CRITERIA FOR IDENTIFYING AND EVALUATING THE CONFORMITY OF THE CLUSTER'S ACTIVITY

Aurelia DUCA[1], Corina GRIBINCEA[2]

[1] Associate Professor, "Dimitrie Cantemir" State University, Chisinau, Republic of Moldova

[2] National Institute for Economic Research, Chisinau, Republic of Moldova

Abstract   *In the article are analyzed two types of cluster diagnostics, the basic approach to certain concepts of "tourism cluster", which reflects the different features of clusters in terms of legislative aspects, funding methods for cluster management, the ideal model for making statistical measurements, or the economic aspects used to describe and better understand the driving forces of competitiveness and growth, and thus the methods of identifying cluster. The authors identified main causes of the cluster formation in the tourist-recreational sphere and their characteristic features. The authors propose the application of a system approach, which assumes a cloud of tourists' clusters is a unified, integral, systematic education, provided by multiplicity of interoperable elements or subsystems; because the presence of tourist cluster systems allows for the development of the regional economy. At the same time, one of the most important issues is the analysis of the mechanisms of organization that cause the emergence of new, integrative properties in an integrated system. The result of integration processes taking place in the economy is the formation of synergistic interaction in cluster systems.*

1. INTRODUCTION

At present, the cluster approach is rather vigorously used in economic studies of regional tourism. In this regard, the problems of identifying tourist clusters, assessing their impact on the regional economy, as well as managing the development of cluster formations in the field of tourism are becoming increasingly important.

2. CHARACTERISTICS AND CRITERIA FOR IDENTIFYING CLUSTERS

2.1. Literature review

In our study, we proceeded from the basic theoretical positions of the formation and development of economic clusters carried out by foreign authors such as D. Jacobson, E. Dahmen (1950), M. Porter, I. Tolenado (1978), P. Fisher, M. Feldman (1999).

The issues of functioning and development of tourism, tourism and recreation clusters have received applied development in research conducted by the World Tourism Organization (UNWTO).

2.2. Research methodology

In the present paper were used comparative analysis of approaches in defining and identifying clusters.

2.3. Approaches to cluster definition

Touristic, tourist-recreational clusters in accordance with the classification refer to industrial field (sectorial) and are considered traditional.

Available approaches are reduced, as a rule, to clarify the subject composition of the tourist and recreational cluster. The focus is also on clarifying the goal-forming function of the tourism cluster and the main localizing factor, as well as on specifying the component composition of tourist clusters, which include providers of specialized tourist services, tourist infrastructure enterprises, educational centers and other organizations that complement each other and are oriented towards meeting social needs in tourism and recreation. The tourist cluster can also be defined as a group of enterprises of the tourist complex, united by a single technological process of serving destination visitors or participating in the formation of a single tourist product consumed by a tourist or by one segment of tourist demand.

In our opinion, the main reasons for the formation of cluster systems in the tourism and recreation sector are the following:

● Technological specificity of the formation and sale of a tourist product, which determines the technologically related and complementary nature of tourist activity;
● Spatial localization of the tourist product;
● The advantages of access and use of unique tourist and recreational resources;
● Route territorial organization of tourism;
● A significant proportion of small and medium businesses engaged in the formation and maintenance of tourist flows.

The cluster can be defined as a work system that ensures a maximum possible level of competitiveness under the existing conditions of access to local resources in a particular region and / or field of activity.

Broadly speaking, clusters are groups of interdependent domains that create wealth in the region as a rule on the export of goods and services, which in their manufacturing process (manufacturing, production, execution and delivery), reflects the entire supply chain, from idea to specialized infrastructure. That is what distinguishes the cluster of an economic branch.

Narrowly, clusters are an association of economic subjects interested in strategic marketing-management based on competitiveness to ensure local skills growth through narrow specialization of cluster subjects able to compete on the international market. This definition of clusters explains the new skills of the subjects by creating new technology chains in one or more fields (branches) to increase the efficiency and competitive advantages of each subject by concentration and high degree of cooperation and as result it reduce costs.

The definitions of clusters and clustering address this phenomenon as a form of concentration of companies and industries, genres and fields of economic activity in a geographic region, distinguished by interconnection. By the way of interconnection of companies is understood their relationship with the market, as well as with various trade associations and educational institutions, the nature of the products offered on the market, the way of supply. Thus clustered formations ensure the economic growth of the region and combine the effective coexistence of state interests, business, science and education.

