

ANALYSIS OF THE INNOVATION CLUSTER FORMATION IN THE DEVELOPED INDUSTRIAL COUNTRIES

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Abstract

The article deals with the vast practice of the cluster development in the world that potentially can be adopted in the course of the Russian cluster policy development. The matter of great interest is the experience of the highly developed industrial countries, such as the countries of Europe and the United States, nowadays remarkable for the considerable number of various cluster projects being successfully run in different sectors of the world economy, for the carefully worked out and approved methods of the cluster development. The article sums up the trends in the economic development and in the cluster development in particular, singles out the key factors that create the favorable conditions for the cluster formation and its further growth.

Key words: innovation, cluster, innovation cluster policy, cluster development programs

JEL Code: O100, O3, R100

Introduction

The world economy suggests a great number of successful cluster projects, and this wide experience can be adopted in the process of the Russian cluster policy development. There are many examples indicating that the competitive advantages of certain product manufacturers and service providers in the global marketplace were achieved by means of the clusters: the IT cluster in the Silicon Valley (USA), film production in Hollywood, shipbuilding cluster in Tasmania (Australia) etc. The matter of great interest for Russia is the experience of the highly developed industrial countries, such as the countries of Europe and the United States, nowadays remarkable for the considerable number of various cluster projects being successfully run in different sectors of the world economy, for the carefully worked out and approved methods of the cluster development.

Theory

The development level of the countries of Europe and the United States is mainly the same, so that it is possible to single out some general trends in development of the economy, and in particular – in the cluster development. However, the formation process and the current state of the economies have their peculiarities determined by the following factors:

- comparatively independent development of the industrial sectors;
- different traditions and national features of the economic management.

Innovation turns into the leading factor for of the economic growth in the countries with the high level of development. For European countries the use of the cluster potentials is the main instrument for achievement of the social and economic goals¹.

In Europe there is no lack of clusters, but there is a certain need of the global scale clusters of and the clusters in the high-technology sectors². In order to encourage the entry of European clusters to the world markets a special attention and support is given to the cross-border cooperation. The latest investigations reveal the retardation of European clusters in the sphere of IT³, which actually could have been the strong driver of the total economic growth in whole Europe, and in particular, the use of technology could foster the interaction between the existing clusters, thereby enhancing their capacity.

Great efforts are made for creation of the interaction platforms for the members of the innovation technology clusters intended for accumulation of all the necessary information about the clusters. One of the platforms working in this direction is the online network The European Cluster Observatory, which provides the unified access to the data about the clusters and the cluster initiatives. There is a “cluster map” created on this basis suggesting the variety of the instruments for analysis: it allows making standard and specific inquiries. Besides this platform there are other ones, among them the research works of Harvard Business School can be singled out, although these researches are mainly casual in character, not continuous.

The next program – European Cluster Alliance, was created within RPOINNOEurope program as means for establishment of the dialogue between the national and regional authorities in order to promote the efficient cluster policies, to eliminate the duplicating functions and to reduce the fragmentariness of the cluster initiatives in Europe⁴.

¹ Europe 2020. A strategy for smart, sustainable and inclusive growth. European commission. Brussels, 2010, p.17.

² The concept of clusters and cluster policies and their role for competitiveness and innovation: main statistical results and lessons learned // Commission Staff Working Document SEC (2008). – Luxembourg: Office for Official Publications of the European Communities, 2008, p.5.

³ Innovation Clusters in Europe: A statistical analysis and overview of current policy support. DG Enterprise and Industry Report, 2008, p.12.

⁴ Ibid, p.3.

Tab. 1: The current and planned projects on the cluster support in European Union

Analysis, strategy formulation	Experience transfer and cooperation between the cluster members	The support of the cluster policies	Transnational cooperation assistance	Enhancement of the cluster business environment
European Cluster Observatory	European Cluster Alliance	Cohesion policy (structural funds)	Regions of Knowledge	Europe INNOVA (CIP)
European Cluster Policy Group	Regions for Economic Change			European Pilot Initiative for Excellence of Cluster
	INNO-Policy TrendChart			Enterprise Europe Network1

Source: Commission Staff Working Document SEC (2008)⁵

The business line of European Cluster Excellence Initiative is the search for the optimum schemes of the cluster management, the expected result of its functioning is the improvement of the cluster management system.

Moreover, there are regular meetings of the experts organized in order to provide the EU Commission with the consulting on the questions of the cluster development programs elaboration. Thus, the results of European Cluster Policy Group are EU Commission recommendations as for the priorities in further cluster development.

