Nodira Kh. Kushieva,
Lecturer,
Uzbekistan State World Languages University

Cluster Approach as Way to Improve Education

Key words: *Cluster, higher education, languages, colleges and universities.*

Annotation: *in this work clinched that educational cluster, could be considered is a moderately new phenomenon, hence it was partly studied and owing to its multiplicity is characterized by high potential. The claim of cluster approach to the organization of innovative activity clues to the improvement of economic individuals of the country (or certain region). Educational clusters are proposed to the integration of correlated institutions of education into the industry companies. The formation and functioning of educational clusters directly stimuluses to the developing competitiveness of educational institutions, as well as upholds integration between the educational system and industry. Practical significance: further exploration of places and efficacious growth of educational clusters, which are most competitive in the global educational area, the analysis of the measured cluster policy implementation in order to increase the efficiency of educational clusters around the world, and the foundation of key success factor list, based on it. This list will convert essential for the formation of educational clusters in the Republic of Uzbekistan, and enhancement the competitiveness of the educational system.*

Introduction

According to recent developments in economic theory, clusters are taking on new international strategies, such as outsourcing and foreign direct investment to maintain their competitive ability. This observation gives a reason to reconsider the role of clusters in shaping competitiveness, suggesting that conventional models of the major forces driving the clustering of economic activities should be rethought (1). It indicates that clusters entered into the next phase of evolution. After local clustering, taking place between actors located in one region, it is time to create cooperative relations on a supra-regional and transnational networks, and establish cross-border clusters (2).

The process of globalization has influenced clusters and other local production systems to open up their borders and to increase their linkages with actors outside their regions. In modern global economy, the notion of a cluster as a self-contained knowledge hub, incorporating strong internal knowledge exchange and little interaction with the outside world, is under pressure. Scholars increasingly recognize the division of knowledge work and specialization across clusters, where openness to external knowledge is increasingly important following from globalization (3).

Amid new requirements to the results of education specialists training, the problem of educational structures rearrangement, technologies modernization and professional training development steps forward (4). For the majority of countries nowadays the problem of national and regional competitiveness increase becomes topical, and is solved mostly with the help of cluster approach as one of the most efficient tools of innovative development, which promotes the creation of detailed coordination between the state, business, science and education (5). One of the most developed forms of science, education and real sector of economy integration are

innovative clusters, aimed at securing favourable environment for the intellectual and technological capacity of major industrial companies, research and development centres and universities (6).

Cluster definition and cluster role

Cluster formation has emerged over last two decades as central issue. The most important characteristics of clusters are: geographical and sectoral concentration, co-operation and competition (coopetition), specialization in specific kinds of economic activity, the existence of relationships between cluster actors and formal interdependence (7). In science, the cluster approach has been very fruitfully used for a long time, in which it becomes necessary to take into account the multiple interrelationships between the elements combined into one whole (7).

Nowadays there are several definitions to the notion of "an educational cluster". For example, cluster as an educational institutions association, connected together by "raw materials" supply, experience and educational standards exchange (8). M.E.Porter defined as “geographic concentration of interconnected companies, suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards agencies, and trade associations) in particular fields that compete but also cooperate”.

The classical definition of cluster was defined by M.Porter (9): "Educational cluster is a group of geographically neighbouring interconnected companies and organizations connected to them, working in a certain area and characterized by common activities and mutual reinforcement". "Educational cluster" is a complex of educational institutions of all educational levels within certain geographical area, resource and employer suppliers, innovative system elements, as well as administration and government bodies, whose activity is connected with nearby industries and the development of regional innovative system" (10). "Educational cluster" is a complex of educational institutions of all educational levels, industries of correspondent government bodies, whose activity is connected with industries and is aimed at successful innovative development". "Educational cluster" is a complex of interconnected institutions of vocational education, connected branch-wise and by partnership with the industry players. Lately, educational clusters research becomes increasingly topical (11).

Modern scientists characterize educational clusters as a new-type interaction system of social dialogue and social partnership (12). The important distinctive features of branch educational clusters are:

1) Creating conditions for training specialists with different levels of vocational education;
2) The integration of education with science and industry;
3) Prestige enhancement of highly qualified vocations. Cluster can be understood as a special system, in which adding elements only improves its functioning, and removing them does not result in irreparable harm.

Cluster systems possess enough productivity, stability and can be easily augmented or modernized. The key benefits of cluster systems are the globality, openness, flexibility and relative simplicity of control (13).