The cluster concept, being derived from English was introduced by H. Cowell in 1930

representing the harmony (PWN, 1974) of the neighboring sounds of the musical ladder in a concentrated arrangement of components, which gives it a harmony character; in industrialized economies, characterized by a group of specialized enterprises but with activities based on cooperation, interacting with the research field and the local administration (J. Staszewska, 2009) to be taken over later by developing economies in search of a new way of harmonizing and streamlining economic development of the regions. The cluster's most popular definition used by the European Cluster Collaboration Platform, belongs to Michael Porter: the cluster is a geographic focus of interconnected companies, specialized vendors, service providers, firms and institutions in certain areas and related (for example, state administration bodies, universities, standardization bodies, trade associations and other plant companies) that compete with each other and at the same time complement each other and cooperate in to gain new competitive advantages (ECCP).

According to the definition of the United Nations Industrial Development Organization (UNIDO), the cluster is a sectorial and geographical concentration of interconnected and mutually complementary companies and institutions that together oppose new complications and strengthen the competitive advantages of companies and cluster in general (UNIDO). World Economic Forum is defining *cluster* as a group of enterprises interconnected within a geographically rational framework, operating in an environment of high specialization, intense competition and a critical mass of highly qualified workers (World Economic Forum (WEF). Another definition of clusters proposed by CLUSTERO - geographic concentrations of interconnected institutions and companies that are part of a specific area (Clusters Association of Romania).

However, despite the fact that clusters are, according to Michael E. Porter, geographical concentrations of interconnected companies, specialized suppliers, service providers, companies operating in related industries and associated institutions in certain areas that compete with each other and also cooperate; cluster initiatives develop jointly the idea of development with existing resources, mutual support and assistance are provided, local development factors are involved in local products, including skills whose importance and utility have not been previously taken into account, they must comply with certain mandatory criteria[1] resulting from their definition:

▪ Geographical proximity (a group of geographically neighboring enterprises and institutions and organizations associated with them in a certain area, linked by similarities and self-completing);

▪ Cooperation (commercial units, institutions and organizations that cooperate, formal or informal, through the implementation of joint projects for local, regional or state benefits);

▪ Organization by vertical or horizontal concentration (an organized, spatially and temporally focused group consisting of economic and social actors, including vertically and horizontally connected institutions and organizations, formal or informal, which by association,

the concentration of resources types of capital), including material, financial, technological and human affiliates, allow their members to obtain a sustainable competitive advantage);

▪ a compact system of vertical and horizontal relationships (a group of companies, specialized institutions and organizations, a group of companies, alliances, local economic systems, spatial concentration associations and formal / informal affiliates in a compact system of vertical and horizontal relations, which, by concentrating resources (forces and means), allow the economic and social autonomous entities to obtain the competitive advantage by creating synergies;

▪ the use of the same skills, technologies, infrastructure and developmental pathway (geographic concentration of competing and cooperative companies, institutions and organizations, interconnected systemically and economically, sharing the same skills, technologies and infrastructure, and the numerous links between cluster members lead them to follow the same trajectory development).

Sharing the point of view of leading researchers on this issue, focusing on certain aspects of the essence of tourist and recreational clusters and summarizing the existing approaches, we note the immanence of the cluster approach in the tourist and recreational sphere, which is explained, on the one hand, by the specific features of tourist activity and its result - a tourist product, service, and on the other hand, significant positive effects arising from the implementation of cluster projects.

The practice of implementing clustering projects shows that even if most modern approaches to clusters start not only from the geographic proximity of companies, but also from other similarities and differences of companies within the cluster. The characteristic features of clusters are (ADTM, 2016):

1. System of connections and interdependencies;
2. The centralization of specialized entities and their resources;
3. Cooperation, collaboration;
4. Competition resulting from the desire to earn income;
5. Targeting the recipient as part of a joint product offer;
6. Efficiency and collective reliability.

At the same time, the main concepts used in explaining clustering for the development of local economies can be as follows:

▪ Agglomerations (other names: "industrial agglomerations", "industrial cores");
▪ Industrial districts;
▪ Territorial or innovation networks;
▪ Competence centers;
▪ Competitiveness poles, etc.

