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**DEVELOPMENT OF MECHANISMS FOR FINANCING SCIENTIFIC AND
INNOVATIVE ACTIVITIES IN THE HIGHER EDUCATION SYSTEM**

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In modern conditions of Kazakhstan, the priority relation of the state to the development of science for several decades had a strong and deep cumulative effect: increased position of the state in science and technology have changed traditional mechanisms of interaction individual sectors of

the national innovation system, including universities in socio-economic development of the country [1].

But this has not led the burgeoning University science in Kazakhstan, although the developed world is a new trend that emerged over the last twenty years is the increasing commercial nature of the activities of the scientists themselves and their resulting structures. If earlier information, consulting, and educational services provided by professors mainly on a contract basis were of equal importance, now more and more scientists are personally involved in the creation of companies and in direct investment in business. A Professor who has created his own business and uses students and postgraduates in the work of a high-tech company is a very common phenomenon.

But this is a global trend, and the share of higher education institutions performing research and development remains extremely low in the structure of Kazakhstan's science (about 3% of science expenditures compared to 21% in the EU and 14-15% in Japan and the United States). In Kazakhstan, it should be noted that the majority of universities practically do not conduct research, there are not enough special state programs for the development of University science. Also, many Russian universities have recently opened so-called "innovation centers", "commercialization centers", which are not only not engaged in the development of innovative activities of universities, but also do not understand their mission. The continuation of this trend can lead to irreversible consequences both for the science itself and for the quality of training of highly qualified specialists.

In this regard, the development of scientific and innovative potential of higher educational institutions in Kazakhstan depends to a large extent on the availability and full operation of appropriate mechanisms for financing their scientific and innovative activities. In terms of the development of such mechanisms, we can note the presence of two directions, focusing on the internal or external environment for attracting financial resources:

1. Development of scientific and innovative potential of a separate University through the formation of an effective innovation infrastructure, where the subsystem of multi-channel financing of science and innovation plays an important role (orientation to the internal environment).

2. Embedding modern universities in the network structures of generation and implementation of innovations in the "triple helix" system: the state, business and universities, where universities are assigned a significant role, and in the future they will have the status of so-called "research universities".

In accordance with the first direction, it is necessary to develop the appropriate innovation infrastructure in the universities of Kazakhstan. Innovation infrastructure is a system (complex) of interrelated elements (marketing, human resources, organizational, consulting, financial, information and commercialization) that create the necessary prerequisites for the development of innovation activities not only of the University, but also of the entire region.

To fully implement the tasks assigned to it to increase the scientific and innovative potential of the University, the innovative infrastructure of the University should include the following mandatory elements:

1. Marketing elements: relevant services or departments;
2. Personnel elements: employees of scientific structural divisions (research institutes) and teaching staff of the Department;
3. Organizational elements: relevant scientific departments (research institutes, scientific offices and services);
4. Consulting elements: research institutes, consulting centers and industry departments;
5. Financial elements: multi-channel financing of scientific and innovative activities through the attraction of grants, budget and extra-budgetary funding, contractual work, etc.;
6. Information elements: information and communication capabilities of the University and the University's website;

7. Elements of commercialization: exhibitions, relations with regional enterprises, organization of scientific offices for commercialization of innovations and a business incubator on the basis of the University [2].

To form a full-fledged innovation infrastructure of the University in the short term, it is necessary to set a strict innovation orientation in the designated elements, i.e. if marketing, then mainly innovation marketing, if personnel, then only personnel of innovation management, etc.

After the basic elements of the innovation infrastructure have already been formed at the University, special support is required from the authorized state bodies. In the presence of target state support of innovative infrastructure of universities, on the basis of the formation of the active elements of the innovation infrastructure to ensure overall development of the regions through the introduction of new technologies, creation of science-intensive and innovative products, companies on the basis of universities small innovative enterprises, the emergence of new jobs. Innovative infrastructure is a link between the University and business. The formation of a full-fledged innovation infrastructure will allow us to organize high-tech production based on the developments of domestic scientists, attract investment to Finance innovative projects at any stage of the innovation process, and generally establish optimal interaction between the University and industry and business.

In the second direction, the development of network mechanisms for financing research and innovation activities of universities, it can be noted that the integration of higher education and business is one of the main ways to move to the knowledge economy. It is extremely necessary, but not through a mechanical merger of universities and business structures, or the creation of so-called entrepreneurial universities focused only on obtaining tuition fees, without taking into account the quality of trained specialists.

It should be taken into account that each of these subjects is a monopoly owner of heterogeneous resources: universities manage a contingent of students and a significant number of faculty members in quantitative and qualitative terms, the business community acts not only as an employer for graduates and as a customer of educational programs, but can also give a large social order for research [3].

Three main players are involved in the search for effective interaction between the modern system of higher education and business: the state, universities and business, the main participants in the so - called "triple helix" system. But each of them defends their own interests:

Business as a whole sees universities as just another source of services, as a provider of ideas and innovations, over which it is desirable to establish strategic control. Businesses have no incentive to invest in University infrastructure as long as it is under the control of the scientific community and the state. For them, these are unproductive, inefficient expenses, and it is preferable for them to remain with universities in the framework of a "buy-and-sell" model of ready-made intellectual property.

Universities are certainly interested in expanding the funding base through business sources. But this is not their only interest. It is more important for them to preserve and further develop the mechanism of " production and dissemination " of knowledge, which was formed within their walls and proved its effectiveness. However, representatives of the scientific community are also concerned about the process of turning universities into another branch of commercial services, which requires the development of acceptable ways to limit this phenomenon and put it under public control.