The clusters are oriented at multitask application. The integration of various, sometimes even no-purpose structures, into clusters does not just come down to simple addition. The whole is not equal to the sum of its parts anymore, it is not bigger or smaller than the sum of parts, it is

just different. The new principle of cluster parts coordination into the whole appears – the setting of an overall development rate of cluster parts. "The understanding of general principles of organization of the evolutionary whole is essential for the elaboration of proper approaches towards the development of the complex social and geopolitical whole (14). An educational cluster is a group of educational institutions within certain territory, that as a final product form an educational service, competitive and interacting providers of necessary factors of industry, equipment, specialized services, utilities, research and development centres, which reinforce each other's advantages. As well as the majority of competitive clusters, educational clusters occur naturally due to the existence and interaction of a significant amount of factors (15).

Methodology

Educational clusters: experience of global market leaders

The most competitive educational clusters in the world are those centred within different American states (7). According to the Institute for Strategy and Competitiveness of Harvard Business School, which implements the cluster-mapping project within the United States, the leading educational clusters are located in such American states, as California, New York, Massachusetts, Pennsylvania, New Jersey etc.

According to the researches of European Cluster Observatory, on the territory of EU countries, there are 69 functioning clusters, having various levels of innovative development, export turnover, pay rate etc. The most developed educational clusters are located in such European cities, as Oxford, Warsaw, Amsterdam, London, Paris etc. (16). According to the Institute for Competitiveness and Welfare in Canada, the leading Canadian educational clusters are located in Ontario and Quebec. At the same time, in the last years' educational clusters appear and develop more and more actively within certain developing economies (UAE, Singapore, China, Jordan), whose welfare and economy competitiveness grow much faster (17).

The purpose of this research is to investigate the basic premises, foundation and development factors of educational clusters of the leading nations for probing the possibility of introducing cluster policy and creating educational clusters in the Republic of Uzbekistan.

Results and discussion

Seems that the most predominant and expedient estimation of factors of successful cluster incidence and development, comparative analysis of their competitiveness advantages, and, accordingly, decisive the ways of improving their efficiency, is the "diamond» model, familiarized in five research papers of Harvard Business School Professor M. Porter. For the better understanding of the potentials of exhausting this configuration in the valuation of the improvement level, impending and disadvantages of educational clusters within Kazakh regions, it seems appropriate to apply comparative analysis of international experience in the formation and development of educational clusters in New Jersey (USA), the cluster functioning in the Canadian province of Ontario (Canada), as well as a cluster developing in Dubai (UAE).

This choice is predetermined by the leading position of the first two clusters in the global educational space. The education cluster in New Jersey dates back to 1746, when by the decree of King George II "to teach youth languages, arts and sciences", Princeton University was established. Currently, the key educational institutes of the cluster are Mercer County

Community College, Middlesex County Community College, New Jersey Medical and Dental University, Princeton University, Rider University, Rutgers University, the College of New Jersey, Thomas A. Edison Community College. They are located on the territory of such districts, as Mercer and Middlesex.

The education cluster includes 73600 students of full-time study in undergraduate programs, and 14,300 students enrolled in the master's programs. The key cluster universities account for 56 patents in the United States annually. The research patent indicator for $ 1 million equals 0.10 (U.S. Cluster Mapping Project). Education Cluster in Ontario is located in the south-west of the province and covers the territory of regions such as Kitchener, Waterloo, Guelph, Hamilton, London. The occurrence of this cluster dates back to 1847, when the Ontario government acquired 500 acres for the creation of the Ontario Agricultural School. Currently, as a part of the cluster, there are about 110,000 full-time study students enrolled in undergraduate programs and 11,400 students enrolled in the master's programs. The key universities of this cluster account for 12 US patents per year. The research patent indicator for $1 million equals 0.04. The key educational institutions of the cluster include Conestoga College, Fanshawe College, McMaster University, Mohawk College, Wilfrid Laurier University, Waterloo University, University of Guelph, University of Western Ontario.

The Knowledge Village in Dubai as the basis for the educational cluster appeared in 2002 as a part of the Government of Dubai initiative for the development of "knowledge society", according to which it was planned to create several clusters operating on the principle of free economic zones. The formation of the Knowledge Village in Dubai through attracting international academic institutions, was aimed at creating the conditions to "hold" the youth, which previously preferred to study abroad, in the region. In addition, the presence of the Knowledge Village guaranteed a steady flow of skilled graduates. Finally, it was designed as an incubator for research and development in order to create conditions for the development of entrepreneurship. Today, there are 31 educational institutions offering multidisciplinary programs ranging in length from one to four years in the International Academic City. More than 12500 students study there, but it is expected that this number will increase up to 40000 students in 2017. The cluster contains more than 450 companies, including professional training centers, language centers and research institutes. It also includes the "pioneers" in the field of e-learning as well as online training. In accordance with the chosen the "diamond" model analysis, all the factors contributing to the development of clusters were narrowed down to four groups:

1. Factor conditions. The first factor (group of factors) is what economists call factors of production. While conducting factor analysis, conclusions should not be made only based on the existence of the factor and its volume. It should be clear how effectively it is used and what technologies are involved.
2. Demand conditions. The second factor that has a significant impact on the development of competitive clusters and which is often not taken into account by those involved in the implementation of public policy – is the need for domestic demand.
3. Related and supporting industries. The possibility to benefit from high demand can be made difficult by the lack of the necessary related supporting industries (companies). There are several reasons for the importance of the availability of local suppliers and related industries:

- Lower production costs: savings in transport costs, logistics;
- The exchange of information, ideas, which leads to the enhanced innovations and increased productivity.