The noted particularities determine the structure and features of the formation of tourist clusters. From the point of view of the structure formation of tourist-recreational cluster, two types of interactions can be distinguished:

• Vertical, which provide for the interaction of companies involved in various stages of the supplier-producer-consumer technological cycle, where relationships among partners are built within the value chain for the consumer;

• Horizontal, which involve the functional integration of various independent participants into a single whole (for example, between competing enterprises engaged in similar activities (accommodation, entertainment, transport and catering),

as well as between company's activities focused on the same consumer segment, but offering individual components of the product (for example, additional tourist services).

In our opinion, the most appropriate direction for the development of the traditional understanding of the tourism cluster at present time is to study it from the standpoint of the general theory of systems, the presence of systemic properties of a cluster is confirmed by the fact that clusters are open, complex, self-organizing nonlinear systems whose elements are combined in material, informational and financial in streams. A systems approach involves looking at tourist clusters as a single, holistic, systemic education consisting of a set of interacting elements or subsystems.

At the same time, one of the most important issues is the analysis of the mechanisms of organization that cause the emergence of new, integrative properties in an integrated system. The result of integration processes occurring in the economy is the formation of synergistic interaction in cluster systems, the essence of which is to establish and develop links between economic actors in order to carry out coordinated activities in accordance with private and common interests. This conclusion is confirmed by international experience showing that clustering in essence does not attract direct economic benefits in the form of a cardinal increase in profitability; although it reduces some of the burden associated with marketing goals.

The presence of systemic properties in tourist clusters allows us to consider them as an effective tool for the growth and development of the regional economy. However, there are a number of objective difficulties associated with identifying the boundaries and structure of tourist clusters, assessing their impact on the main indicators of tourism development and on the economy of the region as a whole. In the regional tourism economy, this aspect is still virtually unexplored.

The advantages obtained depending on the level of interaction with the cluster are the following:

Regional Administration:

1. The number of taxpayers is increasing;
2. Cooperation with business is being strengthened through the diversification of the economic development of the territory;
3. The development of the region is increasing through the introduction of innovations and the expansion of macroeconomic trends;
4. The motivation for strategic cost planning in the region is growing;
5. To fully meet the social obligations to the region population;
6. Using the authority of the cluster, regional authorities more effectively promote their initiatives through federal structures, creating bills.

Enterprises in a cluster:

1. Subsidized training and retraining programs for employees of cluster enterprises;
2. An improved infrastructure is being created;
3. There are more opportunities for research and development;
4. Reduce costs by sharing similar services and suppliers with cluster enterprises;
5. Opportunities for a more successful entry into international markets;
6. There is an increase in labor productivity and innovation;

7. The exchange of knowledge, cooperation between organizations with complementary assets is increasing;

8. Reduces the barrier to entry into the markets for products and the supply of raw materials and labor;

9. There are new opportunities for access to financial resources.

The region in which the cluster is developing:

1. Expanding markets for local goods and services;

2. Migration is prevented or reduced;

3. Prerequisites for the sustainable development of the region are being created on the basis of the rational use of natural and economic resources;

4. The infrastructure of the regional economy is developing: insurance, banking, transport, services, manufacturing, etc.

5. Increases the innovation activity of enterprises, including development of science and education;

6. The development of national culture, local traditions and the preservation of cultural monuments is intensifying;

7. There is an increase in employment of the local population and budget revenues; In the economic literature devoted to the general problems of the implementation of the cluster approach, there is not yet a single universal approach to identifying clusters in the region, considering several basic ways to identify economic clusters.

In our opinion, one should distinguish between two types of cluster diagnostics.

The first type, based on the study of a particular cluster, can be attributed to the diagnosis of existing clusters, the main purpose is to confirm / denial the existence of a particular cluster.

The second type is the diagnosis of potential clusters; the main goal is to analyze the region or country as a whole for the presence of clusters, based on determining the geographical concentration of enterprises (industries) and the presence and degree of interaction between them.

At the same time, there is no uniform and understandable methodology in the literature for determining the boundaries of a cluster, as well as a criterion by which usual geographic concentration can be distinguished from a cluster; taking into account the definition of UNWTO, according to which the tourist product is in close cooperation with the local territory, activating the joint actions of interrelated enterprises, directed to increase the attractiveness and value of a tourist destination.