Besides the policies aimed at cluster development, there other European programs which somehow affect it. Among those are Europa INNOVA, Regions of Knowledge, Enterprise Europe Network etc. A great number of various programs on the regional and national levels, and also on the level of EU Commission, often leads to the duplication of their functions and investment that causes now the necessity of a certain coordination mechanism⁶.

An important place in Europe is given to the biotechnological clusters. The biotechnologies, alongside with nanotechnologies, micro- and nanoelectronics, photonics and engineering of the “new” materials, are called “Key Enabling Technologies”, which in perspective may form the fundament for the EU economic evolution⁷.

⁵ The concept of clusters and cluster policies and their role for competitiveness and innovation: main statistical results and lessons learned // Commission Staff Working Document SEC (2008). – Luxembourg: Office for Official Publications of the European Communities, 2008,p.62.

⁶ Ibid, p.61.

⁷ Preparing for our future: developing a common strategy for key enabling technologies in the EU.// Communication from the commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, SEC, 2009, p.4.

The biotechnology is important for Europe for the following reasons⁸:

- as a required condition for achieving the food security in the region;
- as a response to the climate change in the region (mitigation of the consequences and adaptation to them);
- job-creating and maintaining of the regional economic competitiveness.

There is a number of large biotechnological clusters functioning at the moment in the EU, such as: Medicon Valley (Sweden, Denmark), BioValley (Switzerland), BioCat (Spain), the cluster of Picardie and Champagne-Ardenne regions (France). Besides them there are other examples of bioclusters, attractive for the business entities due to the potential profit on the technology onrush and for the local authorities who thereby may acquire an extra tool for the social and economic development of the regions.

There are projects realized within the EU and aimed at development of the biotechnology and the bioclusters. The most significant among them is European Council of Bioregions (CEBR), established in 2006. The main objective of CEBR is the competitive recovery of the biotechnological products that can be achieved through solving of the three core problems: the reduction of the fragmentariness of European companies and regions; the transformation of the competitiveness between the regions of Europe into cooperation; the formation of the platform for the biotechnological initiatives in the EU in general⁹.

At the moment there are 2 projects being run under the patronage of CEBT¹⁰:

- BioCT within the 'Regions of knowledge' project, which is aimed at the elaboration of the unified action course of biotechnological production development;
- ABCEurope, which unites 14 European biotechnological clusters.

A separate purpose-made platform NetBioCluE (Networking activity for Biotechnology Clusters in Europe), which is a part of the Europe INNOVA project, was created in order to encourage the cluster interaction in the spheres of biotechnology and healthcare. The reports for European authorities on the current situation and the recommendation provision concerning further development of the bio-industries are performed by EuropaBio.

The research work by A. Skoch¹¹ presents the analysis of 33 clusters in various economic sectors, located in different geographic regions of Europe, and on this basis the

⁸ Innovating for sustainable growth: a bioeconomy for Europe // European commission, Brussels, 2012, p. 3-5.

⁹ Rekord S.I. Industrial and innovative clusters development in Europe: evolution and contemporary discussion. – Saint-Petersburg, The Publishing House of Saint Petersburg State University of Economics and Finance, 2010, p.83.

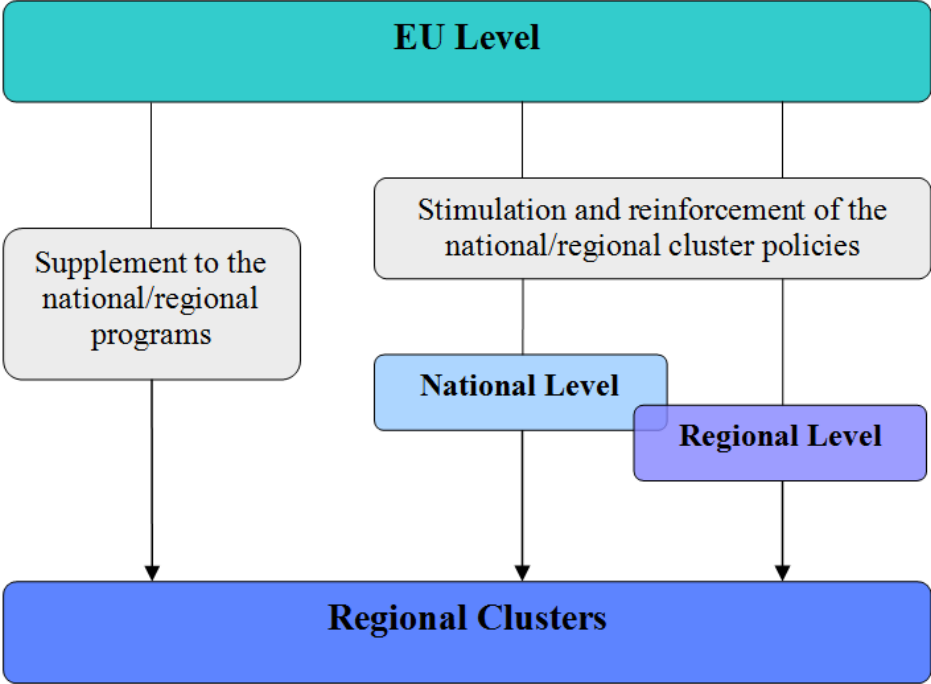
¹⁰ Ibid.

