

MANAGING THE COMPETITIVENESS OF INNOVATION CLUSTERS

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Annotation. Innovative clusters are considered as a dynamic environment in the competitiveness management system. It is proved that this environment creates certain competitive advantages for business entities. Based on the results of the study, the sources of innovative clusters competitiveness are identified and grouped by factors of direct and indirect impact. It is proved that some of them have a particularly significant impact on certain stages of forming and developing innovative clusters. The presented results form a theoretical basis for modeling the competitiveness management system of innovative clusters in order to determine the vectors of its improvement in the future.

Keyword: innovation cluster, competitiveness, management, development

Introduction. The companies competing on their own are characterized by less stable market positions than a group of companies in the long term. Entrepreneurship is a natural process, a kind of symbiosis of communication and transfer, which ensures the distribution of resources between market participants. Accordingly, IC is one of the entrepreneurial interaction forms that is characterized by an improved mechanism of market expansion in the global economy. Given this, it is relevant to manage the development of innovative clusters that would be sensitive to the factors affecting the innovative clusters' competitiveness. The emergence of innovation clusters (IC) is one of the natural economic phenomena formed due to the presence of appropriate circumstances. The main circumstances of increasing the concentration of a certain type enterprises on a certain territory is usually associated with

cultural, historical and geographical features and is based on high entrepreneurial activity. The government decisions to a certain extent can only influence the long-term historical process of forming an entrepreneurial culture in the region, since most economic strategies of regional development are focused on a period of up to 5 years, while forming IC can last for decades. An example of the historical circumstances of IC origin is the clusters of the textile industry in Italy (the districts of Bologna and Milan), in which this industry has been dominant for a long time due to its historical and cultural characteristics. As a result, the concentration of entrepreneurs working in this market grew rapidly, which contributed to IC origin. Another example is Silicon valley (a district in California, USA) formed under the influence of new technologies origin and the enthusiasm of young entrepreneurs who were the first to understand the market potential of new technologies. IC is nothing more than a competition evolution product, as the economic development dominant factor, which requires the management on a systematic basis.

Review of previous studies. In the scientific literature, there are quite a lot of studies devoted to analyzing the prerequisites [1] and the emergence features [2] and [3] clusters' development. A number of scientists studied the role of public administration in forming innovative structures [4], by approaches to assessing economic efficiency [5], [6] and the clusters competitiveness level [7]. Despite the large number of scientific papers devoted to the innovative clusters' development, there are still issues that are a constant subject of the discussion, namely the sources and factors for ensuring the innovative clusters' competitiveness, as well as the stages of forming and developing innovative clusters. These issues are crucial in building rational systems for managing the innovation clusters' competitiveness.

Research results. The scientific world considers the problem of IC development in managing this process as a phenomenon that occurs when several important factors, the list of which is still debatable, interact. It is worth noting that most of the presented models and theories have already been created by IC, so they are more likely to answer the question of the reasons for their successful development than the question of how they were created. These points of view are a generalization of empirical factor analysis. They are versatile, inconsistent, and reflect individual ICs, but do not characterize them as an economic phenomenon in general.

It is almost impossible to apply the above mentioned models in implementing various government and private initiatives, since all these models reflect the main features of the interaction of already the formed system of economic relations inside IC and outside. None of them demonstrates the origin of IC and does not reveal the features of this process. Therefore, designing artificial ICs by copying the "interaction" theoretically described in the models presented above, is nothing more than a "fake" of specific ICs in a certain territory. It seems more likely that the government can create economic zones promoting the high business activity, and then forming ICs will be possible if there are appropriate historical and cultural characteristics, a high level of the local population entrepreneurial activity, and the necessary resources' availability [13]. Artificial forming ICs is a complex, individually creative process that cannot be fully based on one of the existing theories. Therefore, the government initiatives should be aimed at supporting the development of already existing ICs rather than forming them.

