas of common interest, but maintain competitive relationships in other spheres of activity. The most important factor in starting a cluster is *confidence* of the partners in each other. Without mutual security and support, no joint action can be taken. The confidence is the force that contributes to the creation and development of clusters.

There are a number of *organizational principles* that are not usual, but are very important. First, the existence of multiple participants in a cluster requires a horizontal hierarchy (all have equal rights). Second, transparency is necessary in its activity. Thirdly, the cluster needs to be functional, operative and responsive to the arising demands, and have to ensure financially its activities. The financial burden must be equally distributed among all members of the cluster. In addition, it is important to have a close connection with the market, which implies prompt responses to market requirements. Even though cluster members are enclosed in different areas of activity, it is important to be attached to brand formation.

General algorithm for creation and organization a cluster activity. The process of creating and organizing a cluster includes three stages: (1) the preparation phase; (2) the implementation phase; (3) the development phase. Each of these phases involves a series of actions and steps to be followed.

Preparation phase. Typically, clusters and strategic alliances do not form themselves, but through the joint effort of the participants, they create these associations step by step. Preparation is not

just a well-drawn plan, but also is a flexibility and resilience to new challenges. There are four important steps in the cluster preparation phase (see Figure 2):

- 1) Analysis of opportunities, benefits and disadvantages as well as threats that may arise - SWOT.

This analysis examines the existing policies, economic situation, especially the sector where the cluster will active. Here is a very detailed analysis of all areas (market research, sales, procurement, logistics, human resources, etc.).

- 2) Formulation of strategic intentions and cluster objectives.

At this phase, the directions of activity and the ways of reaching the proposed goals, as well as the form and intensity of cooperation between the partners, are clearly set out. The objectives of the cluster must be formulated in accordance with the expectations of each participant. Once a goal has been set, a strategy can be developed to determine the activity of each cluster member. By this way, we could avoid the deviations of cluster priorities and could save time spent for inefficient activities.

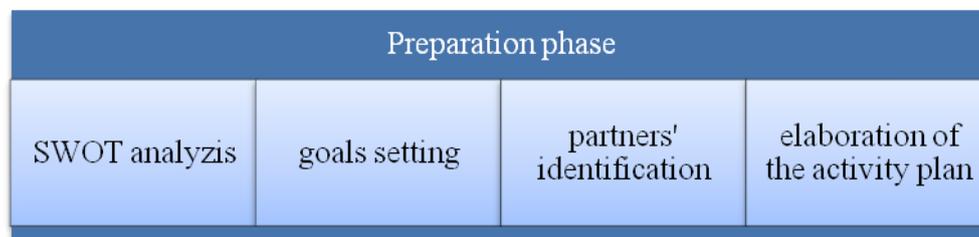


Figure 2. Cluster project preparation phase

Source: developed by author

- 3) Identification of potential partners and launch of the invitation.

Some sources present this stage as the most difficult [4]. The success of the cluster depends largely on the correct choice of partners. At this stage, discussions are initiated, mapping is established, institutions and economic agents who may be interested in eventual cluster participation are identified. Negotiations with potential partners involve presenting to them the benefits, risks, obligations, and requirements to join the cluster.

- 4) Elaboration of the activity plan / strategy.

After formation of the group of partners that are ready to work together, it is necessary to establish the activity rules. At the planning stage the following are defined the cluster membership mechanisms, participants' responsibilities, organizational management, financial analysis, etc. [11]. At the same time, the moments set in the previous stages are detailed; the skills, the benefits and the costs are described. At the planning stage, it is recommended to create within the cluster a management organization and to employ people who will be responsible for cluster management.

In some sources, this stage is presented as "the elaboration of a business plan" [4]. The structure and content of this plan is considered very important from the point of view of its content, description, objectives, funding, threats and opportunities. The development strategy depends largely on the choice of the legal form of the cluster (NGO, SA, LLC). In the strategy formulation, one of the most important issues is funding. At this phase it is correct to determine the necessary volume of funding, the volume of payments in the joint fund, funding projects, monitoring and control systems, etc. In solving financial planning problems it would be helpful to employ financial, fiscal, managerial and legal advisors.

A very important moment in the preparation phase is coordination with public authorities. The objectives and plans of the cluster must fit into government development programs and meet the requirements of these programs.

Implementation phase. Clusters are heterogeneous systems with a large number of companies, members and partners. Information, communication and cooperation between participants must be structured and organized. These activities are concentrated in the implementation phase of the cluster and relate to a series of actions (see Figure 3).