author suggests the average profile of the European cluster. Most of the examined clusters are recently originated: only 5 clusters appeared before 1940, 8 clusters were created in the period 1940-1970, while the rest 20 were formed after 1970. The recent origination is typical not only of the knowledge-intensive, but of the traditional clusters. Approximately 2/3 of the regional clusters unite less than 200 firms, the employment in most of the clusters exceeds 2 thousand people.

For the latest decade the number of the employees has increased in majority of the clusters, while in the 70% of the clusters showed the growth of the quantity of firms¹². The employment data offer a contrast to the average sector indicators, which are notable for the poor growth and even decrease of production.

The regional cluster policy proves greater efficiency in comparison to the federal or national ones, because it considers the geographical peculiarities and the peculiarities of the business located in that area.

Fig. 1: The role of the EU in development of the regional clusters



¹¹ Skoch A. International experience of formation of clusters//Kosmopolis. 2006/2007, No. 2(16).

¹² Skoch A. International experience of formation of clusters//Kosmopolis. 2006/2007, No. 2(16).

The observation of European cluster practice¹³ allows us to single out the following peculiar features:

- As a rule, the cluster policies are aimed at the support of the small and medium businesses, but the number of the cluster members should not be limited, because the cluster initiatives which managed to accumulate the maximum enterprises and firms different of different scale and forms of ownership and with different capital structures, have proved the greater success.

- An insufficient attention is paid to the cross-national interaction. The cluster policy is reduced to the establishment of the cooperative interaction between the scientific organizations and the production и производством, moreover, only a limited number of the clusters are intent on the international competitiveness.

- A great attention is paid to the financial stimulation of the cluster initiatives from the federal funds, while the public sector often is left in the background.

- A tendency for creation of the new high-tech clusters, while the service, financial, and transportation & logistics clusters are poorly understood and left unappreciated;

- The all-European cluster policies are poorly coordinated with the regional ones.

- A multitude of the projects aimed at innovation and cluster development, a steady proliferation of which leads to the incoordination and non-systematic, fragmentary analysis of the previous experience.

Due to that the US economy contributes the largest solid economic complex, it takes precedence over the EU economy. Within the period 1990-2005 one third of the world GDP growth belonged to the USA. In 2008 the US GDP per a work hour was the highest in the world¹⁴. The absence of grave commercial, investment and migration barriers in the USA gives reasons for the high industrial intensity. According to the reports by The European Cluster Observatory, in 32 out of the 38 spheres under analysis the territorial concentration in the US is higher than in Europe. Moreover, the US and Europe differ in the entrepreneurial culture, thus, 61% of the Americans are interested in their own business, while in Europe the figure 45%¹⁵.

The last decades marked the shift of the economic structure towards the production of the high-tech goods and services; a new knowledge-based economy has been created. The

¹³ Innovation Clusters in Europe: A statistical analysis and overview of current policy support. DG Enterprise and Industry Report, 2008, p.24.

¹⁴ Porter M., Ketelhohn N. Automotive Cluster in Michigan (USA), 2009, p.4.

¹⁵ The concept of clusters and cluster policies and their role for competitiveness and innovation: main statistical results and lessons learned // Commission Staff Working Document SEC (2008). – Luxembourg: Office for Official Publications of the European Communities, 2008, p.26-27.

evolution of the economy became possible due to the high innovation potential; for example, the US takes the leading place in the patent quantity per capita. Nevertheless the US takes additional measures on maintenance and strengthening of the competitiveness.