Based on the lack of a sufficiently detailed interpretation of the sources of IC competitiveness, it is advisable to present own understanding of what factors play a decisive role in forming ICs, which of them contribute to forming a certain specialization business and increasing its concentration on a certain geographical location. Based on an empirical analysis of the textile cluster emergence in Italy, Silicon valley in the United States, and IT clusters in some cities in Central-Eastern Europe and South Asia, we can say that the origin of ICs is not a random process that depends entirely on historical, cultural, and political circumstances, since some of the ICs were originated in a not too "friendly" economic and political environment. Most of them were formed due to the development of the latest technologies and unique traditions of a particular region, which explains their location and success, moreover, it also explains the high level of enterprises specialization in ICs.

The local population entrepreneurial activity plays a significant role, since it determines whether the residents of a particular region are able to convert the advantages of their region into wealth. The most important element of small and medium-sized businesses are business founders who believe in the success of their own business, have a significant experience in manufacturing this or that product and have the appropriate skills to sell it. A high proportion of people with these skills is one of the significant competitive advantages of ICs, as it demonstrates whether IC can grow by attracting investment and opening new businesses that will bring new experience, technologies and customers to IC.

In addition to these factors, the state authorities' assistance is also important. The significance of this factor is not decisive, since even in the absence of economic advantages for the enterprises of a certain IC type, its successful economic development is still possible. Analysis of some ICs formation and development experience proves that the indifferent attitude of state regulators usually even more favorably affects the economic state of ICs than the interference in its functioning. However, in conditions of political and economic instability, the economic IC may lose market positions, as the best specialists leave their companies in search for more stable working conditions, companies change their location, and so on. In conditions of acute regulating, the origin of ICs is complicated and the one which will not be characterized by significant competitive advantages in the long term [14]. However, the above done analysis proves that the state regulators' assistance is not decisive in the ICs success, since in the history of economic relations, the formation of globally successful ICs from small and medium-sized businesses is possible only if there are appropriate features of a particular region. The exception is direct investments of the international multinational giants in a certain region with cheap resources. Despite this, such ICs mainly consist of large enterprises that do not contact each other in any way, and therefore, it is unlikely that such economic entities can be called full-fledged ICs. Benefits from their formation are usually received by a small group of people, large investors having sufficient resources to lobby their own interests in public authorities, which creates deficit zones on the territory of a certain country, deepens inequality and leads to the depreciation of the labor force.

Infrastructure also has an important influence on the formation of ICs. Its presence simplifies the business environment and contributes to the entrepreneurial activity growth. Therefore, the access to high-speed Internet, high-quality roads and other factors simplifies the running of small and medium-sized businesses, contributes to its birth and development. An IC with a developed infrastructure is significantly more competitive than a similar IC without it.

It is also worth mentioning that the development of ICs usually takes place in a territory that is characterized by favorable climatic and natural conditions. The example can be a technological IC in Silicon valley located in California (USA), a textile IC in Italy (areas of Bologna and Milan), and many others. Many companies and freelancers working in the field of high technology are moving their own business to Thailand. The communication with the companies' employees of the Lviv IT-cluster shows that some companies from Lviv are planning to move to the "hot lands" (for example, the Ukrainian company "PIPL", the manufacturer of the world-famous Ajax alarm system, have moved some of their offices from Kiev to California (USA)), most of them work in the field of crypto currency. The emergence of some tourist ICs is often based on appropriate natural conditions, which contributes to the ICs promotion and business development on its territory. It is interesting that most economic theories are based on scientific empirical observations, whose authors are business representatives, thus, many factors, whose impact can not be directly analyzed, are often omitted. Therefore, the fact that weather in New York influences on the dynamics of prices on international speculative markets can be considered comical, but this influence exists, although it is not significant, since the person psychological dependence on the weather is scientifically proven. The high psychological state contributes to the risk growth, the depressed state reduces the person activity, makes it less risky, which affects the investors' decisions, and therefore, affects short-term price fluctuations. The exceptional development of philosophy and science in Ancient Greece was not accidental. One of the reasons was the favorable natural and climatic conditions that allowed the ancient Greeks to focus on their own intellectual development. Human behavior is subject to nature laws, and therefore, it

depends on its natural environment, which should be taken into account when conducting scientific research on the IC exceptional success in a particular region.