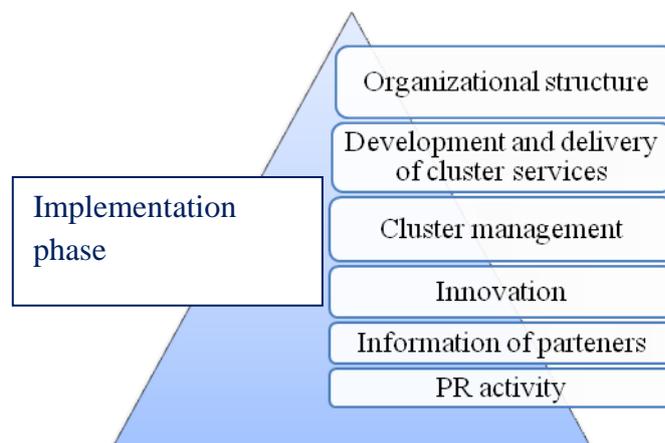


Figure 3. Cluster implementation phase

Source: developed by author

Formal organization and cooperation rules strengthen the cluster and ensure transparency and accountability of its members. The organizational structure defines cluster functions and benefits for participants, fortify confidence in cluster cooperation benefits (corporate identity). At the same time, the organizational structure has influence over competitiveness and power of a cluster - the main qualities for successful operation of cluster on international markets.

The basic elements of an *organizational structure* of a cluster are: (1) the legal form - determined by the legal status; (2) the organizational structure that includes the determination of responsibilities and competencies of each participant in the cluster; (3) organizational methods - working procedures, how cluster processes are organized.

The *development and delivery of cluster services* is very important for the success and sustainability of the cluster. Services must match market requirements, be consumer-oriented and generate revenue. The analysis of developed countries experience show that the most common cluster services are in the following areas: research and development; marketing and PR; export promotion; trainings; organizing tenders (public); procurement and supply; HR; financing and access to capital, etc. A more complete list of activities that can be practiced in a cluster can be found on the European Cluster Observatory platform [2].

It is important to carry out a research with cluster members to determine which services are already available on the market and which must be developed and provided by the cluster. At the same time, it is recommended to consolidate the various services in an integrated system and to promote them in a professional manner.

Cluster management implies the correct management of the projects based on which the current activities are carried out in a cluster. This management can be achieved by creating a joint

interdisciplinary team with management functions which activate in accordance with the objectives and resources available in the projects.

Innovation is the main condition for creating a cluster-type association. The decisive advantage in the process of market competition is the innovation that means "new technologies and practices for society. These may not be unprecedented in absolute terms, but they may be new at company or market level" [12]. In order to promote an innovative climate within the cluster, a tolerant attitude towards failings is necessary, focusing on testing of any idea that can contribute to performance no matter the source of the idea.

Information and interconnection of partners and consumers is based on stable communication platforms and a reliable information base for effective cluster participants' connection.

PR activity is intended to ensure a good communication and promotion of the cluster image for public enterprises and public institutions within the cluster as well as for stakeholders. Communication between them is difficult taking into account the different expectations and habits of the partners. On this line, the creation of "target groups" in communication and information is welcome. Objectives should be divided into short and medium term targets for each target group and should be formulated in such a way that they can be clearly understood.

Development phase of a cluster is based on two steps: (1) monitoring and evaluation, (2) management decisions.

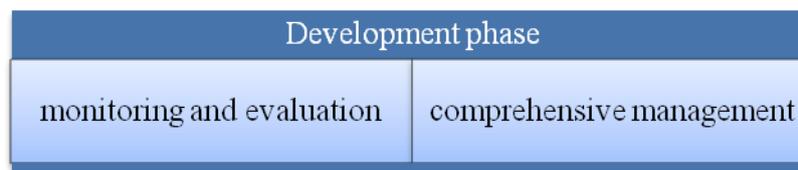


Figure 4. Development phase of a cluster activity

Source: developed by author

Monitoring and evaluation has the purpose of checking out the goals achievement, the effort and efficiency of this achievement. Through evaluation and monitoring, errors can be corrected, so performance can be achieved.

Comprehensive management (management of changes) relies on resilience to the changes that occur in activity. These changes can be planned, managed and systematic, or can come from the external environment (changes in legislation, social or political riots, competition changes, etc.).

The management of changes is a process of finding the problem and solving it, so it is a movement from a problem to solutions. This type of management reduces risk and improves service quality.

On the basis of the analysis of each step in the creation of a cluster, we can schematically represent the phases and the algorithm of cluster formation (see Figure 5).

A certain way to be successful in realizing the competitive advantage through clusters is to follow all the steps of creating and developing a cluster. The thorough organization of companies and institutes in clusters can mitigate the probability of errors and losses due to incorrect design or management of interclusterial processes.

