

## Classification of the Innovation Clusters in the Regional Economy

Ablaev I.M.

Kazan Federal University, Institute of Management, Economics and Finance, Kazan, 420008, Russia

Doi:10.5901/mjss.2015.v6n1s3p361

### Abstract

The article describes the different ways of organizing innovation clusters and innovation at the regional level. This article also considers various strategies of innovation management, described the types of innovative clusters. It also describes the international experience of development of innovative clusters.

**Keywords:** innovation cluster, innovation management, classification of clusters.

The regional innovation cluster is not a single phenomenon, but a multileveled and complex notion. The innovation cluster formation and development depend on the corporate (punctual), elemental and process (structural) spatiotemporal aspects. In the modern economic literature the interest towards the innovation activity has passed several stages. Initially it was treated as the activity of individual innovators – it resulted in the commercial success of the inventions and inventors (like the invention of the tires by Goodyear, or a compressed-air brake by Bendix, or a transistor radio by Bell). All these innovations mostly were used by one company on their own or by small groups, thus they were punctual in their character. The key element of the analysis in this case was the inventor himself or innovator working in the company.

Globalization caused the differentiation and integration of the economies of various countries, the innovation process became complex and comprised a wider range of activities, therefore *поэтому анализ инновационной деятельности вступил в новую фазу*. At present time the process of formation and development of innovation is usually considered more as the continuous process of collective activity than individual one. Such kind of collective collaboration in the field of innovation is performed by the groups of specialists or the groups of companies – the sectorial or intersectorial clusters. Such collaboration results in the origination of the international innovative enterprises of the small and medium-sized businesses at the regional level, and the transnational corporations at world level.

Nowadays both in the foreign and the Russian economic literature there is a prevalent viewpoint that the main criteria in rating the innovativeness of the activity is the presence of the cluster consisting of the interrelated companies of various sectorial specialization that are located considerably close to each other within a certain region, are the parts of one production and technological chain and unite their labour resources, communication channels, forming the single infrastructure. But for the latest twenty years the innovative clusters were formed in different countries. The companies constituting these clusters belong to highly diverse range of economic sectors from the high-tech (pharmaceutics, computer technologies, instrument-making, mobile phone manufacturing) to more traditional ones like clothing and car production. Almost in all of these cases these forms interact with each other by means of labour resources exchange, access to information, provision of ties between manufactures and suppliers, venture capital obtaining and combination of all these factors<sup>1</sup>.

Globalization of the world economic relations over the last 25 years led to origination of the principally new type of the innovation clusters, not regionally located, not compact, dispersed about all over the world. Thus, for example, the sphere of research and development can exist in the form of virtual research institute and be situated in Europe with experimental base and pilot-scale production in China and Southeastern Asia, and with dealer-sales network in the USA.

However, not all the innovation companies work likewise. There are essential differences in the internal structure of the innovation clusters: some of them are focused on the production, others have the joint marketing. Upon closer examination it proves that the similar clusters show considerable heterogeneousness in terms of their organizational

<sup>1</sup> Scott, A. (1990) *New Industrial Districts*, Pion, London; Sternberg, R. (1996) *Reasons for the Genesis of High-Tech Regions – Theoretical Explanation and Empirical Evidence*, Geoforum, 27, 205-233; Keeble, D., and Wilkinson, F. (1999) *Collective Learning and Knowledge Development in the Evolution of Regional Clusters of High Technology Industry in Europe*, Regional Studies, 33, 295-305.

structure<sup>2</sup>.

In 2005 it was suggested that there were different types of innovation clusters and that at least some of them embody the firms that had nothing in common with other innovation enterprises of the area in spite of their close location. Hence, they are simply located on the territory of the region, but are not involved in the regional innovation activity. Moreover, some of these firms are too small. And within such type of micro-firms the significance of the individual innovator or in-company innovator increases<sup>3</sup>.