The generalization of these factors' influence and the process of IC formation and development allows dividing them into certain groups, when analyzing their influence weight and specificity (Fig. 1).

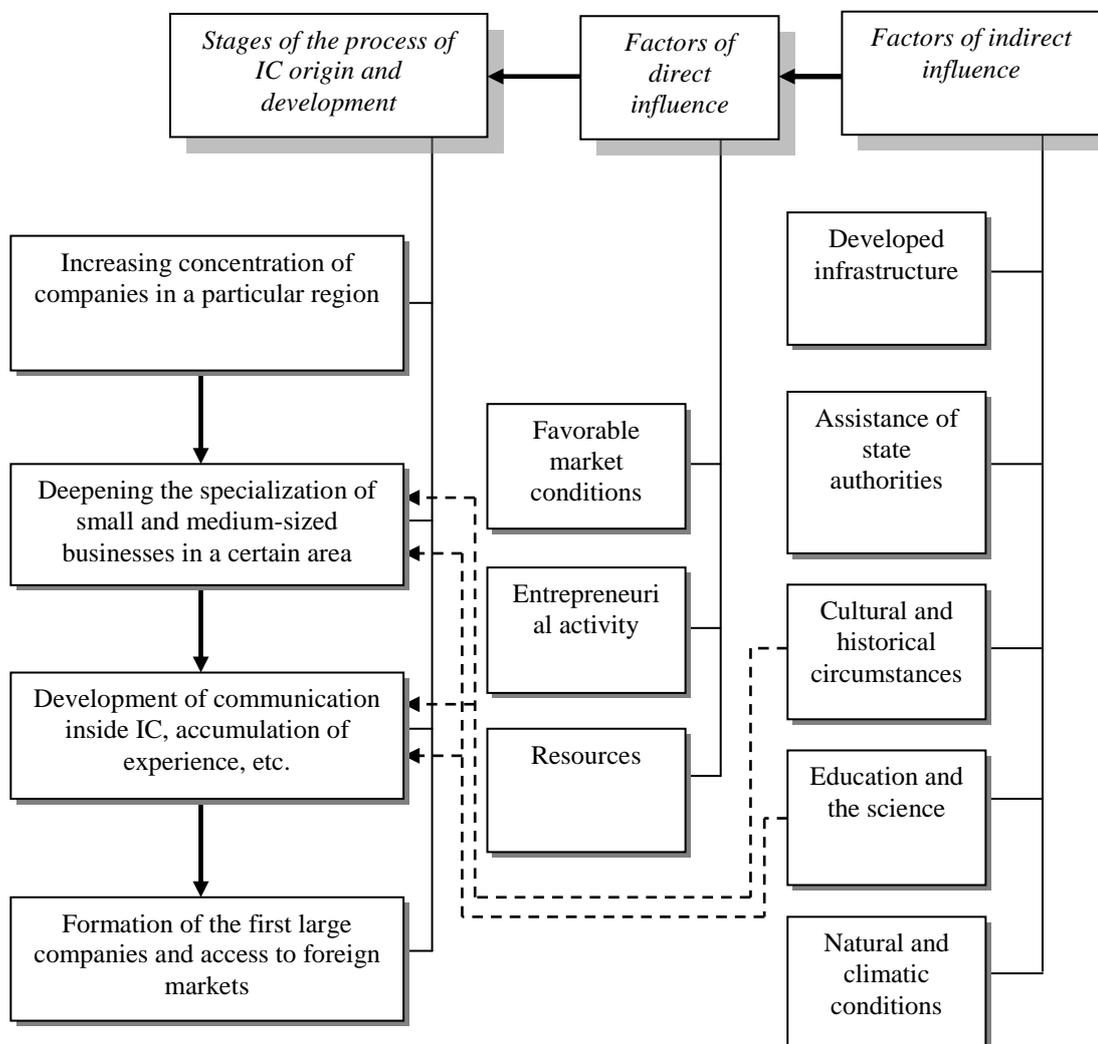


Fig. 1. Factors of direct and indirect influence as sources of IC competitiveness

Symbols: arrows indicate the transition between links of a certain group or process stages, lines indicate that elements belong to a certain logical group; a dashed arrow indicates the special influence of certain factors on some stages of cluster development.

