

Commercialization of scientific and technical researches of universities

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Abstract – The main directions of commercialization of scientific and technical researches of universities in the world and domestic market of educational services are considered (in particular, on the example of Lviv Polytechnic); the main problems of the development of university science and the ways of their solution both at the national and regional levels, and at the level of individual universities.

Keywords: scientific and technical research, commercialization of science, university, scientific potential, cooperation.

I. Features of commercialization of educational and scientific activity of universities in the world and in Ukraine

In the global market for educational services, a regular teaching university has long been transformed into a so-called intellectual entrepreneurship entity, which not only provides high-quality educational services, but also greatly contributes to the intellectual provision of innovative development of the country's economy. This is a university that not only cooperates with companies-representatives of industry, but also is able to monetize the results of its scientific and technical activities, to profit and attract additional financial resources

In developed countries, the share of knowledge value in the total cost of manufactured products exceeds 50% (1).

An example of universities that enable faculty, students and graduates to enter global markets with their innovative companies is the Stanford and Berkeley Universities, which, by executing orders from major corporations and the Pentagon, actually created a world-class high technology center, known as the Silicon Valley. (1)

As the foreign experience shows, the commercialization of the educational and scientific activities of universities is a formula for the successful development of universities, so it is extremely relevant and important. In Ukraine, in terms of modernization of higher education, the scientific component of the university's work is growing, but due to the lack of budget funds, there is a need to find additional sources of funding (2). Commercialization of scientific developments of universities becomes the basis of their competitiveness and the possibility of obtaining such necessary financial resources from different "channels". The issue of commercialization requires research and further harmonization, taking into account the requirements of today: integration of education, science and business;

cooperation with international organizations; implementation of the model of the "triple spiral" and the model "pentapiral". The results of such activities will be useful for universities, public authorities and business representatives.

Although the topic of commercialization of scientific developments and their implementation is not new, it remains an actual problem of further growth of the national economy of Ukraine.

Solving issues of modernization of industry, new industrialization, ensuring innovation development, reasonable growth depends on the availability of scientific and technical developments (2). At the same time, university science has significant intellectual resources, many scientific developments and technologies, but they are not used in practice, and the market for scientific products and technologies is not well developed.

II. Some aspects of commercialization of scientific and technical research in Lviv Polytechnic

Commercialization of scientific and technical research is one of the key priorities of the development of Lviv Polytechnic. Scientific activities at the University are conducted in the key areas of the development of science and technology of Ukraine, while taking into account the challenges of today and the relevance of research. Every year, joint projects are implemented under interstate agreements.

One of the aspects of the commercialization of scientific and technical research is the active participation of Lviv Polytechnic in the work of a number of international university associations, both regional and global (Magna Charta Universitatum; European University Association; Alliance of Universities for Democracy; Association of Carpathian Region Universities; Board of The European Student of Technology, the Association of National Academies of Sciences of Europe, which enables the University to build new contacts, find partners for the preparation and implementation of international projects, and develop academic and scientific mobility.

Another vector of commercialization of the University's scientific and technical research in the global market is the scientific, educational and cultural cooperation within the framework of more than 100 comprehensive agreements on cooperation in scientific and educational activities with more than 75 leading universities and research institutions and companies in Europe (France, Great Britain, Poland), Czech Republic, Slovakia, Germany), America and Asia. Within this framework, Lviv Polytechnic is involved in the implementation of international projects, grants, business contracts; cooperates with foreign higher educational establishments and institutions within the framework of cooperation agreements; Participates in competitions for international grants (individual and collective), etc.

The dynamics of the number of international projects and grants in the framework of international scientific cooperation is presented in Fig. 1.

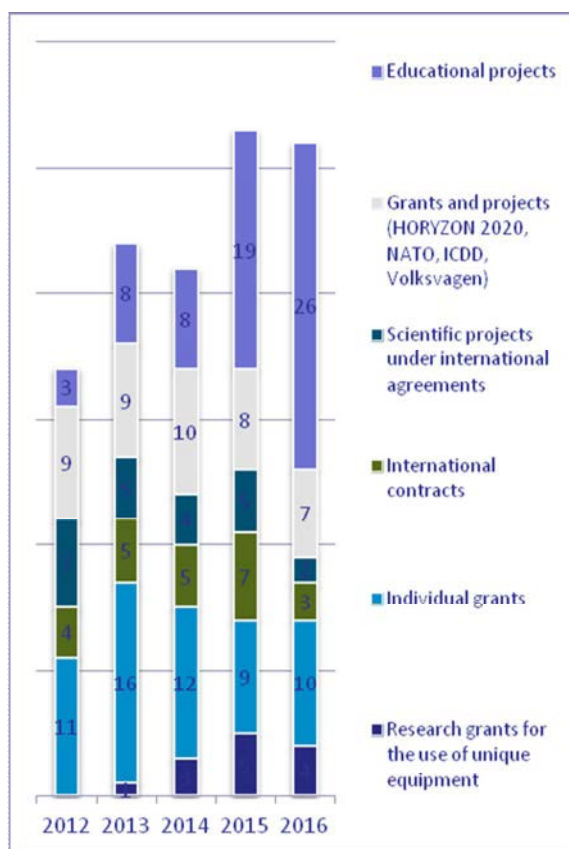


Fig.1 Dynamics of the number and structure of international projects and grants

In 2016, the volume of revenues from the implementation of research projects under international projects, grants is 611.5 thousand UAH.

One of the priority areas for cooperation is the participation of scientists in European science and technology and innovation programs, among them the European Union Framework Program Horizont 2020, the Poland-Belarus-Ukraine Cross-Border Cooperation Program, COPERNICUS, and others. Successful implementation of the projects allows not only to increase the skills of the workers and to update the material and technical base, but also to commercialize the university's scientific developments. Among the priorities of international activities are the participation of scientists and teachers in the preparation of

international educational projects, especially in the Tempus, Erasmus Mundus, Erasmus +, etc. Programs

Thanks to the positive dynamics in 2016 compared to 2015, the number of applications submitted for international grants has increased by 4 times, and the result of this is a positive decision on the financing of the Horizon 2020 program (type of action "Exchange of Scientific and Innovative Personnel") of the project "Innovative optical / quasi-optical technologies and nanoengineering of anisotropic materials to create active cells with significantly increased energy efficiency. The cost of the project is 1 million 692 thousand euros, duration of the project – 4 years. The consortium includes SMARTMEMBRANES (Germany), Czestochowa Polytechnic University (Poland), KARAT (Ukraine), University of Angers (France), Warsaw Polytechnic University (Poland), SoftPartners (Ukraine), LLC FORSCHUNGSZENTRUM JULICH »(Germany), Energia Oze Ltd (Poland). Lviv Polytechnic is the first higher educational institution in Ukraine, which acts as the coordinator of the Horizon 2020 project. The start of the project is scheduled for February 2018. It is important to attract representatives of small and medium-sized businesses to submit applications for international grants and, of course, their direct participation in the future.

Conclusion

Successful commercialization of scientific and technical research is not possible without providing a clear mechanism for managing the field of intellectual property in the "state-university-production" system. Today, the main problem faced by Ukrainian universities lies in the limited use of accumulated innovative potential. For many universities, the lack of orientation of research in accordance with the global trends in technology development and a clear focus on the end user. The policy of a modern innovation university should be aimed at achieving a high level of investment attractiveness through the development of new areas of science and technology and the establishment of cooperation with leading industrial companies in Ukraine and the world.

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