INTERNATIONAL ECONOMICS AND INTERNATIONAL RELATIONS


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EFFECTIVE MODELS OF SCIENCE AND BUSINESS COLLABORATION IN THE MODERN PERIOD

Abstract. In this article key priorities of the high technological development, main objectives of the state policy carried out in this direction in Azerbaijan have been defined and importance of establishing more productive architecture of the science – education – business collaboration has been proven. In the article, contemporary requirements and shortages of the integration processes in the fields of science, education and business has also been revealed, principles of national strategy of the scientific development and contemporary international models of the science-business collaboration has been researched and relevant suggestions have been made for application of them in Azerbaijan.

Keywords: science-business collaboration, education policy, integration processes, model.

To make scientific potential to become main sources of the sustainable economic development, to make industrial knowledge and innovations to become new products and technologies, to intensify science-business collaboration are one of the modern invitations of the 21st century. In his context, «Strategic Road Map for the national economic prospects of the Republic of Azerbaijan» [1] is a program document aimed at updating the structure of the national economy to determine new avant-garde sectors that can ensure the sustainable development of the country’s economy, processing relative to production, sectors based on high technology relative to non-technological sectors, development of private entrepreneurship and other important components in relation to state entrepreneurship.
The Strategic Road Map aims to build an inclusive economy based on high technology covering short-term - until 2020, medium-term - until 2025 and long-term - after 2025 according to 12 strategic roadmaps of 11 avant-garde sectors giving preference the existing development base of the country’s economy, global and regional priorities[2].

Main priorities of high-tech development should be directed to a new stage of the innovation society - formation of an economy based on the generation, dissemination and use of knowledge. Transformation of scientific results, innovations into new products, unique habits and abilities and application of them to constantly changing areas of activity form the basis of technological development. Investment joined to an intellectual activity becomes the most efficient way to use resources. Intensification of production and use of the results of scientific and technical progress leads to a sharp shortening of the innovation cycle and acceleration of the pace of technological innovation.

State policy implemented in Azerbaijan in recent years, including the State Strategy for the Development of Education, the State Program for Industrial Development for 2015-2020, the creation of innovative structures such as technoparks, industrial parks, industrial districts for the development of small and medium businesses, etc. Other measures serve to direct the country’s science, innovation and education potential to the strategy of creating new technological platforms. In order to achieve technological progress, it would be expedient to form a more productive architecture of scientific-educational-business cooperation aimed at a unified state policy and management by studying the best practices of countries that have already passed this stage.

Implementation of scientific-educational-business cooperation from various sources leads to a weakening of the links between the components of the cycle of «fundamental research-application, research-industrial production.» As a result, the pace of development of the research sector lags behind the pace of development of the country’s economy and does not meet the needs of entrepreneurship for new technologies.
Integration processes in science, education and business are conditioned by the acceleration of scientific and technological progress in modern conditions, the application of innovative scientific developments in mass production and the informatization of the economy. Development of science-intensive industries places new demands on the training and retraining of innovative sensitive personnel, as well as on science, education and business in a complex that cannot develop independently and adapt to changes in the technology and equipment.

Insufficient funding of science and education by the state, their weak integration with production do not meet the requirements of innovative development of the economy and the balance of specialists in the national economy with graduates finished higher education institutions. Thus, according to statistics, about 75% of graduates of Azerbaijani universities can not find a job in their specialty. In terms of science and practitioners, the need for the formation of innovative education based on the integrated mutual development of science, education and production systems is obvious. At the same time, education is perceived as a key link in the integration process at the state level. In this regard, universities should be the central link in the integration process of science, education and production.

At present, Azerbaijani universities are entering a new stage of development, gaining the status of the National Innovative University or Republican University, the second model of academic knowledge. Characteristic features of this model: aspect of knowledge application, establishment of innovation infrastructure, including innovation centers, technoparks, business incubators, small innovative enterprises (companies), close interaction with interns starting from the coordination of curricula, regional component of work programs on course subjects, social responsibility for the information produced.

Modern universities are cooperating more actively with scientific institutes and centers, creating joint application efforts of scientific laboratories, research institutes to solve new global problems, creating innovative application companies.

Within the framework of establishing innovative-applied firms, universities and scientific organizations have the opportunity not only to develop the material
and technical base, but also to accelerate the commercialization of scientific developments, to train highly active specialists who are scientifically active and innovative.