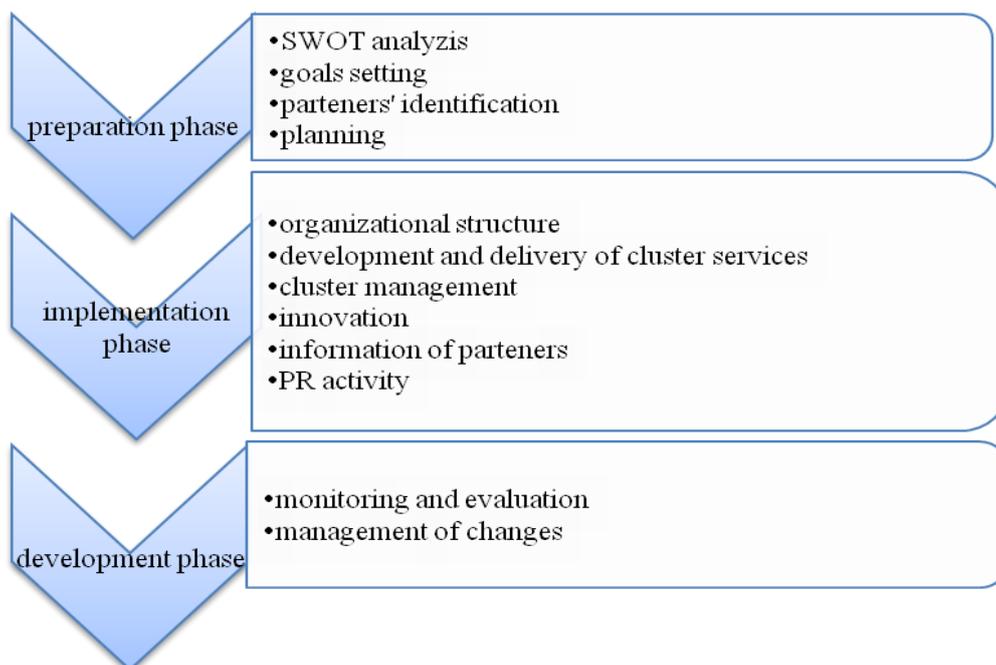


Figure 5. Algorithm of cluster formation and cluster organization

Source: developed by author

There are some impediments in the implementation of cluster activity in the Republic of Moldova. Among these we mention that the cluster organization process is on the beginning in our country and the lack of experience brings reticence from potential cluster participants. On the other hand, there is a lack of interest from public institutions and businesses in this type of collaboration which makes it almost impossible to join them in clusters where one of the basic principles is confidence and cooperation between partners.

5. Conclusions

The phases of cluster initiation are viewed differently by experts. However, there are common concepts for cluster initiation. These concepts concerns with the need for accurate project planning and the efficient management organization. At the same time, it is also important to monitor the efficiency of the cluster.

Considering the importance of the planning phase of a cluster project, we believe it is welcome to develop a "business plan" to help potential entrants to organize a cluster. This key plan should include the most important milestones in order to be able to accurately and strategically plan the activities, resources and objectives of the cluster.

The most important aspects in organizing a cluster remain to be territorial localization, mutual confidence, orientation to development and innovation and the tendency to achieve cluster goals.

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Rezumat

Organizarea activității întreprinderilor sub formă de cluster reprezintă o posibilitate de dezvoltare economică pe baza inovațiilor. Sistemul clusterial contribuie la modernizarea economiei prin creșterea competitivității produselor, serviciilor și a muncii. Această cercetare pornește de la ipoteza că cunoașterea etapelor de creare și dezvoltare a clusterelor contribuie la organizarea eficientă a managementului în cluster și la sporirea efectelor economice ale activității clusteriale. Problema cercetării constă în determinarea algoritmului de inițiere a unui cluster și stabilirea principiilor de organizare a acestuia. Studiul se bazează pe teoria avantajului competitiv a lui Michael Porter și concepția economiei regionale promovate de Walter Isard. Au fost folosite metode de raționament logic, cercetare bibliografică și observare indirectă ceea ce încadrează studiul în demersul epistemologic pozitivist. Rezultatul cercetării derivă din elaborarea mecanismului de inițiere a unui cluster în Republica Moldova și delimitarea principiilor organizaționale valabile pentru dezvoltarea activității clusteriale.

Cuvinte-cheie: cluster, management clusterial, activitate clusterială, inovație, competitivitate

Аннотация

Организация деятельности предприятий в кластерной форме является возможностью для экономического инновационного развития. Кластерная система способствует модернизации экономики посредством повышения конкурентоспособности продукции, услуг и труда. Данное исследование основывается на гипотезе, согласно которой знание этапов создания и развития кластеров позволяет организовать эффективное управление кластером и увеличить экономический эффект от кластерной деятельности. Задача исследования заключается в определении алгоритма инициации кластера и установлении его организационных принципов. Анализ основан на теории конкурентного преимущества Майкла Портера и концепции региональной экономики, продвигаемой Уолтером Айзардом. В позитивистском эпистемологическом подходе разбора использованы методы логического мышления, библиографического исследования и косвенного наблюдения. В результате исследований разработан механизм запуска кластера в Республике Молдове и определены кластерные организационные принципы развития бизнеса.

Ключевые слова: кластер, кластерный менеджмент, деятельность кластера, инновации, конкурентоспособность

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