Currently, there are three main approaches to the identification of economic clusters in the region.

The first approach is based only on qualitative analysis and expert assessments and is based on the concept of industrial clusters from the position of competitiveness, proposed by M. Porter; It includes a wide range of evidence: internal scale effect, value chain, competitiveness, technological innovation, explaining the integration of enterprises in a geographical space, and uses the following basic elements:

● Analysis of a large firm or concentration of similar firms;

● Identification of the vertical chain and lower-level firms and organizations associated with them;

● Horizontal search for industries passing through common channels or producing by-products / services;

● The allocation of organizations that provide for the cluster special skills, technology, capital or infrastructure, as well as the selection of any group entities that include cluster members;

● Search for governmental, legislative structures affecting cluster members.

Table 1. The main criteria for the presence of potential clusters

According to 1st approach		1.Concentration of cluster members in a geographically limited area; 2.The presence of a region-based competitive advantage; 3.The presence of leading companies that promote concentration, which help to attract support and service enterprises; 4. Availability of production and technological interconnection and cooperation between the participants.
According to 2nd approach		1.Localization coefficient more than 1.00
According to 3rd approach		1.Growth in the share of the regional industry in employment

Source: authors investigations

The second approach consists in the quantitative and qualitative analysis of the competitive stability of a region in determining industrial clusters as a result of the economy agglomeration and aims to identify the clustering potential of the region. Among the main methods and approaches to the quantitative analysis of regional specialization or agglomeration are the following:

● Localization factors;

● Gini coefficient;

● Shift analysis - a method of analyzing regional systems, in which economic growth is stratified into state growth, regional growth, and private factors of economic growth.

However, the use of some indicators causes certain difficulties caused by the lack of precise threshold values, indicating the presence of a cluster. For example, a coefficient of localization of more than 1.00 indicates a higher level of concentration of employment of a certain industry in the region compared to the national average (Kostryukova O.N., Karpova E.G,2011), but there are other opinions 1.25 (Bergman E.M., Feser E.J., 2000) or 1.3 (Braunerhjelm P., Carlsson B., 1999) and even up to 5 (Kumral N., Deger C., 2006). At the same time in order to evaluate the growth prospects, it is important to trace the dynamics on the basis of an integral indicator.

A qualitative analysis of the availability and composition of the resource base necessary to ensure the competitiveness of enterprises in the region is aimed at determining the competitive sustainability of regional industries, and is based on an assessment of conditions, for example, production factors, domestic demand, competitive supplier industries or other related industries and factors and factors that motivate the formation of effective strategies.

The analysis of the cluster itself should reveal the nature of the controlling influences on the competitiveness of the region and is carried out from the point of view of the institutional organization and the strategic potential of the clusters, internal motivation and maintenance of

cluster initiatives, and the comparative competitiveness of cluster members.

The third approach to the identification of industrial clusters is based on the economic assessment of interaction between cluster entities, based on the fact that the existence of relationships between enterprises and organizations that are part of a cluster is the second essential feature of economic clusters, and consists in applying technical and economic methods of cluster identification, such as: input-output matrices, shear analysis method, etc. (Table 1)

The input-output matrix method describes the relationship between output in one industry and the cost, expenditure of products from all participating industries necessary to ensure this output; however, being aimed at defining the buyer-seller relationship, the method does not take collective interaction into account, as well as contacts with government officials, associations, educational and research institutions. As a rule, the matrix is based on relative economic indicators, where each coefficient will represent a part of the gross output of the industry (enterprise) consumed

by the opposite side. Even with the use of certain thresholds, there are problems with the choice of this threshold. Using the die technique, according to which the industry belongs to a cluster is determined by the presence of relatively large connections between sectors, the industries related to the die plate, are determined by technical characteristics, and starting with the last consumer industry, its suppliers are determined, and then suppliers of suppliers. However, some modern production forms, such as outsourcing, lack of operational information or information about the interaction between educational, scientific, informational, professional organizations can distort the results of the analysis. The method of shear analysis allows us to trace a comparative regional advantage, which may indicate the presence of a cluster, in terms of the growth of the share of the regional sector in the level of employment, distinguishing the effect of economic growth from the regional one associated with a local competitive advantage.