Let us dwell on some different types of innovation clusters. The idea of innovation (as it was accepted by EU) is a commercially effective use of new technologies, concepts and methods by means of implementation of new products and technologies or refinement of the former ones. Innovation is the result of the dynamic process of learning, in which several inner and outer subjects of activity are involved<sup>4</sup>.

Among the factors influencing the formation process of innovation are the interpretation aspects of the notion of innovation. In the first place it is the innovation cluster in the aspect of commercial concept, not merely a technological or even a concept of intellectual property. No matter how original the innovation might be it will never be of a business entity interest if a company cannot benefit by its implementation. In the second place, irrespective of all the three levels of innovation (modernization, renovation, radical renewal), its underlying cause consists in that the people working together in a team could learn from each other how to create a new brand product or service or refine the existing ones and make profit. In the third place, the fundamental unit of the innovation activity is not usually a person or even not a single unaffected firm. More often it is a group of people or companies collaborating on a certain innovation project.

And finally, the assumed criterion of the definition accepted by EU consists in the fact that if the definition is used for scientific purposes it (or more precisely – innovation activity) lacks the substantiation of the way of its territorial organization. In the assertion that innovation is the result of the dynamic process of learning, in which several inner and outer subjects of activity are involved nothing is mentioned about the location of those subjects – so that they could locate next door, literally and figuratively, or at the outer end of the world, granting the modern global mechanisms of production and outsourcing. These mechanisms vary from the local systems (such as, JIT (Just In Time) delivery or Flex Spec) to synchronic global production TNC on dozens of sites, or it may be the combination of diverse local and global mechanisms<sup>5</sup>.

The location is an important factor, because some areas are more richly innovative than the others, but nevertheless it does not mean that the innovation clusters in such regions are more integrative and more dynamically developing. Similar to the fact there are different rates of innovation activity from gradual to radical one, it is reasonable to assume that undoubtedly there are different types of territorial location of innovative activity. In our opinion, there is a number of different types of innovation clusters requiring careful examination, and the territorial factor is of great importance in this context.

The aim of our research is the study of the theory and practical material on the matter and developing an exemplary classification of various innovation clusters that can be useful for determination of their common and unique features. The problem of the clusters is multipart and become more complicated with origination of new samples. Frequently in the economic literature one and the same term may be applied to different notions, and vice versa: there can be found several terms referring to the same notion. As we mentioned earlier the innovation is important of itself, but it is bound up with other actual economic problem – with competitiveness. Most of the developed countries search for the means to increase the competitiveness of their economies, and the governments and scientists concur that the encouragement of the innovation activity would contribute to it<sup>6</sup>.

---

<sup>2</sup> Rabellotti, R. and Schmitz, H. (1999) *The Internal Heterogeneity of Industrial Districts in Italy, Brazil and Mexico*, *Regional Studies*, **33**, 97-108.

<sup>3</sup> Hart, D. and Simmie, J. (1997) *Innovation, Competition and the Structure of Local Production Networks*, *Local Economy*, November, 235-246.

<sup>4</sup> EC DG XIII 1996, p. 54

<sup>5</sup> McCann, P. and Fingleton, B. (1996) *The Regional Agglomeration Impact of Just-in-Time Input Linkages: Evidence from the Scottish Electronics Industry*, *Scottish Journal of Political Economy*, **43**, 493-518; Piore, M. and Sable, C. (1984) *The Second Industrial Divide*, Basic Books, New York; Amin, A. and Thrift, N. (1994) *Globalization, Institutions and Regional Development*, Oxford, OUP.

<sup>6</sup> Porter, M.E. (1990) *The Competitive Advantage of Nations*, Free Press, New York; Atkinson, R. (1994) *Some States Take the Lead: Explaining the Formation of State Technology Policies*, *Economic Development Quarterly*, **5**, 33-44; European Commission (1994) *Competitiveness and Cohesion, Trends in the Regions, Fifth Periodic Report on the Social and Economic Situation and Development of the Regions in the Community*, Luxembourg, EC. European Commission (1995) *Green Paper on Innovation*, Luxembourg, EC; Department of Trade and Industry (1998) *Our Competitive Future: Building the Knowledge-Driven Economy*, DTI, London.; Camagni, R. (Ed.) (1991) *Innovation Networks: Spatial Perspectives*, Belhaven Press, London, New York.