All the identified factors should be divided into factors of direct and indirect influence. This allows explaining the interaction between them and their role in the IC formation. In addition, this allows dividing the tools for regulating the IC development by weight. This approach is especially valuable when analyzing the IC competitiveness, since it indicates the directions of scientific research, allows focusing on certain factors, and forms a theoretical basis for further scientific research. All the selected factors should not be considered as a system of a single whole, the presence of some can also serve as a sufficient reason for the IC formation and its successful economic development, but if there are similar IC competitors, the advantage is of the one who has a full set of these factors. This approach assumes that the IC formation occurs gradually, and not under the condition of artificial mass concentration of a certain type enterprises on a certain geographical location, which is characterized by cheap resources. Among the process stages of the IC formation and development, first of all, it is necessary to

distinguish the growth stage of the small and medium-sized businesses concentration in a certain territory, provided that there are cultural, educational and scientific opportunities for a certain specialization. This contributes to the accumulation of unique experience, knowledge and skills and deepens interaction with educational and scientific institutions, promotes communication inside IC, and forms the basis for the emergence of large companies having sufficient competitive advantages to further enter international markets.

At the stage of increasing the small and medium-sized businesses concentration in a certain territory, the IC is already becoming a strong player in the international arena, there is an abnormal increase in wages for a geographical location, there is a specialization deepening, and business activity increasing. IC begins to attract resources, labor, and technologies, whose cost begins to grow inside IC. Each of the stages of the IC development is the basis for further acceleration of exponential growth. With the transition from one stage to another, the level of competitiveness increases, the weight in the international arena increases, and the market positions of its participants increase. The process of the IC development and formation is a natural exponential process, which organically reflects the nature and society laws in the economy and is the next milestone in the competitiveness growth of its individual players, who gain competitive advantages from interaction with medium and small businesses. IC acquires the features of a revolutionary new link in the structure of global competitiveness enhancement, technology development, narrow specialized products improvement, obtaining new experience and supplying high-quality personnel for the further industry development and its entry to a new level of improving its own competitiveness. It is important that the exponentially growing processes in the economy are characterized by a high risk of "bubbles" and financial crashes [15], [16], however, most ICs compete not by increasing the value of their own assets, but by creating a qualitatively new competitive product that the company cannot generate individually. One feature of the given list of the IC competitiveness sources is the allocation of some factors' significant influence on the stages of its formation and development [17]. These factors include cultural and historical circumstances, as well as education and science. Thus, the inheritance of the developed technical school of the Soviet Union contributed to the IC development in Ukraine, Russia, and Azerbaijan. Cultural and historical circumstances contributed to the textile industry development in Italy. Therefore, it should be noted that the presence of certain cultural and educational features contributes to deepening specialization of enterprises in a particular region [6]. This proves that the presence of these factors is necessary for the IC origin, because if there is no narrow specialization, territories with a high concentration of small and medium-sized businesses can be considered exclusively as an economically developed region, but not as an IC. In this case, it is important to distinguish the IR concept in astronomy and in economics.

Conclusion. It is proved that the classification of innovative clusters' competitiveness sources should take into account all the success factors of clusters by the nature of the impact and the significance level depending on the stage of the cluster's life cycle. Based on the conducted critical analysis, the classification takes into account the factors that were not reflected in the existing models describing the origin and development of innovative clusters. We are talking about cultural, historical, natural and climatic circumstances. These factors should be taken into account, as they affect the development of clusters in the textile industry, tourism, and extractive industries.

Scientific novelty of the study is as follows: allocating the process stages of the emergence and development of innovation clusters; identifying the factors of the direct and indirect influence on the innovative clusters' competitiveness in the context of individual stages of their origin and development.

The future research should be carried out in the direction of building a system-functional model for managing the innovative clusters' competitiveness, which would allow quantitatively parameterizing the values' nature of the identified factors and provide for the choice of alternative solutions to influence these factors and adapt to them.

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