The US economic policy is remarkable for the restricted interference into the cluster development process. The US authorities do not consider it necessary to scrutinize the commercial success of the businesses if it does not cause the damage to the US economy. Moreover, the USA, as distinct from Western Europe, is characterized by the high absorption of market and the strong diversification of the sectorial structure of the economy. In our opinion, it is the reason why the USA has adopted the so-called “upward” model of the cluster development, which presupposes the business initiatives as the starting point, and the function of the state authorities consists in the development of the sci-tech partnership, in the tax credit extension and the provision of concessional taxation for the enterprises and firms involved into the state and the private R&D programs¹⁶.

Notwithstanding the absence of the federal cluster policy, there is a multitude of the regional programs. A good example of the effective cooperation between the R&D organizations, the business entities and the authorities of the state of California is Silicon Valley. Silicon Valley, located close to Stanford University (San Francisco) and the University of California (Berkeley), displays the numerous companies producing computers, computer accessories and software¹⁷.

One of the most high-capacity clusters in the US is the Michigan Automotive Cluster. Currently, the 61 out of the 100 agencies representing the leading motorcar manufactures are located in the state of Michigan. The cluster comprises 250 technology centers, 58 colleges and universities on the motorcar industry¹⁸. At present the Michigan Automotive Cluster can be considered a developed cluster with almost exhausted potential and its further development is possible only via transformation.

The Michigan Automotive Cluster start forming in the XX century with the emergence of the launching of the motorcar production by H.Ford, W.Durant and R.Olds. At that time the state of Michigan was the leader in production of the wood and the copper, the ironstone of Minnesota was available as well. The Great Lakes provided the access to the dynamically developing states, to Chicago and New York, the railway connected Michigan to the south and the west of the country. Michigan in its turn was attractive due to the available high

¹⁶ Menshenina I.G. Clustering in regional economy: monograph / I.G. Menshenina, L.M. Kapustin. – Yekaterinburg: Publishing house of the Ural State University of Economics, 2008. – 154 pages, p.53.

¹⁷ Ibid., p.58.

¹⁸ Official site of the Michigan economic development corporation, URL: <http://www.michiganbusiness.org/>.

skilled labour force and the low level of the underdeveloped trade unions. The presence of the steel producing manufactures the production of locomotives and trains determined the availability of the workers familiar with metal working. Moreover, the accumulated income from the forest industry, the mineral industry and the availability of the venture capital allowed investing in the motorcar industry¹⁹.

Originally the Michigan Automotive Cluster specialized in the passenger car production, which characterized by greater demand as compared to the lorry production. By 1910 458 thousand of motorcars were released and this sector turned into one of the key industries of the country²⁰.

Further development of the Michigan Automotive Cluster was conditioned by the large steady market: in 1956-1958 the American Government introduced the program on improvement of the highway service between the states; the growth of the suburbs caused the increase of the customers dependent on the transportation; the car acquires the status of an icon and the Americans become eagerly anticipant of the new model releases. Until the 70s the American car manufacturers operated in almost non-competitive conditions, and by the end of the 70s the car market grew up to 111 million items. However, the economical recovery of Europe and Japan called forth the car import, and the oil crisis of the 80s highly influenced the customer preferences and caused the drastic demand for the economy cars²¹.

The increase of imports entailed the emergence of the foreign motorcar plants in the USA and the retard of the American manufacturers became obvious. The market crash in 1987 resulted in the serious difficulties the American producers had to confront with.

Conclusion

The manufacturers-members of the Michigan Automotive Cluster experienced the market share loss for the next 20 years. The 90s marked the increase of their market share due to the introduction of the new market segments such as SUV and LCV, but the overcoming of the lag in the quality level became possible only by the beginning of the XXI century²². Nevertheless, in our opinion, the American practice of the cluster formation and development has its strong points that may be adopted and used in the process of the innovation cluster development in the regions of Russia.

¹⁹ Porter M., Ketelhohn N. Automotive Cluster in Michigan (USA), 2009, p.13.

²⁰ Ibid., p.14.

²¹ Ibid., p.15-16.

²² Ibid., p.17.

Hence, we consider it efficient to take over the competitive mechanism conceived in the American automotive clusters that also combined the method of product range expansion with the cross-investment into the clusters from the related economic sectors. The implementation of these mechanisms in the Russian cluster development presupposes the introduction of the cross-shareholding practice within the companies belonging to the innovation cluster. Consequently, the cluster in the aspect of ownership is to constitute the solid holding in the form of the financial and industrial group.

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