However, the attempt to facilitate the increase of competitiveness by prompting the innovative activity is paradoxical in its nature. Innovation activity by definition is attended with high risk and uncertainties, and it is obvious that companies try to circumvent such difficulties. According to J. Schumpeter innovation would hit not only the benefits and productivity of the existing companies, but also – their existence itself<sup>7</sup>.

For profiting and further planning the companies need certainty in their activity<sup>8</sup>. Therefore the problem of competitiveness directly influences the innovation process as it is. On the one hand, as long as the companies compete with each other, their competition tends to involve the implementation of new technologies, i.e. new products and services, but the uncertainty in the market grows too. Innovation is principally a disturbing factor, and the more radical, the more destabilizing it is. On the other hand, the companies always respond to innovation – both their own and other's – but they are to keep the certain level of stability in order to have the opportunity to gain profit and set short- and long-termed production goals. In our study we try to prove that location as well as the organizational structure play important role in the balance of these contradicting elements.

The existing antinomy evidently influences the territorial distribution of innovations. Territorial distribution of innovations is not a new topic, but we insist that the organizational structure of territorial distribution of innovations has been changed with time and nowadays there are diverse forms of it, originating partly due to that antinomy. However, the crucial issue regarding the significance of the innovation for economic development still remains open. Sixty years ago J. Schumpeter called innovation "the creative destruction"<sup>9</sup>. C. Freeman also expressed himself on exclusive importance of support of innovation. He claimed that lack of changes signifies loss<sup>10</sup>. Innovation is the key condition for increase of competitiveness, and new products and services are to modify the whole production chain, the methods of work and the consumer's lifestyle in an unpredictable way. As an illustrative example may serve the increasing entertaining and commercial activity in the global network.

Theoretically there are various strategies of innovation activity management, and most of them include the territorial aspect. One of the approaches suggests to prompt appearance of innovations inside the company, but for all that to await the consequences of the innovation activity from other companies and firms, which through forward planning influence the single firm, and its location in particular. Apparently, the threshold question for the companies is not only the mode of innovation implementation, but also the way of organizing the innovation process.

Usually these strategies include the territorial criterion and in this regard a number of different configurations of territorial distribution of innovations can be marked out. For example, there is a strategy that can be named "macro-globalization". It means that large companies in such countries like the USA or Japan expand their activity all over the world. Such companies became greater and created transnational corporations in the late 19<sup>th</sup> c. and throughout the 20<sup>th</sup> c. These transnational corporations attracted more market share by force of amalgamation and globalization of their activity, as well as through promotion of their innovations all over the world<sup>11</sup>.

Globalization helped these companies to make use of the world market within the framework of their own production system, and thereby to reduce the risk of uncertainty. In some cases these companies carried out a policy of vertical integration within that economic sector to which they belonged, so that they were enabled to get control of raw material market and finally – of their consumers by force of control over suppliers and distributors, that meant the control over the production process on the whole, from beginning to end.

But during the last decade it has become clear that there are other approaches to the territorial distribution of innovations that are also used by transnational corporations all over the world. Many large companies are involved in the process of staff reduction and concentration on the basis activity owing to the cutdown of their peripheral functions. This approach can be called "vertical disintegration". It was applied by the large corporations in the 1980s-1990s and allowed to cut down expenses and make the sales of the manufactured products more efficient<sup>12</sup>.

Thus, in the modern economics there are various methods of organization of innovation clusters and

<sup>7</sup> Quoted by Simmie, J. and Hart, D. (1999) *Innovation Projects and Local Production Networks: A Case Study of Hertfordshire*, *European Planning Studies*, 7, 445-462.

