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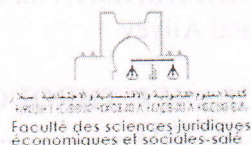
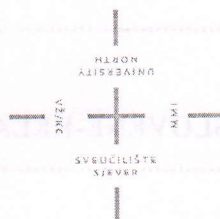
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ACADEMIC ENTREPRENEURSHIP AS AN IMPORTANT FACTOR OF SUSTAINABLE ECONOMIC DEVELOPMENT

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ABSTRACT

The article reveals the essence and importance of academic entrepreneurship as an important factor in sustainable economic development. The emphasis was placed on the growing role of academic entrepreneurship in all academic personnel and in all economic subjects of innovation activity. The article studies the research and innovation activities of universities in developed countries, as well as innovative enterprises as subjects of academic entrepreneurship, as well as their problems in the process of formation and functioning. Modern universities also take on the mission of presenting the results of their research and business activities to the business environment, in addition to education and basic research, and also turn scientific research laboratories and community centers into economic actors that play an important role in the innovation process. The actions of key participants, such as pioneers, innovators and investors involved in the implementation of innovations in the field of commercialization of university innovations, as well as the close relationship of the concept of commercialization with market relations were reviewed. In order to achieve high technological results in the innovation sector, the issues of attracting potential investors and public funding of universities were considered. To assist small innovative enterprises, the urgency of the creation of business incubators and investment institutions by the state is justified. The issues of improving the financial policy mechanism for the development of academic entrepreneurship, especially improving the lending and taxation system, stimulating innovation, expanding the intermediate function between state universities, research organizations and industrial companies were carefully studied. Substantial proposals and recommendations for improving the methods and forms of commercialization of results and innovation of university research are provided.

Keywords: *academic entrepreneurship commercialization of innovations, small innovative enterprise*

1. INTRODUCTION

Ideas about higher education, society, entrepreneurship, and the state are undergoing major changes in the globalizing world economy, and universities are seen as the center for the systematic integration of innovation activities in the country. Universities engaged in the development and commercialization of new knowledge and technologies receive additional sources of income, and the innovations they introduce satisfy the needs of consumers. As a means of commercializing the results of university research, academic entrepreneurship transforms new knowledge into innovations, products, services and processes. Academic entrepreneurship plays an important role not only among academical staff involved in research and the commercialization of their results, but also in all economic subjects of innovation activity. Strengthening the innovative potential of universities in the post-industrial age is necessary for the future integration of science and the real economy, the development of the state and society. It is expected that universities will contribute to the sustainable development and competitiveness of the national economy through innovation.

2. INNOVATION AS A PRIORITY DIRECTION OF UNIVERSITIES

Innovative development of academic entrepreneurship is one of the most vital social and economic problems of sustainable development. An important pattern of sustainable development is inequality due to the consistent replacement of technological systems. The basis of the theory of changing technological systems and their replacement by new generation technologies is the concept of long-term cycles N. D. Kondratieva and I. Shumbetrin's hypothesis, which reflects the interaction between entrepreneurship and long-term movement in the development of technological innovations. The innovative technology of the sixth technological system - NBIC technology, based on the technological convergence of nano-bio-information and cognitive technologies, will become a sustainable source of economic growth and competitiveness of developed countries due to the strong synergy effect. Innovations in the developed countries of the world, which are leaders in the field of research and development of NBIC technology, provide 80-90 percent of GDP growth [1, p.215]. Recently, there have been positive trends in science in higher education. This is due to the increase in state support for universities and the need to commercialize the results of their research. If universities are passive and do not interact with state-owned enterprises, they may lose reputation and access to financial resources in the eyes of the business community and cannot actively participate in international educational and scientific cooperation, which could lead to divergence of potential college candidates and future problems. Universities in developed countries of the world are turning into leading research centers whose goal is not only to train highly qualified specialists, but also to stimulate innovation and the application of innovation. Leading universities unite with business structures for creation of a chain of innovations. For example, in the United States the University of Maryland has an industry engagement program which accelerates process of commercialization of innovative technologies by joint financing of research and development by the university and the industry.

