

## INTERACTION OF INNOVATIVE CLUSTERS AND HIGHER EDUCATION

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In recent years, Ukraine has undergone fundamental changes in the search for a new, effective format for relations between science, higher education and knowledge-intensive business. Modern educational practices introduce innovative models of interaction according to the scheme of the so-called "triangle of knowledge": science - education - innovation.

Higher education institutions play a leading role in the scientific field, whose activities are aimed at studying the problematic issues that are included in the priority areas of development of education, science and technology. In order to improve coordination and improve the quality of research, specialized research institutes and laboratories, modern research centers and innovation clusters are being created.

An important role in the activities of higher education institutions is their interaction with innovative clusters. It should be noted that the issue of the interaction between innovation clusters and the higher education system is very relevant and needs detailed research.

At the same time, the processes that take place within the framework of industry modernization require the involvement of effective mechanisms for interaction of innovation clusters with the higher education system.

Among the measures that can help to improve the quality of higher education, a significant role is given to harnessing the potential of innovative cluster structures that stimulate the development of the internal market, strengthen the economic and social component of the region, and increase its competitiveness.

The basic principle of formation of an innovation cluster is the choice of priority directions of scientific, technical and technological development of the economy of the territory. Considering the scientific and innovative potential of the objects involved in solving the set tasks. The members of the innovation cluster, thanks to effective teamwork, have up-to-date information on the activity of enterprises, markets and labor resources. This ensures high-quality strategic planning, both at the level of government and at the level of enterprises.

Cluster members pool their resources and those of financial institutions to create new products, achieve synergies, and gain access to new knowledge, technologies, and markets [2].

According to the European Cluster Observatory and the European Cluster Collaboration Platform [5-7], more than 100 innovation clusters operate in the European Union (Tallinn, London, Oxford, Amsterdam, Warsaw, Paris, etc.). What are the different levels of innovative development, wages and exports of educational services. An example of such a cluster, created from scratch, is the International Academic City in the United Arab Emirates (Dubai). It has more than 30 educational establishments from different regions and more than 450 companies (vocational training centers, language schools, private and public schools, day schools, training centers, retraining centers, staff evaluation centers, research institutes, sports and cultural centers, etc.). In addition, technopoles, which are part of the intellectual

infrastructure of the regions, are successfully operating in Japan, science and research parks in the United States (California). And colleges and campuses with regional specialization and groups of research units of their universities contribute to the development of the local economy [1-4].

The experience of many countries shows that close cooperation with innovative cluster structures is an important condition for the effective development of higher education. Examples of successful work of such clusters are: ArchEnerg International Innovative Cluster for Renewable Energy and Building Trade (Hungary), Eastern Cluster ICT (Poland), Cluster of Innovative Manufacturing Technologies Association CINNOMATECH, Polish Innovative Medical Cluster PIKMED, Sluster Innowacyjna Medycyna / Innovative Medicine Cluster, Innovative Food Cluster FOOD4GOOD (Poland), AEI Conocimiento Asturias / Innovative Knowledge Business Association of Asturias (Spain), Strategic Innovative Cluster for Mechatronics Smart Specialization Domain, GREEN ENERGY Romanian Innovative Biomass Cluster, North-East Innovative Regional Cluster for Structural and Molecular Imaging (IMAGO-MOL) (Romania), Pharmapolis Debrecen Innovative Pharmaceutical Cluster (Hungary), Smart IT Cluster Lithuania, Innovative and Industrial Cluster in the Field of Biotechnologies and Green Economy (Belarus), Green Economy Cluster, Wind Technology Cluster (Estonia), etc. [5-7].

In Ukraine 23 are successfully operating and developing innovative clusters, including: Publishing and Printing Cluster (Lviv), Ternopil IT Cluster (Ternopil), Carpathian International Agro-Industrial Cluster of Kherson Region "Oriental Food Technologies Plus" Ukraine (Kakhovka), Ukrainian Organic Cluster Khmilnyk), energy cluster "Innovative energy" (Lutsk), committee of suppliers of green services of Volyn Chamber of Commerce (Lutsk), IT cluster Vinnitsa (Vinnitsa), Kiev IT cluster, Dnipro space cl Aster, Ukrainian Aerospace Cluster (Dnipro), Chernihiv IT Cluster (Chernihiv), and others [5-7]. All the above-mentioned clusters work effectively with higher education institutions.

As for the Chernihiv region, an example of such successful activity is the cooperation of the Chernihiv National University of Technology with the innovation cluster of the Chernihiv IT cluster. Such interaction creates favorable conditions for development of innovative projects, including educational and practical centers of branch direction, experimental production facilities. Effective combination of intra-cluster cooperation with internal competition within the cluster is the basis of the mechanism of interaction between innovative clusters and the higher education system. This, in turn, will reduce the overall costs of research and development of innovations with their further commercialization due to the high efficiency of the cluster's production and technological structure.

To sum up, the interaction of innovation clusters with the higher education system helps to increase the level of professional training of future specialists, the qualification of teaching staff and provides additional opportunities for the introduction of innovative teaching methods.

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