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УДК 330.3

DOI: 10.5281/zenodo.1220707

**ПОЛІТИКА РОЗВИТКУ КЛАСТЕРІВ РЕСПУБЛІКИ МОЛДОВА: ПРОБЛЕМИ І ПЕРСПЕКТИВИ****Левітська А.П.**

*Ключові слова:* кластери, інновації, інноваційний розвиток, знання, регіональна економіка, кластерні мережі, конкурентоспроможність, організаційно-економічний механізм.

**ПОЛИТИКА РАЗВИТИЯ КЛАСТЕРОВ РЕСПУБЛИКИ МОЛДОВА: ПРОБЛЕМЫ И ПЕРСПЕКТИВЫ****Левитская А.П.**

*Производство и передача знаний, процессы внедрения и распространения инноваций играют решающую роль в контексте регионального экономического роста и конкурентоспособности страны в целом. Успешный ход этих процессов усиливается за счет создания сети регионального инновационного взаимодействия между основными «участниками» инновационного развития, такими как научно-исследовательские институты, университеты и поставщики бизнес услуг.*

*Географическая близость этих структур, которые заинтересованы в инновационном развитии на малой территории рассматриваемой нами автономии, играет решающую роль в установлении эффективного коммуникационного процесса между ними. В дополнение к этому типу близости, «актеры» также должны иметь когнитивную близость, что подразумевает общие знания, которые помогают понять и успешно абсорбировать новую информацию в процессе взаимодействия.*

*Развитие этих процессов основано на процессах территориальной кластеризации, а именно на создании инновационных сетей, способствующих ускорению интерактивного процесса обучения между локальными участниками инноваций и их внешними партнерами, накоплению региональных знаний, основанных на концепции когнитивной экономики.*

*На основании анализа кластерной политики в Республике Молдова в данной статье определены тенденции и механизмы разработки кластерной политики на региональном уровне. Опыт создания кластеров описан на примере региона развития АТО (автономное территориальное образование) Гагаузия.*

**Ключевые слова:** кластеры, инновации, инновационное развитие, знания, региональная экономика, кластерные сети, конкурентоспособность, организационно-экономический механизм.

## CLUSTER DEVELOPMENT POLICY OF THE REPUBLIC OF MOLDOVA: CHALLENGES AND PROSPECTS

**Alla Levitskaia**

*Production and transfer of knowledge, the processes of implementation and diffusion of innovations have crucial role in the context of the regional economic growth and competitiveness of the country as a whole. Successful course of these processes is enhanced by creation of a network of regional innovative interaction between the main «actors» of the innovative development, such as: scientific-research institutes, universities and providers of business services.*

*The geographical proximity of these structures, which are interested in innovative development in the small territory of the autonomy examined by us, plays a crucial role in the establishment of an effective communication process between them. In addition to this type of proximity, the «actors» should also have cognitive proximity, which implies the overall knowledge that helps understanding and successfully absorbing new information in the process of interaction.*

*Development of these processes is based on the processes of territorial clustering, and namely the creation of innovation networks, contributing to the acceleration of the interactive learning process between local innovation actors and their external partners, accumulation of regional knowledge based on the concept of cognitive economy.*

*Based on the analysis of cluster policy the Republic of Moldova, this paper identifies the trends and mechanisms of development of cluster policy at the regional level. The experience of cluster establishment is described based on the example of development region of ATU Gagauzia.*

**Key words:** clusters, innovations, innovative development, knowledge, regional economy, cluster networks, competitiveness, organizational and economic mechanism.

JEL 018; R11

### 1. The essence of cluster establishment

#### 1.1 Typology of cluster establishment

The idea of industrial clusters, formulated by M. Porter, includes a union of companies from the same branch, bound by the strategy of vertical integration: providers, producers, financial institutions [1]. According to Porter, this concept implies geographically concentrated companies, firms from related industries, which compete, but also cooperate with each other, thus creating a unique process of interaction [2].

M. Porter came to the concept of economic cluster following an analysis of the competitiveness of individual sectors of the economy. According to one of his main statements, geographically concentrated and competing inter-related groups of companies can represent quite a powerful competitive force in the global economy.

Such clusters influence the growth of competition between companies - participants of the cluster in three ways: by increasing the companies' labor productivity, creating innovative solutions in area relevant to business priorities, and encouraging development of activities [3].

Another researcher, Rosenfield, identified cluster as «a group of geographically concentrated companies with common values, technical and cultural reference points, acting directly or indirectly in one single regional market under conditions of cooperation and competition» [4]. According to Enrigh, cluster - is «a group of commercial and non-profit organizations with interconnected industrial and non-industrial types of activities and services, concentrated on the key production and where the membership in the group is an important element of individual competitiveness» [5].

By definition of the Organization of Economic Cooperation and Development (OECD), innovation cluster is a network of interconnected manufacturing companies, organizations that create knowledge and institutional actors, united in the production value chain [6].

Typology of clusters depends on the choice of key cluster characteristics:

- **Knowledge clusters** - the concentration of economic activity around the existing knowledge infrastructure actors (universities, research institutes);
- **Industry production clusters**, created by companies, united by the strategy of vertical integration;
- **Associations of enterprises**, using one single infrastructure or employing one single technology;
- **Mixed clusters**, representing a combination of various types of clusters mentioned above.

The following are the main characteristics of clusters [7]:

1. geographical concentration (enables quick exchange of industrial and social resources);
2. specialization (organizations are concentrated around the area of cluster's expertise);
3. heterogeneity of stakeholders (NGOs, universities, financial intermediaries, research institutes, etc.);
4. competition and cooperation (as the main types of interaction between companies - participants of the cluster);
5. achieving «critical mass» in the size of the cluster (for the effects of internal dynamics and development);
6. viability of clusters (long-term activity);
7. involvement in the innovation process (organizations - participants are included in the processes of technological, product, market or organizational innovations).