2.1. The role of academic entrepreneurship in the innovative development of the economy

With the globalization of the world economy in the higher education system, major changes are occurring, as in other areas, it is assumed that universities are directly involved in the development of entrepreneurial activity based on innovation. As a result of the commercialization of large scientific and technical potential collected at universities, it is possible to obtain additional sources of income. This can be achieved through the development of academic entrepreneurship, which is the means of commercialization of knowledge. For the development of academic entrepreneurship, it is important to create small innovative enterprises in higher education institutions that turn their knowledge into innovations, services, products and processes. The phenomenon of academic entrepreneurship plays an important role not only among the teaching staff engaged in research and commercialization, but also in all economic actors of innovation. For the first time, American companies were engaged in academic entrepreneurship in the 70s of the 20th century, and its formal formation has coincided with the adoption of the Bayh-Dole Act in 1980. This law allowed universities to patent their inventions, and also granted ownership of their research and technology. In the 80s of the 20th century, universities in European countries began to commercialize the results of their research work. Commercialization is the process of transforming the fundamental knowledge gained from business activities in universities into innovative products. The basis of these processes are fundamentally new functions assigned to universities. Universities also take on the mission of presenting the results of their research and business activities to a business environment, in addition to education and basic research. Research laboratories and social centers are becoming economic actors that play an important role in the innovation process. Thus, universities become researchers and consultants and turn into a full-fledged market participant, which led to the creation of small innovative enterprises.

In industrialized countries, universities, in addition to performing their traditional functions, successfully implement the commercialization of the results of their research work. At the end of the 20th century, academic entrepreneurship became more prominent in European countries, since the commercialization of the results of scientific and technical activities allowed universities to generate additional income. A large number of studies on the development of academic entrepreneurship have been implemented and published in European countries. In economically developed European countries, talented students work in small innovative enterprises, in which they transform their knowledge gained by them in the learning process, into various innovative technologies and projects. Leading research universities in the world have specialized offices that help academic staff and students wishing to engage in academic entrepreneurship. These offices offer technological equipments and jobs, and also form a team for the implementation of innovative projects. They then look for an investor and assist in launching a small innovative enterprise and patenting acquired inventions, as well as provide necessary advice and answers to questions during the project implementation stages.

2.1.1. Principles for the commercialization of university innovations

Attracting potential investors or public funding of universities are crucial to achieving high technological innovation results, as universities often do not have special funds for research and development of new technologies. To support small innovative enterprises, the state should create business incubators and investment institutions, as well as make changes and amendments to the legislation. All this is crucial for protecting and increasing the interest of students and teachers in the development of academic entrepreneurship, since small innovative enterprises have significant advantages in the development of an innovative economy of the country. The development of small innovative enterprises allows universities to benefit from the material resources and capabilities of industrial companies. In addition, joint research with industrial companies improves the status of universities. The process of commercialization of innovations in higher education requires the joint participation of several actors. The main actors in this process are pioneers, innovators and investors. In the process of commercializing innovation, universities are pioneers and sources of scientific work, industrial companies play the role of innovators, and state and commercial banks, credit institutions and venture capital funds perform the functions of an investor. Joint participation in the commercialization of innovations leads to certain contradictions in their interests. That is why the commercialization of innovations in higher education requires a balance of interests of all participants. Considering that the concept of commercialization is closely related to market relations, we can say that the basis of the concept of market and commercialization is the same. Market relations are based on free enterprise, competition and the allocation of resources, pricing, determining the balance of supply and demand and the protection of property rights by the state. Therefore, without market relations, the concept of "commercialization" loses its essence. Research centers and universities play an important role in the innovative development of the economy.

3. IMPROVING THE MECHANISM OF MANAGEMENT OF ACADEMIC ENTREPRENEURSHIP IN UNIVERSITIES

Universities support the development of the country's economy in the following directions [2, p.139].

- universities are considered the basis of basic scientific research, creating the conditions for technological, social and economic development of the country;
- researches are conducted in universities of the applied direction and intermediate structures are created for their introduction into the industry (technoparks, business incubators);

- university research is an important part of the process of training scientific personnel and increasing the scientific and pedagogical potential of the country;
- universities often become a "pole of attraction" of high-tech industries to their countries.

