CLUSTER DEVELOPMENT AS A FACTOR IN IMPROVING THE COMPETITIVENESS OF THE AGRO-INDUSTRIAL COMPLEX OF THE REPUBLIC OF MOLDOVA

Liudmila TODOROVA

State Agrarian University of Moldova, 42 Mircesti Str., Sector Rascani, Chisinau, MD-2049, Republic of Moldova, E-mail: liudmila.tod@gmail.com

Corresponding author: liudmila.tod@gmail.com

Abstract

In today's world, the scenario of long-term economic development of any country presupposes the growth of its competitiveness in both traditional and new knowledge-intensive sectors, a breakthrough in improving the quality of human capital and labor productivity trends, the transformation of innovative factors into the main source of economic growth. Solving these problems requires creating a system of clear interaction between government, business, science and education through the use of effective tools of innovation development, among which an important role is played by the cluster approach. The relationship between the clustering process, strengthening of competitiveness and accelerate of innovation activity - a new economic phenomenon, which allows resisting the onslaught of global competition and properly meet the requirements of national and regional development. The cluster approach - this is a new management technology that allows to improve the competitiveness of a particular region or industry, and the state as a whole. And this approach has become a basic element of development strategies in most countries. The most important characteristic of the modern cluster is an innovative component, which determines its competitiveness. As a result, innovation clusters are beginning to prevail over the traditional industrial clusters.

Key words: effective instruments, innovative development, the clustering process, the cluster approach, strengthening competitiveness

INTRODUCTION

Research centers and universities, as integral parts of innovation clusters, generating new knowledge and innovation, provide a high educational level of the regions in which they operate.

As part of the innovation clusters, it is possible to coordinate the efforts and financial resources to create new products and technologies, and output them to the market.

In fact, within such clusters, it is possible alignment of the closed process chain - from the creation of the product to its manufacturing and bringing to the market.

The most important difference from traditional innovation clusters of industrial - is the creation within them mainly export-oriented products and technologies, i.e., intra-cluster competitive advantages are significant on an international scale.

Should pay special attention on the state's role in the formation of cluster strategies. If initially the clusters are formed only due to the "invisible hand of the market", that recently many governments began to "grow" their own initiative in the framework of public-private partnership, giving this process a tangible material and moral assistance. Thus, an important factor in the process of cluster development, especially in agricultural complex is the development and implementation of public policies to support cluster development.

MATERIALS AND METHODS

In this study, the statistical analysis methods were used. To determine the competitiveness of Moldovan products on foreign markets and trade potential of the country used the methodology Lafay index. Documentary research base consists of the laws and regulations adopted by the Government of the Republic of Moldova: the development Strategy of the small and medium enterprises

for 2012-2020, the Concept of cluster development of industries in the Republic of Moldova, Strategy for the period of 2013-2020 – „Innovation for Competitiveness", the roadmap for improving the competitiveness of Moldova [3, 5, 6].

RESULTS AND DISCUSSIONS

In Moldova, the development of the cluster policy started in 2013, when the Government of the country has approved the Concept of cluster development of the industrial sector.

The main task of the state policy of supporting cluster development of the industrial sector, defined of this concept is to intensify the development of industries and increase their share in the national economy by combining administrative and organizational efforts, support for innovation and growth of competitiveness of industrial enterprises, both large and of SME sector.

To create a scientific-technological parks and innovation incubators have been installed and operate the scientific and technological clusters shown in Table 1. (AITT, 2016) [1].

Table 1. Scientific and technological clusters in the Republic of Moldova

	Cluster name	Year of creation	The purpose of the cluster establishment and functioning	Number of residents
1)	Scientific and technological cluster "Academica"	2007	Creation of STP "Academica" and II "Inovatorul"	19
2)	The Science and Technology cluster in the field of Ecology and Intensive Agriculture	2008	Creation of the Scientific and Technological Park "Inagro"	4
3)	The Science and Technology cluster in the field of micro and nano technologies "Micronanoteh"	2008	Creation of the Scientific and Technological Park "Micronanoteh"	2
4)	Scientific-Education Cluster "UniverScience"	2011	Creation of innovative and educational incubator "Universcience"	20
5)	A cluster of innovative entrepreneurial incubators	2012	Creation of: II "Nord" in 2012 and II «Antreprenorul Inovativ» in 2013	5
6)	A cluster of innovative entrepreneurial incubators in Chisinau	2012	Creation of: II "Itech" at the AESM and II "Inventica-USM» within the SUM	2
7)	Scientific-Education Cluster "InnOCluster"	2012	Creation of Innovative Incubator "InnOCenter"	6
8)	The Science and Technology cluster in the field of modern technologies "ELCHIM - MOLDOVA"	2013	Activities of the cluster are in the beginning stages	10
9)	The Science and Technology cluster in the field of nano-technology and information technology	2014	In 2014, the cluster presented a proposal for the creation of an innovative incubator	3
10)	Moldovan-Lithuanian cluster	2014	Creation of Innovative Incubator "Media Garaj"	6
11)	The Science and Technology cluster in the field of IT	2015	Creation of Innovative Incubator "IT4BA" at the AESM	5

However, this process is not sufficient, and the proportion of clusters in the country's exports, the number of jobs created and the new business is insignificant. There is no concrete policy of the state, which would stimulate and encourage this process. State actions in this direction were limited basically just introducing the notion of a cluster in the legislative and regulatory acts. It is important that the declaratory action and expressions of intentions to proceed as soon as concrete actions. In time, we contemplate and realize

clustering process, other countries already actively implemented over 15-20 years clustering policies. (Tornea I., 2016) [4] Now some renovation efforts are required in the cluster high-technological branches.

This can be achieved by attracting FDI in these sectors, diffusing elements of global competitiveness in national economies, whatever the structural development of stage where they are to be found, but also by implementing policies the targeted support for the creation and development of clusters. To

identify which areas are potentially the biggest clustering, we will analyze the sectors which have the largest share in the gross value added (GVA) and those with the largest share in exports, granting sectors with the largest share 1 point for each category (GAV / exports). (Tornea I., 2016) [4] Following such an analysis we can conclude that the sectors with the greatest potential formation of clusters are:
-machinery and electrical appliances;
-manufacture of other food products (including sugar);
-beverage industry;
-non-metallic mineral products industry (especially glass and glass products, cement and articles thereof);
-manufacture of wearing apparel/dressing and dyeing of fur;
-manufacturing of textiles;
-processing and preserving fruits and vegetables (Tornea I., 2016) [4].

Also, there is a relatively high potential in such areas as:
-production / processing and preserving of meat and meat products;
-dairy products and eggs of birds;
-chemical industry;
-furniture production and other industrial activities;
-manufacture of machinery and equipment;
-production of rubber and plastic;
-production of leather, leather products and footwear;
-manufacture of fabricated metal;
-manufacture of vegetable and animal oils and fats (Tornea I., 2016) [4].

Identify sectors with high potential for clustering is especially important in terms of measures and policies to support the creation and development of clusters to be promoted to support the clustering of national economy.
Some authors believe that because of the small internal market, to identify potential clusters, should be considered only sectors with the largest share in exports. (Moldovanu D., 2009) [2]. For this purpose is used Lafay index, which is identified by the following formula:

$$LI_j^i = 100 \cdot \left(\frac{X_j^i - M_j^i}{X_j^i + M_j^i} - \frac{\sum_{j=1}^{N}(X_j^i - M_j^i)}{\sum_{j=1}^{N}(X_j^i + M_j^i)} \right) \cdot \frac{X_j^i + M_j^i}{\sum_{j=1}^{N}(X_j^i + M_j^i)}$$

where X_j^i and M_j^i - export and import of products j into the country i. N - number of product types.

Table 2. Groups of goods for export in the Republic of Moldova, 2015

Categories of goods for export, 2015	Lafay Index	Categories of goods for export, 2015	Lafay Index
Clothing; Clothing accessories	4,2	Preparations of vegetables; Fruit or other parts of plants	0,9
Cereals	3,2	Sugar; Sugar products	0,9
Alcoholic beverages; Spirits and vinegar	3,1	Metallic mineral products (glass and glassware, cement)	0,8
Edible fruits and nuts	3,0	Footwear and similar items, leather goods, travel goods and similar products	0,7
Oilseeds; Seeds and fruit; Industrial and medicinal plants	2,6	Carpets and other textile floor coverings	0,5
Machinery; Electrical equipment and parts thereof	1,5	Meat and edible offal	0,2
Furniture; Luminaires, and the like; Prefabricated constructions	1,4	Residues and waste from food industries; animal feed	0,1
Fats and oils of animal or vegetable origin; Cleavage products	1,2	Pharmaceutical products	0,1

Lafay index shows that conglomeration potential have such branches of agriculture as production of cereals, fruit growing and different types of nuts. They are followed by oilseeds, production of vegetable and animal fats, further processing of fruits and vegetables, as well as sugar and its derivatives. The rest of the branches of production with a high index of export of goods and clustering relate to other sectors of

the economy.

The main efforts to identify and promote possible measures and state policy of supporting the creation of clusters in these sectors should be directed towards building / strengthening links of these areas to the local economy and the integration of Moldovan enterprises, especially SMEs in the supply chains of foreign companies.

The share of agriculture in GDP of the country is ≈ 13%, along with the processing industry of agricultural production, it provides 17% of GDP and 45% of the country's total exports.

The most exported agricultural products are cereals, edible fruits (fresh and dried) and nuts, oilseeds, natural honey, grapes, vegetables, meat, poultry and eggs. Together these categories account for over 25% of total exports. Moldovan agricultural sector can be divided into two main sub-sectors:

(1) *the corporate sector* consisting of large enterprises;

(2) *the individual sector*, including small farms and households.

Large agricultural enterprises mainly specialize in producing low-value crops (cereals, oilseeds, sugar beet), and a small amount of fruit mainly for export.

To achieve stable growth of production and export of agricultural products, support policies in this area should be oriented mainly towards diversification and increased access to markets.

Small farms are generally subsistence and produce only a small amount of high-value agricultural products for commercialization (fruits, vegetables, nuts, grapes, potatoes, natural honey) on the domestic markets.

Republic of Moldova is difficult to name a country with a functional market regulation mechanisms, so government intervention is necessary to correct the weaknesses of the market relations. In addition, the state should encourage and consolidate the basic elements of the efficient functioning of the market economy. In this case, the clusters are important competitive advantages of the economy, and the task of the state is to support the emergence and development of such relations.

One of the most important factors in the development of the cluster policy of Moldova is to support existing clusters, given the current state of the national economy, features of the development of agro-industrial complex and the investment climate in the country. In this direction, it is advisable to make maximum use of available resources and mechanisms.

International experience of creation and development of clusters allows us to formulate the basic aspects of the feasibility of the development of cluster policy in the Republic of Moldova, as presented in Fig.1.

Fig. 1. Policy options for developing clusters in Moldova

The problems of development of existing clusters is becoming increasingly important in the discussion of ways of development and economic growth. Therefore, clusters already operating upcoming governments of most countries are considered as potential engines of

innovation.

It should be noted that the simple accumulation of enterprises geographically does not guarantee the successful operation of the agglomeration. That is, the advantages associated with the clustering process can not be achieved automatically.

This applies primarily to the countries with inefficient institutions and are in the process of market mechanisms formation.

Especially relevant for Moldova is the fact that clusters are seen as effective tools of regional development, which allows to concentrate resources in the targeted sectors and regions that possess the necessary potential for economic growth and development. And the results of such cooperation, in consequence, may impact on other non-target sectors and regions.

CONCLUSIONS

Analysis of the current cluster development and implementation of cluster policy leads to the following conclusions:

-For the sustainable and accelerated development of the clustering of industries and regions of Moldova is necessary to gain the attention of the state in this direction, since the state now holds more supervisory position.

-It is necessary to develop and adopt for the implementation of the regulatory framework for the efficient development of the clusters on the basis of good practices in the European Union.

-In implementing the cluster development policy, it should be considered separately from the process of regional development. These processes should be complementary, rather than substitute.

It is necessary to develop and implement a clear advance for all parties measurement criteria and evaluation of clusters of activity. This procedure should be performed periodically with consecutive introduction of the necessary changes in the regulations.

REFERENCES

[1] Agency for Innovation and Technology Transfer of the Republic of Moldova, 2016: http://aitt.md.
[2]Moldovanu. D., 2009, Integrarea economică a Republicii Moldova: premise, avantaje şi oportunităţi pierdute", Ed. Ştiinţa, Chişinău.
[3]Strategy for the period of 2013-2020 – „Innovation for Competitiveness" № 952 from 27.11.2013 (HG nr. 952 din 27.11.2013).
[4]Tornea, I., 2016, Politici pentru dezvoltarea clusterelor în Moldova, Nr. 1, Institutul pentru Dezvoltare şi Iniţiative Sociale (IDIS) „Viitorul", 23 p.
[5]The development strategy of the small and medium enterprises for 2012-2020 (HG nr. 685 din 13.09.2012)
[6]The concept of cluster development of industries in the Republic of Moldova (HG nr. 614 din 20.08.2013)
[7]The roadmap for improving the competitiveness of Moldova (HG nr. 4 din 14.01.2014).