Significant impetus to the integration of science, education and business efforts is provided by state support. The «State Strategy for the Development of Education in the Republic of Azerbaijan» [4] approved by the Decree of the President of the Republic of Azerbaijan No. 13 dated October 24, 2013 aims to update the structure and content of education, as well as to develop fundamentalism and practical orientation of curricula and programs. was to strengthen the system of continuing education. The strategy provides for the following as a priority: application of models of integrated scientific-educational, practice-oriented enterprises; formation of national universities, which are considered to be the centers of integration in order to increase the efficiency of the use of intellectual potential, which still has a place in the modern higher education system.


In the context of the challenges of the modern world, it would be useful to use the best practices of technologically advanced countries at this stage in the development of a new architecture for the centralized management of scientific, educational and business relations. From this point of view, the reforms implemented in France in recent years are also typical for Azerbaijan. Thus, in both countries there are significant similarities both in the institutional organization and functional forms of science, and in the style of public management.

Unlike France, Azerbaijan has a multipolarity in science policy and management: university science from the Ministry of Education, institutes of the Academy of Sciences from the Presidium of the Academy of Sciences, corporate science from relevant ministries and companies, project funding from the State Science Fund, and admission to higher and secondary schools. Implemented by the
State Examination Center. Of course, multipolarity in the management of scientific-higher education relations cannot be considered a characteristic feature of the science-education system, which aims to integrate into the pan-European higher education space.

In 2013, a new law on higher education and science was adopted in France to increase the efficiency of the conductor system for managing scientific development, which was formed in the 50s and 60s of the last century. Relevant governing bodies and programs for the implementation of higher education strategies based on the principles of the law - «New National Research Strategy», «France-Europe 2020», «National Strategy for Higher Education», «New Industrial France», «Innovation Tax Incentive System» formed. These bodies have developed key guidelines for the implementation of strategies, action plans, monitoring and evaluation methods, and diversification, improving the quality of scientific research, and transforming research results into workplaces. In France, the coordination of science and education policy began to be carried out by the Ministry of National Education, Higher Education and Science. The General Directorate for Science and Innovations of the Ministry has been assigned to act as a driver between other ministries and interested entities involved in scientific and innovative development. Funding for research is entrusted to the Inter-Ministerial Mission for Science and Higher Education. The implementation of research and quality assessment services by the Higher Council for Scientific Research and Higher Education Evaluation has helped to increase the competitiveness of science and education. Another effective tool for funding research in France is the State Investment Bank for project financing. Industrial development programs and innovative technology transfer projects are financed by this bank. The bank has capital of 21 billion euros and branches in 42 regions of France.

In Germany, the United Kingdom and Japan, which are recognized as innovative leaders in the world, the trend of focusing fundamental scientific research on concrete results is preferred. In these countries, a new structure of state support for science has been developed, mechanisms for diversifying financial resources for scientific development have been established, and a system of continuous
improvement of tax incentives has been applied to enterprises investing in science. For this purpose, additional benefits such as along with bank loans and state subsidies, tax credit, special regime of taxation of income from innovation grants, intellectual property, etc. are widely used for scientific research.

European experience shows that the operator function of science-education-business programs can be assigned to one organization at a time. For example, the Ministry of Education and the Academy of Sciences, the Ministries of Ecology and Energy in the field of ecology and energy, the Ministry of Economy in industrial clusters, and the relevant investment bank may act as program operators in the fields of higher education and research.

In order for such reforms to be effective in Azerbaijan, it would be expedient to build a national strategy for scientific development based on the following principles:

– to direct scientific research to the global and local challenges facing modern society, to convert these challenges into specific goals of the state science policy, to identify and support priority areas of national science and technological development on the basis of public-business partnership;

– to create favorable conditions and incentives for the sustainable development of scientific research;

– to strengthen public-business partnership, to support entrepreneurship and high-tech small companies, to stimulate the attraction of foreign direct investment in research;

– to ensure the production of knowledge based on the development and international openness of the components of the science-business partnership system and to increase the attractiveness of the national education ecosystem.

These principles are reflected in one way or another in the State Strategy for the Development of Education. It is possible to further increase the effectiveness of application mechanisms based on these principles by implementing institutional and structural reforms that can ensure the implementation of the science-business partnership system from a single center. In other words, it would be expedient to
replace the existing model of multipolar management with more efficient and more flexible indirect methods of influence in order to ensure the self-sufficiency and self-organization of the science-higher education-business ecosystem.