In world practice, there are various mechanisms for the application of innovations. Analyzing the features of the innovation policy of foreign countries, the Russian economist Natalya Shelyubskaya concluded that their innovation policy was aimed at promoting clear scientific and technical cooperation [3, p. 24]. The state often plays the role of an intermediary between research organizations, universities and companies. Various structures are being created, such as a university and industrial cooperative center, an innovation center for the introduction of new technologies for small and medium-sized businesses, and a center for the commercialization of inventions. To implement the results of scientific research is usually used mechanism of technology commercialization using organizational structures of business entities. Scientific studies show that countries with a high level of innovation interaction between universities and industrial enterprises occupy leading positions in the Global Competitiveness Index of the Davos World Economic Forum. The analysis of the works devoted to the problems of innovative development of the economy leads to the conclusion that there are general trends in innovation policy in different countries of the world. For example, in all countries of the world, direct and indirect methods of stimulating innovation are used, which, in turn, corresponds to the structure as a whole. There is a cluster approach to the formation of general trends in the innovation policy of foreign countries. American philosopher Michael porter (1947), the founder of cluster theory, first described the cluster in his work "Competition". A cluster is a geographical concentration of interconnected enterprises, specialized suppliers, associated institutions in a particular field, as well as organizations that are competitive in certain areas and at the same time work together on their activities [4, p.485]. The creation of clusters accelerates the process of economic growth in some areas, which leads to the growth of innovative activity and competitiveness of the country. The experience of foreign countries has shown that the functioning of several groups of sectors in the interaction within clusters leads to an increase in employment, a large amount of investment and accelerated use of innovative technologies in the national economy. Since 2005, industrial areas, industrial parks and agroparks have been created in many cities and districts of the Republic of Azerbaijan; serious work is being done towards clustering and diversifying the national economy. The development of academic entrepreneurship requires the formation and development of a national innovation system. Some steps were taken to form a national innovation system in the Republic of Azerbaijan, the Scientific Innovations Center of the National Academy of Sciences of Azerbaijan and the Foundation for the Development of Science were created, and legislative and regulatory acts regulating innovations were adopted. Financing of innovation activities should be carried out at the expense of the state budget and the local budget, special funds of enterprises, extra-budgetary funds and venture capital. To implement an active innovation policy, it is necessary to take measures to improve fiscal policy, in particular, to improve the system of crediting and taxation and to stimulate innovation activity. Experience shows that modern high-tech production can be based only on horizontal, diagonal and vertical integration processes. Profound economic progress can be achieved not by scattered enterprises, but by their mergers and groupings through clusters and networks. The inclusion of universities in the cluster provides a competitive advantage for the country, that is, investors can simultaneously invest in the real economy, as well as education and research. A distinctive feature of such clusters is their innovative orientation. An innovation cluster is a set of services that provides interaction between independent enterprises, such as universities, knowledge-based enterprises, science and industry, and also supports organizations and consumers who participate in joint innovation activities.

Various innovative structures have been created at universities in the USA, Canada, Great Britain, Japan, and other countries that contribute to the innovative development of the national economy. At the present stage of the Azerbaijani economy, higher education institutions are considered as a center for the systematic integration of the country's innovative activity. Innovation activities of higher education institutions, understood as activities aimed at the development and commercialization of new knowledge and technologies, are considered as their main directions of development. Innovations carried out by institutions of higher education lead to the satisfaction of the demand of local and foreign consumers. In addition, strengthening the innovative capacity of higher education institutions is important for the future integration of science and the real economy, as well as the sustainable development of the state and society in the post-industrial era. In accordance with the State Strategy for the Development of Education in the Republic of Azerbaijan, the restructuring of the higher education sector is aimed at developing research and development in universities, deepening cooperation between universities, leading companies in the real economy and academic institutions, and expanding international integration of universities in Azerbaijan in the field of research and development, strengthening academic mobility and the development of a network of educational and research programs are the main priorities of higher education. Thus, financial support from the government to leading universities, research groups and other scientists participating in research at the international level will increase, and the practice of providing benefits to small innovative enterprises that will allow commercialization of intellectual property in universities will continue. Currently, universities are developing innovation performance management systems, developing criteria for evaluating innovations and proposing various methods and tools for its development. As a rule, the organization of innovation in higher education involves the integration of research centers of universities and industrial companies, so that academic staff who participate in research can commercialize the results of their work as soon as possible. Today, the most urgent task is to create innovation centers, incubators, special educational, scientific and innovative complexes at universities. Thus, the innovative activity of higher educational institutions is one of the main factors for the successful modernization of the economy of Azerbaijan. Modern universities are considered as subjects of economic activity. Currently, various structural units of higher education institutions have the opportunity to realize and commercialize their innovative potential. In order to improve the process of managing innovations in the conditions of free market relations, it is necessary to improve the management methods of the university, taking into account its characteristics. At new stages of education, universities successfully competing in the global market for educational services are transformed into an open innovation system.

4. CONCLUSIONS

There is a trend in the world towards a knowledge-based society and economy. Small innovative enterprises, which are one of the key organizers of this process, play an important role in the development of academic entrepreneurship in higher education institutions. However, the Azerbaijani authorities are not taking effective measures to stimulate academic entrepreneurship.

- Innovative activity of higher educational institutions is one of the main factors for successful modernization of the country's economy. Modern university is considered as a subject of economic activity. Structural subdivisions of the university have the opportunity to realize their innovative potential, they receive additional funds from the commercialization of their research results.
- The system of financing university science should be flexible and have many sources; it is necessary to eliminate regulatory barriers that prevent the integration of education with the

real sector of science and economics. In terms of market relations, it is necessary to improve the methods of university management taking into account the peculiarities of innovation. It is important to actively promote the partnership of business with science and education.

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