The concept of a «cluster» differs from country to country and this is clearly reflected in Table 1.

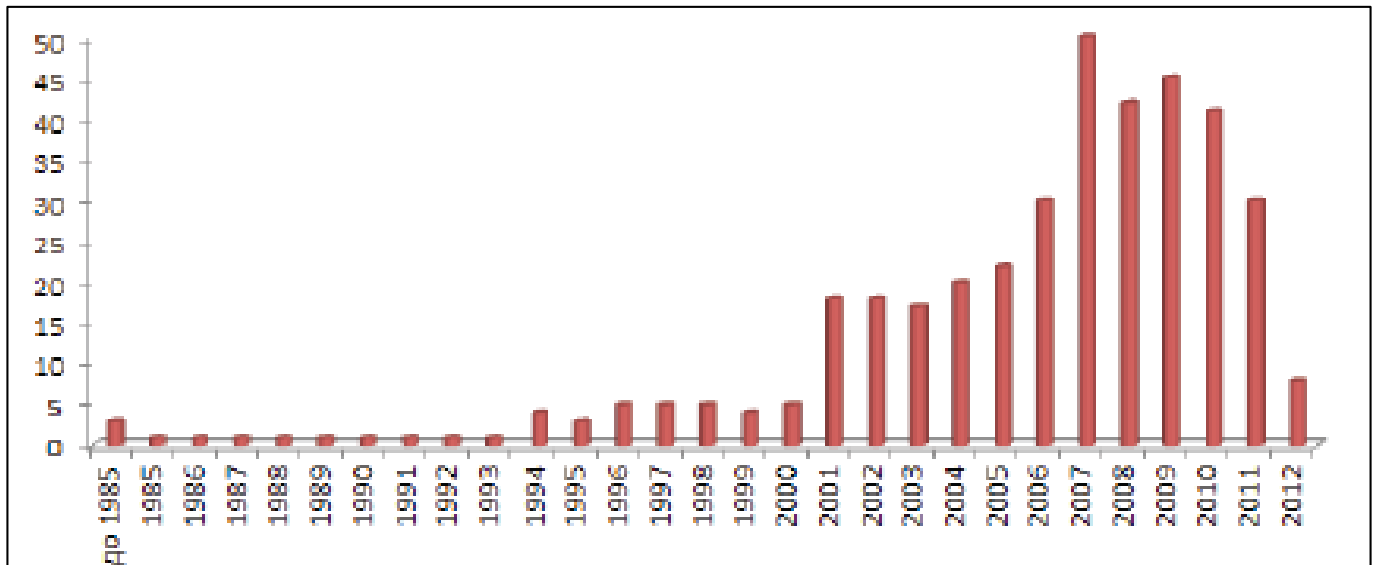
**Table 1. Cross-country cluster concepts**

Country	Cluster concept
Austria	Production networks, innovation networks, interaction networks
Belgium	Production chains and networks, innovations and cooperation
Canada	Innovative systems
USA	Production chains and networks
Finland	Clusters as unique combination of companies related to each other
Great Britain	Regional innovation systems
Sweden	System of interconnected companies from different industry areas
Norway	Chains for creating added value and production networks
Netherlands	Chains for creating added value and production networks
Switzerland	Innovative networks
Spain	Innovative systems
Germany	Same type companies and innovative systems
Italy	Cross-industry knowledge flows

Source: *Boosting Innovation. The Cluster Approach. OECD Proceedings. OECD Publication Service, 1999. P. 415.*

An important characteristic of a cluster is its consistency, as interdependence of individual parts of the whole. Depending on the nature of cluster establishment, they can be either naturally or artificially created units. The role of the government in the first case – is to participate in the development of cluster network, and in the second case – to act as initiator. When a cluster is artificially created, it is necessary to define its goals, objectives, actors involved and the main stakeholders of this network [8].

According to the study conducted by the European Cluster Observatory, in 39% of cases clusters are initiated by businesses and in 36% by public authorities through various initiatives. Resources for cluster development mainly come from the regional (local) funds, followed by the funding from the state programs and thirdly – from membership fees of companies - cluster members, which is a new sector developed in recent years (about 66%) [9], as well as other non-commercial sources and income from services provided. Also, this study noted that the increase in the number of clusters in the EU Member States reached its maximum in 2007- 2010 (Figure 1).



**Fig. 1 Cluster initiative of EU Member States per years.**

Source: *Global Cluster initiative survey. 2012. Survey summery report. European commission, European Cluster observatory, Stockholm, 2012.*

150 clusters in the EU are equal to the level of global clusters in terms of the size, employment opportunities (38% of the workforce is employed in 2000 clusters), concentration and specialization. The following stages are provided as example of development of cluster initiatives in Romania:

1. Initiating development of cluster policy in 2009
2. Developing Cluster Map of Romania (Guidelines for implementation of the Concept of innovation cluster in 8 regions) in 2010.
3. Establishment of the Cluster Association CLUSTERO ([www.clustero.eu](http://www.clustero.eu)) in 2011
4. Implementation of cluster policy (introduction of innovations in clusters, internationalization of SME and creation of networks, exchange of best practices with EU Member States, development of Regional Development Plans (cluster-center of Regional Policy) 2011-2015.

5. Development of the approach «down-up» with focus on the industry in the following sectors and types of activities: automobile production, agro-food sector, energy, aviation, electronics, creative and cultural sector, tourism, IT, health care, construction, shipping, textiles, furniture, bio- and high-technology, logistics.

**1.2 Advantages and disadvantages of cluster networks**

Critical comments of Porter’s theory related to the difficulty or sometimes impossibility of achieving the necessary concentration of resources of key industries in less developed countries. As it is well known, well-developed infrastructure represents the basis of the innovative capacity of the region. However, creation of cluster networks is often based on the existing «needs» in the development of small peripheral growing cities (regions), rather than on «their potential» because of the lack of adequate infrastructure in the regions [10].

In this case, governments have crucial role in development of cluster policy, as they need to minimize interventions aimed at restricting competition (trade barriers, pricing), and play the role of an activist in areas, such as: development of business environment (reducing «entry barriers»), infrastructure, stimulating introduction of innovations at the legislative level [11].

Geographical proximity of companies is not a necessary condition any longer and depends on the specialization of the cluster. In this case, it is more relevant to pay attention to the adequate feedback mechanism between the participants, stakeholders: local and regional authorities. There are also examples of virtual clusters, which are based on the mechanism of intensive exchange of knowledge, despite the geographical remoteness of the members of the cluster.

**Table 2. Advantages and disadvantages of cluster networks**

Characteristics	Advantages	Disadvantages
Cooperation	Clusters encompass not only companies-members of the cluster, but also institutions that promote cooperation	Results of the activity of the entire cluster depend on the effectiveness of the activity of each participant
Integration and coordination	Existence of formal and informal personal relations helps to better coordinate efforts for adapting to the permanently-changing environmental conditions	Excessive concentration of enterprises on internal relations and disregarding the environment outside the cluster may lead to obsolete technologies and their reduced competitiveness
Territorial localization	Closely located companies are attractive to each other because of the opportunity to save on quick economic interaction, on learning processes, and because of a multiplier effect that impacts the region	Closed nature of the cluster may lead to a decrease in the flexibility of the participating enterprises
Innovation	Including cluster members in the processes of technological, production, market and organizational innovations	There is always a high-risk in the implementation of innovative projects
Closeness	Guarantees a certain level of preserving confidential information, and distribution of unique information only among the cluster members	Lack of competitors within an individual cluster «destroys» the need for continuous improvement of the production and sales process
Uniqueness (specialization)	Clusters are concentrated around certain area of activity, which is common to all participants	Uniqueness of each cluster makes it considerably more complicated to assess its effectiveness, since there is no opportunity to compare it with other clusters
Enterprises-leaders	Presence of nucleus – Center of acceptance of innovations allows for a quick management and response to external changes	Suppressing the interests of small organizations by large cluster-leaders

Source: elaborated by the author.

In order to improve the quality of life in individual regions, it is possible to merge commercial, non-profit organizations, as well as state agencies into «regional networks of economic development». These structures function as non-profit associations who aim at promoting regional development by joint development of strategic plans. This makes them distinct from the industrial clusters, whose purpose is to increase production efficiency. Creating this kind of networks – is a reaction to the emerging imbalance in the region, deterioration of economic situation, enhanced migration of the population.

The initial lack of a formal structure in this kind of associations represents a serious shortcoming, which can potentially affect the durability of the alliance. Creating this type of networks allows finding solutions that could stimulate business development, elaboration of innovative initiatives for addressing problems of the region, while also combining the resources of all members.

**1.3 Assessment of cluster activity**

Synergy is the result of interaction between the cluster participants, which also represents the source of cluster growth. Based on international experience, the «critical mass» of organizations from different sectors that are part of

a cluster should include minimum 30 enterprises. Only in this case there will be «synergistic effect» in the process of interaction between cluster members. [12] Synergistic theory, formulated by R. Eggerson [13], leads to the conclusion that the emerging integration network allows having a result that exceeds the results of activity carried out individually by each company. I. Ansoff [14] identifies 4 types of synergies:

- Sales synergism - using the same channels and associated infrastructure in the selling process of products, occurs when a company, selling several products, uses the same distribution channels, manages sales through one single center and uses the same warehouse;
- Operating synergism - is a result of a more efficient use of fixed and current assets, labor force, allocation of overhead, etc.;
- Investment synergism - represents the result of sharing production capacity, total reserves of raw materials, transport, transferring SREDW costs from one product to another, the use of the same equipment, etc.
- Management synergism – is manifested during development of new products or entry into a new industry. When the previously accumulated experience and knowledge can help address new challenges arising from the company's entrance into a new competitive environment.

Savings are also possible due to the expansion of access to different resources, development of various forms of outsourcing (including R&D, if the cluster includes universities and research institutions), facilitation of entrance into the chains and networks of creating products and technologies, savings due to transformation and transaction costs, general staff management and training.

The following are the parameters for evaluating the performance of the cluster [15]: compliance with development goals; satisfaction of cluster participants with available services; expanding the range of activities and services provided within the cluster; strengthening the links between the science and business; growth of investments in the cluster; growth in the number of jobs; creation of new businesses; improving dialogue with policy makers; development of specialized training; increase in the number of cluster members; attracting new companies to the region; development of new technologies.

Apart from the evaluation criteria mentioned above, clusters' competitiveness also depends on their ability to adapt to environmental changes. Considering the mobility and the uncertainty of the external environment factors, effectiveness of cluster systems is determined by their flexibility and adaptability. This cluster attribute - synthesizing dynamics, can be defined as «the ability to integrate, build and rebuild external and internal competences to respond to rapidly changing conditions [16].»

The progress of the processes will depend on: the level of integration and coordination among organizations – members of the cluster; existence of transactional relations that allow conducting the policy of savings; absorption level - as «the ability of socio-economic environment to assimilate innovations, to use, transform and develop innovative knowledge, to expand the embodiment of this knowledge into new products, services, processes»; ability to create new knowledge and the speed of their implementation; desire and understanding of the benefits of cooperation.

## 2. Cluster Development Policy in the Republic of Moldova

### 2.1 The concept of cluster development in the RM

Establishment of clusters in the Republic of Moldova is at its early stages. The mechanisms of their establishment are not clearly defined, and namely: definition of the development concept, of the basic elements and management tools, evaluation of their effectiveness [17]. According to national legislation, *scientific-technological cluster* represents a group of individuals and legal entities created on the basis of the merging agreement concluded between the accredited organizations in the field of science and innovation and/or accredited high educational institutions, other non-profit organizations, on the one hand, and economic entities, local public administration authorities, patronage associations or professional associations, individuals, financial institutions, international organizations, domestic and foreign investors, on the other hand, in order to carry out activities in the field of scientific research, education and technology transfer of scientific results and innovations, their exploration through economic activity [18].

The main reasons for the insufficient development of the Moldovan industrial clusters are the following:

- the low level of participation in these processes both of large companies and companies from SME sector, absence of a leader who would promote the group interests;
- Lack of cooperation between business sectors, authorities and science and research organizations;
- Limited access to business information as a result of lack of trust between domestic and foreign partners;
- Lack of partnerships between business community and local authorities because of the high level of bureaucracy and lack of financial support of investment projects;
- Insufficient support from outside and absence of self-financing of modern infrastructure projects by businesses.

Based on these recent studies, the number of SME, who signed cooperation agreements on innovative activity with other enterprises or institutions, is very low and represents about 14% of enterprises [19]. About 56% represent enterprises operating in the capital - Chisinau municipality [20]. Science, education and business organizations develop along trajectories, which are often unrelated to each other. This creates an unfavorable environment for improving the competitiveness of enterprises, both at global and at the national and regional levels. It is necessary to develop organizational and managerial innovation development management mechanisms that can ensure a higher degree of interaction between education, science, business and government. [19].

In 2013, Government adopted Decision on approval of the Cluster Development Concept (CDC) of Moldovan industrial sector [21], which is based on the international experience of cluster initiatives, which are an important

component in the development of industrial, regional and innovation policies of advanced economies [22]. Therefore, the adaptation of these methods in the countries with developing economies, in the process of revival of the regions and support of individual industrial sectors, remains open [23].

CDC provides 2 stages of supporting cluster development:

Stage 1 includes: development of policy documents, legislation, development and implementation of the state support mechanism for development of industrial clusters; contribution to the social and business environment; elaboration of «Cluster Map»; development of teaching materials; selection and training of cluster coordinators (facilitators); identification of enterprises interested to cooperate in cluster format; training of cluster managers;

Stage 2 involves development of cluster support policies that will illustrate the positive results in the development process; hardening the requirements for participating in projects funded by the state; focus on the larger and more innovative projects; monitoring the activities of clusters that use state support; updating cluster map. According to the Concept, the production of machinery and equipment, chemical industry and electronics should be included in the next stage of cluster development.

## 2.2 Areas of cluster development

The cluster identification problem is solved in the EU member states in two ways: by statistics, by identifying through the principles of geographical proximity the enterprises with related activities, or by «cluster initiatives» - the process of initiating cluster establishment. The first approach aims to supporting companies - industry leaders in the region, usually the exporters.

The second approach represents the strategic bailout of certain regions. At the same time, there is no universal policy in the area of regional cluster development. Each region should develop its own criteria and cluster development support mechanisms: tax credits for research and development, low-interest loans, grant programs for research and development, training of staff, etc. Governmental structures should provide complex support in the form of cross-industry cluster development support programs, which should combine several areas.

The mechanism of implementation of state policy aimed at supporting the establishment and functioning of clusters is based on the following main elements:

1. Elaboration of the legal basis for establishment and development of clusters.
2. Scientific and methodological support for the development and implementation of cluster policy.
3. Promoting cluster idea and training key individuals at the stage of cluster establishment.
4. Financing cluster policy.
5. Identification of key organizations participating in implementation of cluster projects.

Moldovan experts in the field of innovations distinguish the following priority areas for innovative entrepreneurship and initiation of cluster processes: nanotechnology and new materials, biotechnology, medicine, information technology, manufacturing and processing of ecologically clean food, light industry, and others.

IT sector is the most promising sector in Moldova. There are dozens of foreign outsourcing companies in Moldova, which are integrated in the international systems of development and distribution of software products. Products of Moldovan private IT - companies are used in the activity of state bodies in different countries of the world, including in the US and UK.

Information and communication technology is a rapidly growing sector, which may significantly contribute to the economy in terms of export growth, employment and national income as a whole. The sector of information technology and communication (ITC) is one of the few sectors where the Republic of Moldova has good indicators; the share of the gross domestic product (GDP) of this sector in the country represents around 10%, with the market value of more than 6 billion lei per year.

In terms of the speed of Internet access, Moldova is among the top 20 countries in the world. In accordance with the goal of the Digital Moldova 2020 Strategy, about 80% of public services will be available on Internet and 60% of citizens will be able to use digital signature. Also, Parliament adopted a law on IT parks, whose key element is to introduce a single tax of 7% for the residents of IT-parks for 7 years.

Clusters can also develop based on joint research conducted by private and scientific-research institutions in the field of nanotechnology and new materials, food industry and the use of renewable energy sources in agriculture. When researching cluster initiatives at the regional level, it is important to identify the existing areas of region's specialization or justify the new areas. The index of specialization of RM regions, based on the study of Gutu K. [24], shows the main areas of the sectoral development of cluster networks. The leading areas are - production of natural wines, manufacture of clothing, dressing and dyeing of fur (sheep wool). These areas should be primarily researched to determine the cluster links.

## 3. The potential for development of cluster policy in ATU Gagauzia

### 3.1. Mechanism of development of regional clusters

At the level of regional development (RD) in the RM (including DR Gagauzia), there are a number of objective reasons that adversely affect and hinder the creation of clusters in the region. They include:

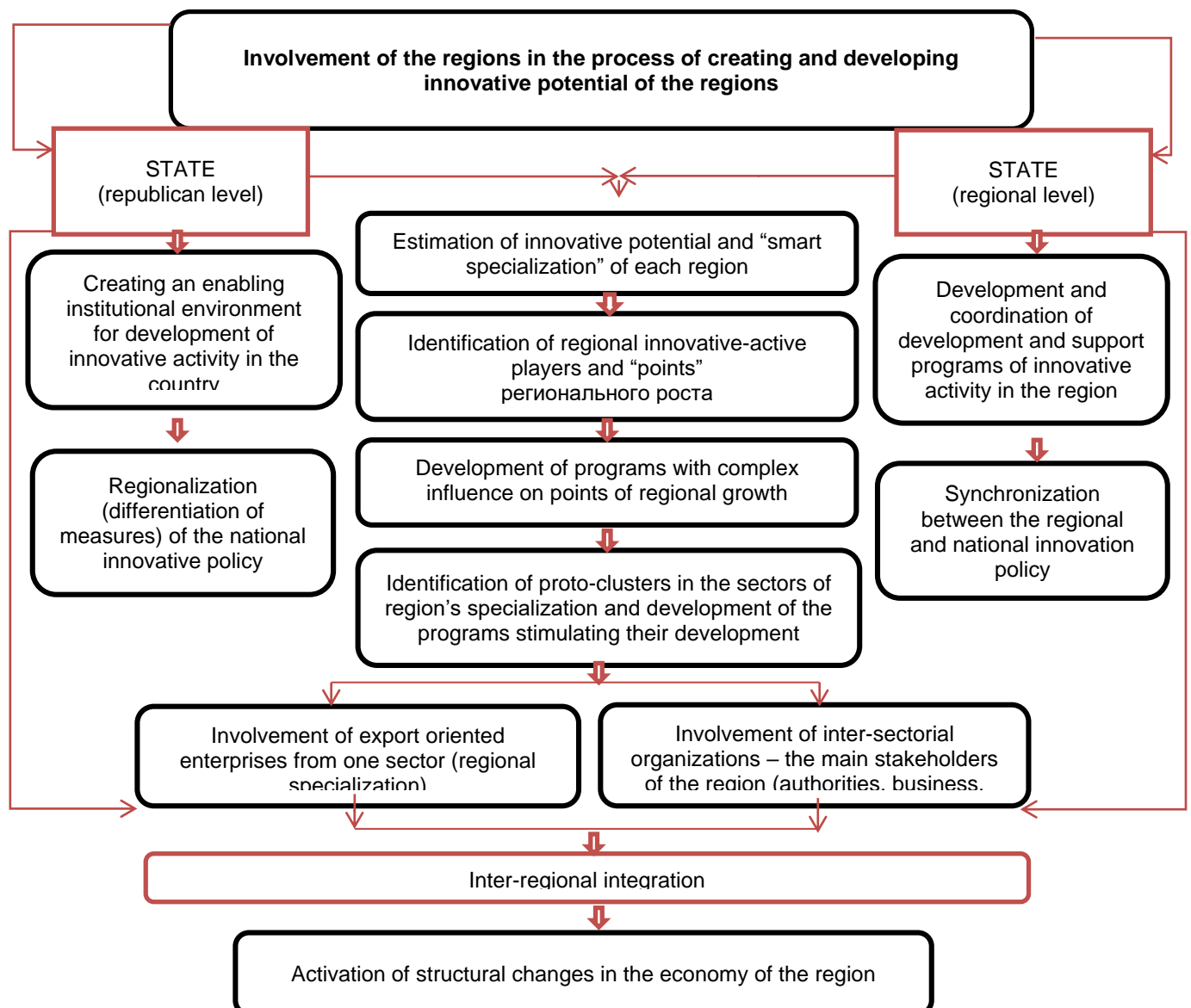
- low level of interaction, trust;
- insufficient level of economic influence of regional authorities on the entities that are part of cluster structure;
- unstable relations between research-scientific institutes, universities and industrial enterprises;
- short-term strategy of development of enterprises and lack of long-term interest to increase their competitiveness in the administrative bodies;

- low level of business development infrastructure;

However, establishment of clusters is not only possible, but also necessary for consolidation of small and medium enterprises in the Republic of Moldova, as well as enhancing competitiveness of key sectors of the economy, etc. Implementation of the regional development strategy, ensuring development of innovation capacity, shall be accompanied by coordination of efforts for creating an innovative infrastructure, developing innovative entrepreneurship, improving interaction of the regional administrations with the existing components of the innovation infrastructure: research-scientific and educational centers, innovation infrastructure, infrastructure for financing innovations, innovation companies.

The mechanism of organizational and methodological support for managing implementation of the concept in the interests of socio-economic development of the region requires, first and foremost, the definition of the «smart specialization» of the region – which means selecting the areas that will make the greatest contribution to the development of the region through the support of research and development within the selected specialization.

This category might include not only high-tech or dominant industries in the regional manufacturing, but also areas whose investment and development will contribute in the future to the development of the region. For example, ATU is a touristic and recreational area of activity, which has none of the two characteristics mentioned above, but which clearly has the development potential, as well as certain specializations determined by experts: agricultural biotechnology, and energy efficiency.



**Figure 2. The model of enhancing innovative capacity on the basis of clustering the industries and sectors of regional economy**

Source: developed by the author.

The state in this concept has three functions:

- 1) creation of conditions for coordination and selection of the «smart specialization»,

2) monitoring cluster development from perspective of the specialization selected by the regions,  
 3) identifying the needs that have emerged in related to the selected specialization (e.g., education), and introduction of appropriate incentives and support measures [26]. Innovative Development Council, which was created in Gagauzia, may take over these tasks.

Identification of export-oriented industries has an important place in the system of regional relations, which is a direct confirmation of the competitiveness of products exported to the foreign markets. According to GDEDG data, the 9 groups of goods exported from ATU Gagauzia include 96% (1,585.400,000 lei) of the total amount of exports in 2015, and namely: alcoholic beverages – 42,6% (687,6 million lei), sunflower – 16,5% (272,9 million lei.), clothing – 16,2% (267.6 million lei), glass and products made of grass – 6,6% (109,5 million lei), vegetable processing products – 5,6% (92,4 million lei), oil products – 5,5% (90,6 million lei), cereals - 2% (33,5 million lei), and fruits- 2 % (33,1 million lei).

Universities have a special role in the selection of «smart specialization» of the region in the EU Member States [27]. Revising the traditional role of universities in the process of innovative development of the Republic of Moldova, reviewing their status in the regional development and their approval as «points of regional growth» – represent the necessary conditions in the process of building regional innovative strategies.

Universities may contribute directly to promoting the objectives of the regional development in different forms, including through: activation of innovations through implementation of the results of research-scientific activity; contributing to the development of entrepreneurial activity in the region; development of human capital and skills through life-learning process; improving social equality through recovery of the economy and cultural development of the regions.

### 3.2 Innovation and Education Cluster

The most important characteristic of the modern cluster is an innovative component that contributes to the growth of the competitiveness of its members. Unlike the traditional industrial clusters, innovation clusters represent a system of close relations not only between companies, their suppliers and customers, but also with the institutions of knowledge. Research centers and universities, as integral part of innovation clusters, generate new knowledge and innovations, as well as ensure a high educational level of the regions where they operate.

Innovation clusters allow coordinating the efforts and financial resources to create new products and technologies and release them to the market. In fact, clusters allow creating a closed technological chain - from research and development in the field of creating a new product to its production and release to the market. Another difference between innovation clusters and traditional industrial clusters is the manufacturing of mainly export-oriented products and technologies within innovation clusters.

Based on the studies described in the previous chapters, we focus on one of the types of knowledge cluster – Innovation-Education Cluster (IEC), which is present in the regions of the countries with underdeveloped industry and innovative infrastructure. The leading role in the development of this structure belongs to the Comrat State University (CSU), which implements educational programs, innovative projects, conducts information campaigns, by merging entrepreneurs-producers, intermediaries of innovations, as well as research groups and scientific institutions.

Based on close cooperation between researchers, teachers, business partners and representatives of state authorities, this type of structures can solve the problems of innovative development of the region: stimulating the development of new ideas, contributing to incubation of new businesses and improving the educational process. *The regional innovation - educational cluster* can be defined as geographically concentrated innovation and educational organizations, which, through active interaction, act as driving forces for the development of innovative specialization of the region.

Based on synergies, the benefits for organizations to join the cluster are obvious. The nucleus of the EIC «InnoCenter» of the Comrat State University - will act as an advisory body for creating the necessary connections between various actors and stakeholders [27]. They may include organization of seminars, conferences, group discussions, lectures, etc., while ensuring the participation of the University, relevant entities of local and national industry, scientific-research institutes, civil society and government.

The center of the innovation cluster will coordinate and stimulate entrepreneurial activity in the university, among students, as well as in the existing business; and identify problems faced by local communities. In combination with the favourable innovation environment of the region, which includes the regulatory and financial component, cluster partners are focusing on the introduction of advanced learning technologies, optimization of research and accelerated development of new tools and approaches for learning. [28]. The main model for EIC represents interaction of three components: state, business and universities. The leading role of a model component may depend on the balance of forces in the region, as well as initiatives of the parties. Ultimately, the components of this model should be in equilibrium. As practice shows, the projects based on initiative, which grows from bottom-up, are more successfully implemented in the end; however they require a mature civil society and active local authorities.

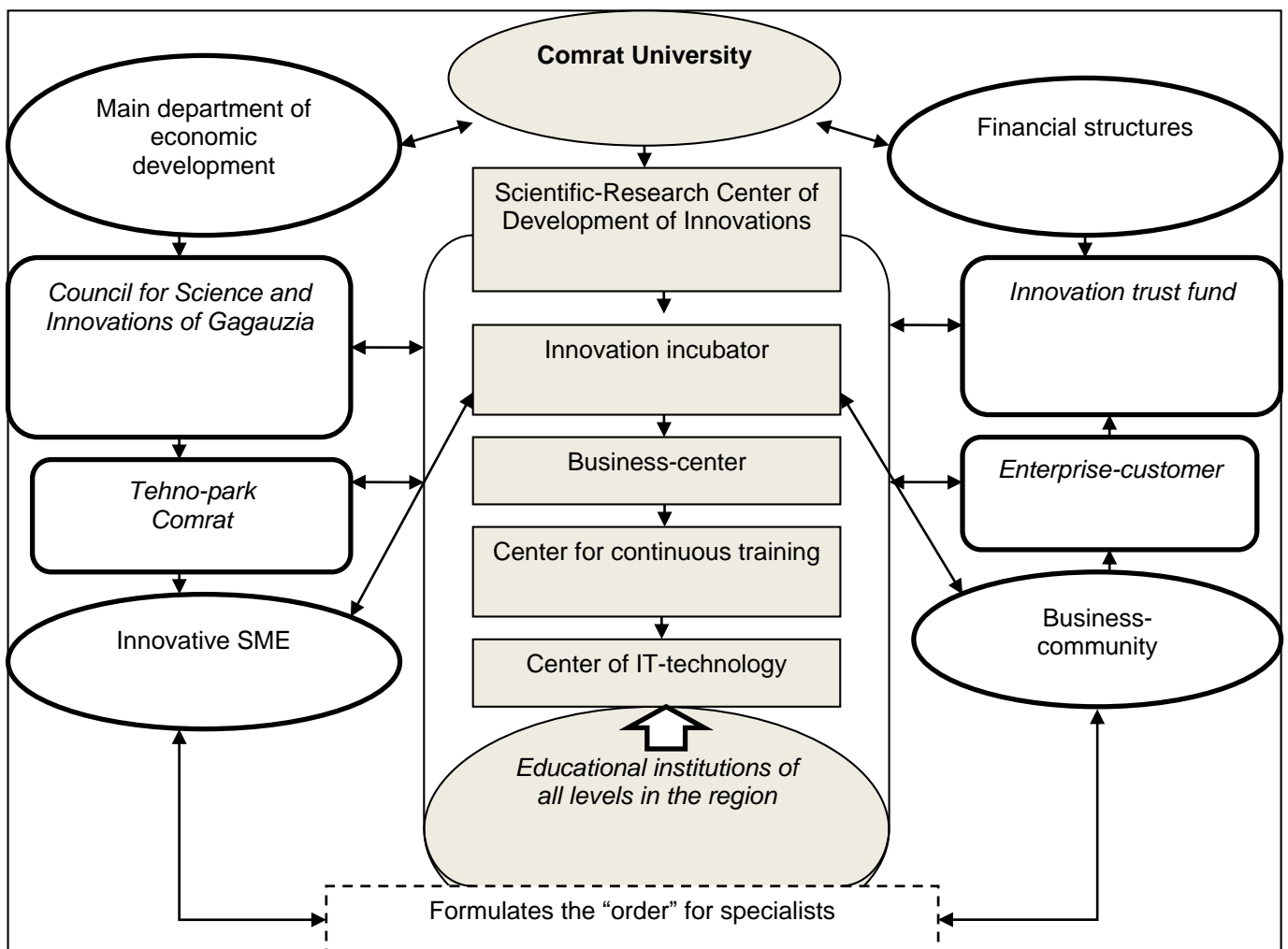
For the effective functioning of EIC on the territory of Gagauzia, it is necessary to solve the following tasks:

- create legal and regulatory framework supporting the establishment of such clusters at the national and regional level;
- develop elements of innovative infrastructure: techno-parks, business incubators, technology transfer centers, venture capital companies;
- create a system of state support for innovative companies, especially during the launch of small business.

The merger of businesses, educational institutions and business service providers leads to support to the development of research structures: scientific-research institutes, centers within universities, innovation incubators, techno-parks, research laboratories of the companies, etc. The center of innovative cluster will coordinate and stimulate



entrepreneurial activity both in the university among students, as well as in the existing business, and identify problems faced by local communities. It is necessary to distinguish the following main challenges faced by InnoKlasterom:



**Figure 3. The proposed innovation infrastructure of the region of Gagauzia by including its basic element «education-innovation cluster».**

Source: developed by the author.

1. Creation of a unified information and educational environment between the IEC members: harmonization of educational curricula, creation of resource centers, development of scientific and innovative activity; assistance in obtaining patents and registration of innovative technologies; increase in the number of publications in peer-reviewed journals.

2. Elaboration of EIC partnership strategy with commercial, non-profit and governmental agencies: forecasting the need for professional staff in order to ensure the necessary specialists; signing of agreements on joint research with business representatives; organization of work based on grant support of priority research and shortening the terms of their commercialization; modernization of laboratories and opening of small innovative enterprises under university departments and preparation of innovation specialists; implementing R&D results within the companies in the region;

3. Integration into the global educational space: organization of internships in foreign universities and enterprises; conducting and participating in conferences, Olympiads, projects, competitions, etc.; implementation of the «double diploma» programs.

4. Creation of a single center for research and development of the region's ecosystem, implementation and active use of scientific achievements by business entities.

At the national level it is necessary: to create an independent Department of Science and Innovation within Government, which will take over the development of state policy in the field of science, development of the state order to the science, and checking the compliance of real achievements of the science with the state order; development of the state program on cooperation of business and scientific institutions that includes broad awareness raising among business about the achievements, the priority needs of the state in the process of development of scientific activity, development of incentives for introducing science in business, and creation of high-tech industries in the priority areas.

This means that the strategies of companies focused on internal changes become secondary, giving way to a different way of thinking about the competitive advantages outside the company or even outside the sectors and the

regions of its functioning. This is a «new way of thinking about the national, state and local economies that require new roles for the companies, for the various levels of government and for other enterprises to improve competitiveness» [29].

### 3.3 Areas of development of «Cluster map» of the region

Mapping the region's clusters allows predicting the development of the following networks:

1. The purpose of the «Innovation-Education» cluster represents – interaction with enterprises that order innovations, public authorities, educational and scientific institutions, financial institutions.

2. The purpose of the «Agro-industrial» cluster represents - increase of grain production in the region; expansion and development in the region of agro-industrial production; expansion and development in the region of processing industries; integration of the region in the global agro-industrial market.