State Strategy for the Development of Education in Azerbaijan summarizes the principles of development of science-education-business relations. This strategy is aimed at integration into the European educational space based on improving the quality of education and recognition of its results. Application of public administration models in different areas of the strategy and the tradition of participation of public institutions serve to ensure the openness, simplicity and investment attractiveness of the education system. Many principles of the national education strategy - openness of the higher education system to the whole world, regular distribution of higher education institutions in terms of territory, participation of all partners interested in the development of higher education in the coordination process, sufficient resources for development, etc. It is in line with the principles of the European model.

Further diversification of the multilevel education system for the European educational space is characterized by the training of specialists at the bachelor’s, bachelor’s, master’s, and research master’s levels. Horizont 2020, Erasmus Mundus, Erasmus Plus projects and Tuning methodology are very important tools in the study and application of European experience. Today, the Tuning methodology is widely used in the development of curricula and plans in 28 European countries. For this purpose, first of all, the conjuncture of the labor market is studied, priority specialties, general and specific competencies, educational requirements to determine the relevant competencies are determined, correlation between competencies and subject modules is established, and according to this credit module is established and distribution between subjects is carried out on the basis of the principle of credits module.

In relation to improving scientific-educational relations, the reduction of restrictions on admission to the master’s degree and the simplification of examinations are among the urgent issues of the day. Today’s master is tomorrow’s doctoral student, university teacher, researcher, production manager. In recent years,
some universities have made extensive use of the practice of full-time education without making appropriate changes in curricula and study programs, without leaving the production of master’s degree, which leads to a sharp decline in the quality of master’s education. Giving the right to defer military service to students admitted to the master’s degree is a clear example of how much importance is attached to quality master’s education in the formation of the country’s scientific and educational potential.

Main issues of scientific research, as in technologically developed countries, should be focused on the challenges that are important for economic growth. Today, the basis of national science is the research conducted in the state-funded research institutes of universities, departments, research laboratories, institutes of the Academy of Sciences and scientific institutions of line ministries. The research areas of these institutions are mainly aimed at solving problems that are specific to the post-Soviet space, do not meet the local and global challenges of modern times, do not meet the needs of entrepreneurs, and are specific to departments, institutes and scientific schools of individual scientists.

Innovative institutions with special status, such as technoparks, start-ups, and master centers, aimed at accelerating the commercialization of new technologies and research results should be widely used in universities and research institutions. Issues such as the identification of common interests between science and industry, raising the level of education and improving the staff of technological enterprises can be addressed in such innovative platforms.

Purposeful policy is being carried out to ensure the political, economic, social independence and territorial integrity of Azerbaijan, as well as its technological independence. The tasks set by the President to ensure the technological development of the country - the transformation of scientific potential into the main resources of sustainable economic development, the transformation of productive knowledge into necessary products and innovations, the pace of development of science and innovation sector and the needs of entrepreneurship in new technologies. The quality and timeliness of the implementation of strategically important tasks,
such as coordination, further highlights the importance of the implementation of scientific-educational-business partnership from a single center and with high professionalism.

We consider that even if we are not partially ready for these processes, the transition is important and development is impossible without the world. That is, good models must be applied. There are many opportunities for teachers and students to engage in entrepreneurship in universities, and there are many forms of this. Examples include consulting services, sales of new innovations, branding and sales of educational products, organization and sale of products on the basis of various orders in technoparks, products produced with the participation of students (bachelors, masters and doctoral students) during the educational and production activities of universities. we can show the materialization of works and services and other similar works.

We consider that university leaders need to be more innovative. A university without an education-science-business triangle has no future, and its diploma is not enough for the labor market. In our opinion, for this purpose, the material and technical base should be formed in accordance with the profiles of universities. Our universities had to invest the funds from private education and the budget in the future, not in meaningless aesthetic beauty, stone and cement. But it’s not too late. Experts emphasize the importance of developing innovation and entrepreneurship in cooperation with industry and business, the importance of cooperation between higher education institutions and the business world, as well as the importance of developing a culture of innovation and entrepreneurship. If the reforms are carried out correctly in all directions, the results will be positive.

References:
