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Synergy of Educational Cluster Development in the Framework of a University Supplementary Professional Education

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The article deals with advantages of cluster additional vocational education. Synergetic effect is considered in the development of program cluster in the framework of additional vocational education in a university. A strategy in program cluster development is suggested using scenario development based on "neosystem approach".

Key words: additional vocational education, educational cluster, a cluster of additional professional education programs, synergies interdisciplinarity, innovation, benchmarking.

Transformations taking place in our country have promoted modernization of education providing qualitative development of human potential, which is largely defined by the change in content and quality of education including additional vocational one. The system of additional vocational education is rather a dynamic system of perspective development of a person possessing potential creativity and fulfilling herself /himself by means of definite competencies, its social and professional mobility.

At present, in the system of additional vocational education (AVE), educational clusters are rapidly being developed. They are intended to train highly-qualified and competitive specialists possessing professional independency. The qualitative characteristic of the new stage in a university's development is an educational cluster, in which all structural elements are transformed, their interconnections and features are clearly observed in innovations of education process.

Innovation as an important feature of new economy is, first of all, revealed in the ability to transfer knowledge (the result of research and educational activity) into development of new products, projects, processes, and services. In the system of additional vocational education, new uniform consistent curricula are developed to train specialists at all levels.

The advantage of the cluster approach consists of development of learning goals by learners themselves – "knowledge in action". AVE course participants are in the condition of specific project innovative activity. Learning is based on training personnel capable of managing the processes in an education institution, region, country, and the world.

"Cluster" is a strand, chain or connector that is capable of being an organizing or integrating principle. M. Porter defines cluster in the following way: "it is a cross-industry network confined by the system of reproduction communication of enterprises located in the same site and united by technological innovations". He introduces a concept of communication as a system-generating principle of synergetic relations. Within the cluster there is a growth in employment, investments, and accelerated distribution of advanced innovative technologies in economy. One of the main conditions for cluster development is an extensive network of additional vocational education. Development of educational clusters contributes to implementing the strategy of a university's or a region's innovative development.

Considering a cluster in the university environment, it is, first of all, worth paying attention to a cluster structure. Cluster is based on interactions built upon formation of links among different departments of an organization. Closeness of cluster elements allows increasing the effect of synergy. Development of cluster implies formation of horizontal and vertical links based on synergy, i.e. all elements in the structure would function on the basis of cooperation. Hence, the cluster is the highest form of organization in mutual development of all elements. Educational cluster is a combination of interconnected enterprises of vocational education united on the grounds of industrial profile and partnership relations with other industry players.

Development of curricula cluster is conditioned by necessity of integrating all disciplines and business projects in a definite sphere, fundamental research and modern project system of new educational products, their production and implementation in the university AVE based on interdisciplinary and transdisciplinary approaches. Integration of technology and knowledge transfer cycles originates developing curricula cluster which unites several groundbreaking educational products in its structure. Transfer to cluster is connected, first of all, with development of integration processes in learning individualization based on transformation and replacement by new innovative techniques of exsiting AVE curricula.

The foundation of curricula cluster development is, first of all, integration of different education programs, among which there is synergy; secondly, innovative pedagogical technologies based on humanitarian paradigm and new principles of education system in the sphere of additional education, using the "life-long learning" rule in the new systems of practice and activity. Curricula cluster is developed to accumulate new trends in AVE university system by means of arrangement of educational grounds, involvement of leading researchers and specialists from business communities to university; In this case, there is an intensive knowledge circulation (fundamental, engineering, technological, humanitarian, natural-science, economic), which is a foundation for curricula cluster management using complex practice-oriented knowledge and humanitarian theories based on subject-subject relations. From this point of view, curricula cluster development implies mutual organization of engineering, natural-science, humanities and spheres. The developed curricula cluster is efficient in education institution only that adopts new and new innovative and differentiated scheme of activities, such as a university.

When developing curricula cluster, synergy is manifested in the following forms presented by I. Ansoff [3, p. 18-20]:

- sales synergy of post-diploma education product;
- operating synergy in collaborative learning in the specialists' network structure;
- management synergy;
- investment synergy in innovation transfer projection within the cluster.

In the process of curricula cluster formation a student is integrated into positive stage-by-stage development by means of:

- development of guaranteed consumption of post-diploma educational products around the system;
- formation of new infrastructure; development of structural mega curricula cluster (interdisciplinary projects);
- initiation of contractual relationships and building contracts with immediate consumers of post-diploma education product, for example, education management or local business community, which, in their turn, guarantee the consumption of education products.

Curricula clusters are to meet the following requirments: to have a basic

resource of developed and existing curricula; have some identical curricula based on module approach and connected between each other; be attractive to customers [2, p. 48-50].

The criteria of curricula cluster priority are as follows: in terms of curricula cluster potential (current curricula and their number); in terms of infrastructure (specialized education); in terms of curricula cluster culture at a given moment (level of interaction / building relationships between the curricula, AVE departments, motivation of parties involved programs of additional vocational training, potential leaders of university's AVE system, leading highly demand curricula based on qualitative and quantitative indicators).

A significant factor for successful development of curricula cluster is sustainable development strategy formed on multi-factor basis of final education product and modelled by us using the following components [4, p. 3-5]:

- benchmarking of curricula cluster as a a comparison of advanced domestic and foreign research technologies or some varaible experimental programs;
- development of coordination and cooperation plan within the curricula cluster to increase competitiveness of final education products;
- customer focus on educational products;
- selection of curricula cluster's name, its brand;
- increase in the number of stakehoplders and specialists involved in cluster initiatives.

As K.L. Komarov states [1, p. 52-54], benchmarking is not limited to the study in experience of competitors and world leaders. This method is to be one of the key components in continuous improvement of any activity since benchmarking is a regularly performed comparison of activity elements with similar elements of a more successful activity at macro- and microlevels.

Let us consider the types of scientific criteria for benchmarking, i.e. comparison of the level of potential market creativity in terms of the following parameters:

- psycological readiness for European standards of post-diploma educational services;
- requirements of the RF Ministry of Education and Science for definite level of additional vocational re-training.

The preventive consistency of benchmarking is defined as a multifaceted approach to long-term marketing forecast of future consumers' preferences for post-diploma education product.

Cluster structure allows differentiating programs and developing infrastructure via [5, p. 23-24]:

- specialization in basic majors of university;
- structuring the university inner networks where interaction between AVE structure occurs on the basis of interdisciplinary and competence-oriented approaches;
- research and development of large projects within a university, cooperation with government and public institutions, business community (order of a definite curriculum);
- competent and effective management and education marketing;
- university teaching staff's motivation;
- access to financial flows, development of proactive business activity of AVE departments.

In our opinion, the objectives of university higher management are to be analysis, long-term forecasting, evaluation of produced synergy in AVE curricula cluster to plan long-term solutions on their further application, extension of curricula cluster complex multiplying the AVE program potential demanded by education service market and local labor market.

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