Table 2. Identification methods of industrial clusters

Name of the approach	Virtues	Disadvantages
Coefficient of per capita production, coefficient of localization, coefficient of specialization	Availability of necessary data; ease of calculation; possibility of use in combination with other approaches.	Indicates the concentration / specialization of the tourism industry in the region, and not the presence of cluster education; must be supplemented with qualitative analysis; no clarity with the choice of threshold.
Input-output matrix	It allows to formally measuring the relationship between industries, which, in	The absence / inaccessibility of operational information about the interaction of potential participants in the tourism cluster; does not

	turn, allows you to identify the presence of a cluster.	take into account financial flows, flows of information exchange, as well as the exchange of knowledge and human resources; The main focus is on material flows, but for tourism it is not so important.
Shear analysis	Allows tracing the growth of the share of the regional tourist industry in the level of employment, distinguishing the effect of economic growth from the local effect associated with local competitive advantage.	Not widely spread, including in tourism.
Expert evaluation method	Detailed information, individual approach.	Subjective assessment; lack of systematic information gathering; lack of aggregated data.
Focus Group Survey Method	Relatively low costs; small time costs.	The problem of non-appearance of respondents at a specified time and place; the need for additional incentives, including participation fees.
Delphi Method	To apply practically in any situation demanding forecasting, including if there is not enough information to make a decision; anonymity and independence of expert opinions; focus on strategic planning; comprehensive coverage of the problem being solved.	The subjectivity of the opinions of specialists; labor intensity; time-consuming for multi-level expertise and the complete exclusion of direct collision of expert opinions.

Source: Кострюкова О. Н. Карпова, Е. Г. 2011

CONCLUSIONS

It can be concluded that the development of a universal, integrated method for the identification of tourist clusters is currently topical. As noted above, it is necessary that this method be based on both quantitative and qualitative assessments. Also, it is necessary that the analysis be carried out taking into account two main features of tourist clusters – the geographical concentration of tourism enterprises, as well as the presence of interconnections between these enterprises.

REFERENCES

❖ Miron, V., Miron, M., Duca, A., Roman, M., Molski, C. Clustere agroturistice în Moldova. ADTM, Programul de Colaborare Poloneză pentru Dezvoltare, Centrul de Cooperare Europeană, - Chișinău, 2016, 230 p.

❖ Кострюкова О. Н. Карпова Е. Г. Методы идентификации туристских кластеров в системе регионального туризма http://www.m-economy.ru/art.php?nArtId=3866

❖ Bergman, E.M., Feser, E.J. National industry cluster emplates: a framework for applied regional cluster analysis // Regional Studies. 2000.34 (1). pp. 1–19

❖ Braunerhjelm, P., Carlsson, B. Industry clusters in Ohio and Sweden, 1975–1995 // Small Business Economics. — 1999. — № 12. — pp. 279–293

❖ Dahmen, E. Entrepreneurial Activity and the Development of Swedish Industry, 1919–1939. Stockholm, 1950

❖ Encyklopedia Powszechna. PWN, Warszawa, 1974, pag. 474.

❖ Staszewska, J. Klaster perspektywą dla przedsiębiorców na polskim rynku turystycznym. Wydaw. Difin, Warszawa, 2009, pag. 28.

❖ Kumral, N., Deger, C. An Industrial Cluster Study: as a basis for the Aegean Region's Development Policy // Working Paper. — 2006. — № 06/01, Department of Economics of Ege University

❖ Tolenado J.A. Propis des Filieres Industrielles //Revue d'Economie Industrielle. 1978. № 4. Vol. 6. P. 149–158.

❖ Aeldman V.P., Audretsch D.B. Innovation in Cities: Science based Diversity, Specialization and Localized Competition // European Economic Review. 1999. № 43. P. 31–39.

❖ https://witrynawiejska.org.pl/data/Clustere%20agroturistice%202016%20v9.pdf

❖ http://clustero.eu/despre-clustere/ http://www.clustercollaboration.eu/cluster-definitions

❖ http://www.unido.org/unido-united-nations-industrial-development-organization.html

❖ https://www.weforum.org/agenda/2014/12/how-industrial-clusters-boost-growth/

❖ http://www2.unwto.org/unwto-publications