3. The purpose of the «Tourism and recreation» cluster represents - creation of a recognizable and well-known brand and an attractive image of Gagauzia, comprehensive development of touristic and supportive infrastructure; integration of the region in tourist border areas; addressing the major social and demographic problems of the region.

4. «Wine» cluster, which is characterized by the «leadership» strategy of the main sector of export specialization of the region - wine-making, which implies introduction of domestic innovations in this area, support and development of research activity.

The level of specialization of ATU Gagauzia was also considered for establishment of a wine cluster in the region. The following parameters represent the most accessible method for analysing the significance of a particular sector of the region in the country's economy as a whole: the coefficient of localization and coefficient of specialization. If the analysed parameters exceed one, then we can talk about specialization of the region in this sector. Parameters indicate a high level of specialization of the region and the possibility of creating the winemaking cluster in ATU Gagauzia.

**Table 1. The main industrial agglomerations based on the «cluster» type (Regions of development of Republic of Moldova)**

	Index of specialization	Average number of employed (persons)
<b>Chisinau municipality</b>		
Production of vehicles	2,139	192
Production of technical equipment for the office	2,034	174
Paper and cardboard	2,012	1383
Publishing, printing and reproducing recorded media	1,753	2515
Manufacture of leather, leather products and shoes	1,722	3176
Manufacture of tobacco products	1,698	1013
Furniture and other products	1,634	3024
Manufacture of rubber and plastic products	1,583	2119
Production equipment, as well as medical equipment, precision and optical instruments	1,576	1485
<b>Development region «North»</b>		
Production of electrical machinery and electrical equipment	2,517	1508
Mining	1,390	1237
Production of clothes, dressing and dyeing of fur	1,311	5840
Production and distribution of electricity, gas and hot water	1,220	3720
Food and Beverage	1,157	10142
Production equipment, as well as medical equipment, precision and optical instruments	1,048	528
<b>Development region «Center»</b>		
Mining	2,061	1207
Wood and products	1,738	567
Production of textiles	1,650	679
Food and Beverages	1,364	7868
<b>Development region «South»</b>		
Production of textiles	3,621	638
Food and Beverages	1,505	3717
Wood and products	1,152	161
Production of clothes, dressing and dyeing of fur	1,043	1310
<b>Development region «Gagauzia»</b>		
Production of clothes, dressing and dyeing of fur	2,548	2148
Food and Beverages	1,028	1704

Source: Gutu C. *Elaboration of the models of regional development through establishment of clusters». Scientific report. - ASEM, Chisinau 2009.*

Considering the wine industry from ATU Gagauzia as the basis of the wine cluster in the south of Moldova, it is necessary to also note the following conditions for its establishment:

1. Favorable economic and geographical position of ATU Gagauzia;
2. Presence of favorable climatic conditions for the cultivation of grapes - the main raw material in the production of wine;
3. Qualified human resources;
4. Functioning of the Comrat State University, which trains specialists in the field of wine-making;
5. Development of services provided by the Innovation Incubator, which aims at developing the economy based on innovations and transfer of new technologies based on the promotion and development of innovative SME;
6. Developed scientific basis of viticulture and winemaking;
7. High geographical concentration of wineries in view of the small area occupied by the autonomy;
8. Existence of administrative structures and enterprises able to enter the value chain;
9. Use of good practices from EU countries on stimulating the creation and successful development of clusters.

In addition, the most viable clusters are developing in the sectors and regions where entrepreneurs have already established cooperation and there is a certain degree of dialogue and trust. Such cooperation on the territory of ATU Gagauzia is represented by the Association of Winemakers of Gagauzia «GAGAUZIA-VIN». Association of Winemakers of Gagauzia, «GAGAUZIA-VIN», is the governing body of the cluster. The main participants of the cluster are directly involved in the cultivation, processing grapes, bottling and storage of wine. The operating cluster members contribute to the wine marketing, selling of finished products, development of new markets, preferential financing of processing enterprises, as well as financing of the cluster from the special support funds, etc.

**Conclusion.** Accelerating the pace of innovation development requires creation and development of new structures of interaction between economic entities at the regional level. The efficiency of the economy is determined by the degree of development of innovative processes, and gaining new knowledge and applying it in the productive sectors of the economy and social sphere are equally important components.

One of the areas represents elaboration of the conceptual model of the development of innovative potential of Gagauzia's economy on the basis of clustering the industries and sectors of the regional economy. EIC as a symbiosis of enterprises, government agencies, educational institutions and business-service providers of the region with the center - Comrat State University will allow establishing an exchange of innovative information, inventions and finished products and technology among all the structures of the cluster also in the future and extending them to the whole region and, ultimately, the whole country.

This cluster can contribute in the future to the creation and development of cluster networks, which all jointly aim at innovative development: «Wine Cluster» (potential interaction with the research laboratory of the university department «Winemaking»), «Tourism and recreation cluster» (potential interaction with the university department «Economics» in the field of training specialists on marketing and tourism); «Agro-industrial cluster» (research on the basis of Agricultural Technological Faculty).

The research conducted in RM shows that innovative culture is underdeveloped and, as a rule, enterprises do not know to what level of quality and originality of their products they should strive in order to occupy a leading position at the domestic and international markets. At the same time, enterprises of RM are characterized by: low level of management, disinterest in innovations, low qualification of staff, etc. These factors contribute to the low level of competitiveness of enterprises and require urgent measures to ensure survival of the Moldovan economy in the conditions of globalization.

It is necessary to develop organizational - economic mechanisms for governing innovative development that can ensure a higher degree of interaction between education, science and business. We believe that it is necessary to develop the mechanisms of such interaction based on the establishment of education innovation clusters.

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