4. The company's strategy, its structure and its competitors. One of the obvious empirical research findings of M.Porter (9) was the relationship between a strong competition in the domestic market and the creation and maintenance of high competitiveness in the industry.

The large number of competitors in the domestic market itself is not a sufficient condition to ensure success. If between them there is no keen struggle based on unique strategies, the benefits of such competition are reduced to nothing. Moreover, the nation must have other benefits in the "diamond", otherwise the success is unlikely. Speaking of the influence of various factors, it should be emphasized, that the "diamond" is a system whose components interact, complement and reinforce each other. Each determinant influences the rest.

Competitive advantage based on only one or two possible determinants is possible in sectors with a strong dependence on natural resources, or in sectors where complicated technologies and skills are poorly applied. To gain and keep a competitive advantage in such industries as education, one needs benefits in all the components of the "diamond". This is the picture made during the analysis of the competitive advantages educational clusters New Jersey, Ontario and Dubai.

Without going into a detailed analysis in this article, it should be noted that one advantage of the educational cluster of New Jersey is its location close to New York City and Philadelphia. Ontario Education Cluster also has this advantage because is located near Toronto. It should also highlight the geographical location of Dubai in the heart of the Middle East in the presence of well-developed means of communication. Highly professional staff (teachers and researchers) act as the main factor of development (training) of competitive programs and attraction of funding for research. Colleges and universities use the teaching staff as the main factor of production. Still, all the clusters have a wide choice of materials and services suppliers working within the cluster.

For the key companies of the discussed educational clusters, as the related and supporting industries can be distinguished companies in the field of high technology, e-business and consulting, ICT, medicine and pharmaceuticals, media, banking and financial sector, companies in the field of human resource management – most of them are well represented in the regions of analyzed clusters. In addition, for the development of educational clusters the connection between the existing educational institutions and the corporate world is extremely important, as it leads to the maximization of the knowledge production in the society, rapid access to information, innovation, etc. Summarizing the analysis of the basic conditions for the educational cluster development in Dubai, some conclusions could be made:
1) At the beginning of the education cluster project in Dubai, the level of "diamond" model development was low;
2) The most developed factors at that time were factor conditions and domestic demand; moreover, positive dynamics of both determinants can be noted – the demand quality improvement and the "developed specialized factors" extension, which form a more substantial and lasting basis for competitive advantage than the common factors;

3) The absence of academic institutions at the initial stage of a cluster formation, therefore, the absence of competition;
4) The positive and significant role of government in the "diamond" model formation and creation of conditions for cluster development. The solution to these and many other problems can be found through the cluster-based approach implementation. Within this approach, the following points could take place:
1. Joint programs as an efficient mechanism of knowledge spillover into related spheres;
2. The spread of joint programs among universities in order to join resources;
3. Reducing dependence on public funding through enhanced partnerships with manufacturing corporations;
4. Joint projects of foreign commercialization.

In conclusion, it is necessary to note some differences between the presented model of the cluster formation in a developing country and the western models. The essence of the latter is that in most western countries, regardless of what structures are engaged in the cluster policy implementation – a business or a state – this policy mostly focuses on the development of already existing clusters. The approach used in Dubai and several other Middle Eastern countries demonstrates the "cluster creation from the ground up". In this case, we are not talking about the formation of new key and related companies within the cluster by the government. The government does not create businesses and does not force private businessmen to engage in a particular business that seems "right" to the public authorities. It provides the most favorable conditions for those who are already competitive in the world and may be interested in expanding their activities. The state "completes" the "diamond" model, i.e. directs its efforts to improve conditions within the individual elements of the "diamond". In addition, the State forms a reservoir of skilled labor and scientific personnel, who can then create their own educational institutions.

Conclusions

The educational cluster is a relatively new phenomenon. However, it has already occupied a strong position and, because of its diversity, has a high potential. There is no doubt that in modern world the education clusters have a high degree of risk and uncertainty in some operation results. Nonetheless, overcoming these barriers, new integration structures will contribute to the improving of education quality and university competitiveness on the educational services market through the development of fundamental and applied scientific, economic and social growth. Positive changes resulting from the activity of the educational cluster are:
1. The creation of conditions for ensuring access to qualified primary, secondary and higher vocational education for young people;
2. Development and implementation of programs for the continuous multilevel education that combines research institutions and institutions of secondary and higher vocational education, providing the possibility to adapt the educational programs to the changing labor market conditions and the real economy needs;
3. Accumulation, preservation and augmentation of moral, cultural and scientific society values;

4. Activities based on the real needs of the region for highly qualified personnel, as well as the market needs formation, taking into account the prospects of the country and region development;
5. Cost optimization in the educational process of scientific-industrial orientation.
6. Training of highly qualified specialists who are competitive on the labor market, competent, responsible, fluent in their profession, oriented in the related areas and ready for the constant professional growth, social and professional mobility.
7. Creation of personnel reserve forming system at the levels of pre-university, university and post-graduate training; specialists' selection available from the point of view of learning and further work in organizations.
8. Providing the innovative science development and system integration of education, science and production, including the scientific research integration with educational process through the innovative educational programs implementation.
9. Formation of specialist's maintenance system during their adaptation to industrial and social environment.

Implications and Recommendations

The implications and recommendations for the education cluster implementation are the following:

- The cluster approach use leads to the increased concentration of economic entities in the country (region), contributes to the innovative orientation of production, facilitates the achievement of a qualitatively new technology level and production management in all economic activity spheres. Education cluster is intended to unite the efforts of interrelated professional education institutions with the industry in the united area.
- The establishment and operation of educational clusters has a direct impact on improving the educational institutions competitiveness and promotes integration between education authorities, financial, research, educational institutions and industries.
- Further identification of the prerequisites and conditions for educational clusters successful development, the program analysis for the implementation of a cluster policy to improve the educational clusters efficiency in different countries and formation of the important success factors is going to become a basis to create educational clusters in the Republic of Uzbekistan, which will significantly increase the competitiveness of its educational system.

References:

1. *Dunning JH. Regions, globalization and the knowledge-based economy: the issues stated: Regions, Globalization and the Knowledge-based Economy, Oxford, 2002; 7-14.*
2. *Kowalski AM. Znaczenie Klastrów dla Innowacyjności Gospodarki w Polsce, Warszawa, 2013; 1-4.*
3. *Isaksen A, Kalsaas BT. Suppliers and strategies for upgrading in global production networks: the case of a supplier to the global automotive industry in a high-cost location: European Planning Studies, vol. 17, no. 4, 2009; 569-585.*
4. *Li W, Wang Y. Research on the Performance Evaluation Model of Higher Education Teachers Based on the Improved Grey Clustering Analysis Method: International Journal of Emerging Technologies in Learning, 10(8), 2016; 123-134.*

5. *Anistsyna N. Innovative Research and Education cluster as a way of organizing innovation activities in high school: Creative Economy, 4(40), 2010; 91-97.*
6. *Gentry M. Cluster grouping: An investigation of student achievement, identification and classroom practices: Unpublished doctoral dissertation, Storrs. 1996.*
7. *Kleiner D, Katchalov R, Nagrudnaya N. Synthesis of a cluster strategy based on system-integration theory: The science. Innovation. Education, 7, 2008; 9-39.*
8. *Lapygin D, Korensky G. The outlines of a regional education cluster: The region's economy, 18, 2007; 25-29.*
9. *Porter M. (2008). Clusters and Competition: New Agendas for Companies, Governments and Institutions: On Competition, 2008; 213–303.*
10. *Manuylova EA. The innovative development of the region: the formation of regional educational clusters: Innovation, 7(105), 2007; 75-79.*
11. *Khamidullina G, Timiryasova A, Gafiullina L. Areas of reform of higher vocational education. Kazan, 2009.*
12. *Koretskiy G, Lapygin D. Prerequisites of integration into the educational cluster: Vladimir State University electronic journal, 4, 2006. [Internet] Available from: http://journal.vlsu.ru/index.php?id=58*
13. *Houghton R. Education cluster capacity mapping: Global study, 2009. [Internet] Available from: http://educationcluster.net/?get=000377%7C2013/12/Education-Cluster CapacityMapping-Global-Study-Feb-2009.pdf*
14. *Krivykh S, Makarenya A. Educational anthropoecology: Pedagogy of life. St. Petersburg, 2003.*
15. *Mukhametzyanova G, Pugacheva N. The cluster approach to the management of vocational education. Kazan, 2007.*
16. *Manuylova EA. The innovative development of the region: the formation of regional educational clusters: Innovation, 7(105), 2007; 75-79.*
17. *Amsale F, Bekele M, Tafesse M. The Ethical Behaviors of Educational Leaders in Ethiopian Public Universities: Case Of The Western Cluster Universities: European Scientific Journal, 12(13), 2016; 23-31.*
18. *Kamli A. Dubai Knowledge Economy, 2003-2008. [Internet] Available from: http://ae.zawya.com- /researchreports/madar/DKE-I.pdf*