<sup>8</sup> Cyert, R. and March, J. (1963) *A Behavioural Theory of the Firm*, Prentice Hall, Englewood Cliff, N.J.

<sup>9</sup> Schumpeter, J.A. (1939) *Business Cycles: A Theoretical, Historical and Statistical Account of the Capitalist Process (2 Vols.)* McGraw Hill, New York.

<sup>10</sup> Quoted by Wever, E. and Stam, E. (1999) *Clusters of High Technology SMEs: The Dutch Case*, *Regional Studies*, 33, 391-400.

<sup>11</sup> Porter, M.E. (1990) *The Competitive Advantage of Nations*, Free Press, New York; Amin, A. and Thrift, N. (1994) *Globalization, Institutions and Regional Development*, Oxford, OUP.

<sup>12</sup> Amin, A. and Thrift, N. (1994) *Globalization, Institutions and Regional Development*, Oxford, OUP; Sadler, D. (1999) *Internationalization and Specialization in the European Automotive Components Sector: Implications for the Hollowing-Out Thesis*, *Regional Studies*, 33, 109-119.

implementation of innovations at the regional level that are in the focus of the scientific economic literature in the last years. They can be defined as the localized compact and the dispersed horizontal integration of innovation clusters. The horizontal integration is widely used by regional clusters of companies that work side by side in the economic, social spheres and in the sector of research and development.

## References

- Gallyamova D. Kh. Development of Globalization in the Modern Economy // *World Applied Sciences Journal* 30 (9): 1160-1165, 2014
- Nurieva, A.R., Gibadullin, M.Z., Fazlieva, E.P. Stability of interregional trade and economic relations as the factor of competitiveness of territories, *World Applied Sciences Journal*, Volume 29, Issue 4, 2014, Pages 501-505
- Gibadullin, M.Z., Fazlieva, E.P., Nurieva, A.R., Grigoryeva, L.L. Territorial aspects of migration processes in Russia. *Mediterranean Journal of Social Sciences*, Volume 5, Issue 12, June 2014, Pages 93-96.
- Gallyamova, D Cluster policy as a tool of regional economics competitiveness improvement . *Economic Annals-XXI*, Volume 3-4, Issue 1, 2014, Pages 12-15.
- Ajupov A.A., Mishina M.S., Ivanov M.E. Method of valuation of financial factors influencing the implementation of liquidity risk for leasing companies // *Mediterranean Journal of Social Sciences* vol. 5 № 24, November 2014, pp. 154-159
- Ajupov A.A., Artamonov A.B., Kurilov K.U., Kurilova A.A. Economic bases of formation and development of financial engineering in financial innovation // *Mediterranean Journal of Social Sciences* vol. 5 № 24, November 2014, pp. 148-153
- Razumovskaya, E.M., Lapidus, L.V., Mishakin, T.S., Popov, M.L. features and peculiarities of the Russian passenger rail market development. *Mediterranean Journal of Social Sciences*, Volume 5, Issue 18 SPEC. ISSUE, 2014, Pages 165-170
- Panasyuk M.V., Pudovik E.M., Sabirova M.E. Problems of labor market of modern Russia in conditions of stable economic growth. *Life Science Journal* 2014; 11(6s): 487 – 489.
- Panasyuk, M.V., Pudovik, E.M., Malganova, I.G. (2014). Modified index method in scenarios of regional socio-economic development. *Mediterranean Journal of Social Sciences*, 5 (18 SPEC. ISSUE), pp. 331-334
- Panasyuk, M., Pudovik, E., Malganova, I., Butov, G. (2014). Regional multicultural community: Problems of life quality estimation. *Mediterranean Journal of Social Sciences*, 5 (18 SPEC. ISSUE), pp. 323-326.
- Panasyuk, M.V., Pudovik, E.M. (2014). The application of geoinformation systems for the purposes of economical-statistical analysis. *Mediterranean Journal of Social Sciences*, 5 (18 SPEC. ISSUE), pp. 145-148.