The state, on the one hand, is interested in preserving and developing the scientific and educational potential of the higher education system to create new knowledge and inventions, and in forming a system for their dissemination. But, on the other hand, it is no less interested in improving the competitiveness of national business. There is a clear conflict of interest that can only be resolved at the political level. The state should decide at any given moment what is more in its interests: support for national science or national business.

But it should be borne in mind that cooperation between universities and business is the interaction of two completely different social institutions, each with its own goals, internal

organization, motivation of key personnel, success criteria, etc. Society needs both of these institutions, each of which should solve its specific tasks with maximum efficiency. Therefore, cooperation between science and business should not lead to the merger or absorption of one institution by another and, as a result, to the loss of the original qualities. Thus, the interaction between universities and business should only develop their strengths, without disrupting the internal structure and organization of the research process at universities. [4]

In this regard, taking into account these contradictions, we propose to develop a new type of relationship - as a two-way creative process that involves the development of new forms of organization of training and research in educational institutions, while ensuring the active participation of the business community in the educational process, in the training of modern personnel.

The most promising way to integrate higher education and business is to combine research institutes and universities with production companies, enterprises, and science and technology parks. Such large associations can serve large business organizations, corporations, holdings, and multinational companies by providing them with a range of educational, research, and other types of services. Abroad, it has long been practiced to create such large complexes, which are called multi-universities. They are University-industrial centers or intellectual cities that play a crucial role in the development of specific regions.

An important stage of innovative development of the higher education system in Kazakhstan and ensuring its competitiveness is the introduction of network mechanisms for interaction between universities and business structures. This is due to the fact that in modern conditions, the traditional division of the economy into sectors or industries is losing its relevance and clusters come to the forefront - systems of network relationships between firms and organizations, the significance of which as a whole exceeds the simple sum of its components. A network or cluster model of innovative development of the national higher education system, if properly implemented, can radically change the content of the country's educational and scientific innovation policy, through the elimination of restrictions imposed on the growth of efficiency and the introduction of technological innovations.

Understanding of network philosophy in the global community is rapidly increasing, and networks themselves are becoming a key component of national and regional economic development plans.

This is due to the fact that the active position in the competitive market of higher education, actualizes the importance of the ability to consolidate efforts with other dynamic educational institutions, to be ready to operate in network structures in which each member complements each other and increases the overall efficiency of the network. In the last decade, due to globalization and excessive development of information and communication technologies, the competitive pressure on the educational services market has become so strong that no higher education institution can be sufficiently confident in the long-term prospects of its development. Mass introduction of remote technologies of higher education in developed countries on the basis of moocs (mass open online courses) can become a serious factor limiting development for those universities that do not work in this direction and do not use remote technologies for teaching students.

In such conditions, the most optimal option for ensuring and increasing the competitiveness of universities is network interaction structures. It is network structures that play a leading role in shaping the policy of the formation and growth of the knowledge economy in countries of all continents, of course, to the greatest extent in the industrialized countries. With the help of network structures, it has become possible to ensure the transfer of knowledge and innovation to universities and institutions in countries with economies in transition.

The main motives for creating network structures in higher education include:

1. development and active implementation of high technologies;
2. increasing innovation and economic activity in the territory of the network;
3. possibility of cooperation and reduction of transaction costs of network participants;
4. maintaining and improving the competitiveness of network participants;

5. training of highly qualified and in-demand specialists [4].

Summarizing the world experience in the development of network and cluster structures in almost all areas of the economy, we can say that they gave a significant impetus to the innovative development of the national economic system. In network structures, instead of rigid specialization in the form of a single profile of participating organizations, the so-called flexible specialization, the ability to innovate, develops. In many respects, these qualities of network structures are based on the hidden redistribution of knowledge and interdisciplinary exchange of information, which are characteristic of innovation and educational networks.

As for the innovative motive for the formation of network structures of universities, summarizing foreign experience in the development of innovation in Western Europe, the United States and Japan, we can note the tendency of their organizational and managerial structures for the development and implementation of innovation, which are characterized by the concentration of basic research, mainly in the field of higher education. The development of scientific and innovative potential of Kazakhstan's universities should lead universities from the level of educational organizations to the level of research and innovation, through the creation of network interactions with the same research institutes, foreign universities, state and regional development institutions and corporate structures.

As a prospect for further expansion of the network of interaction between universities and business, we can suggest the development of educational and innovative complexes and zones based on them, which are a network of interaction consisting not only of universities, but also research institutes, research centers, consulting and training companies focused on training qualified labor and generating new ideas and developments.

Such educational and innovative complexes should be aimed at solving the problem of deploying innovative infrastructure in regions where the policy of developing and attracting qualified human resources (including foreign ones) is being implemented, as well as ensuring technology transfer [4].

In General, to further deepen the interaction between higher education and business, Kazakhstan's universities need to ensure the implementation of the following priority tasks:

* Quality training for the knowledge-based economy. The production of high-tech, complex, high-value-added goods and services is impossible without a properly trained workforce. Among other things, such a system should combine in one process scientists who can generate new knowledge; engineers who have the necessary experience and methods of converting new knowledge into useful technologies; and technicians who directly transfer these technologies to public production; managers who know how to organize the whole process, and teachers who have modern methods of training and education. This system should permeate all levels of the educational process from secondary and specialized secondary to higher education. It should take into account that the set of skills and knowledge required by the economy today will be very different from what will be required tomorrow. the process of continuous learning should be organically integrated into the new system. At the same time, the new system of education and business, which is the main consumer of the new type of personnel, must maintain constant close ties, through which the goals of education are adjusted.

* The production of new, economically sought-after knowledge. Academic science should go beyond just basic research and be actively involved in applied research and specific developments. University science should be more involved in solving the real problems of the regional business community and initiate any research projects, if they can be used to solve regional problems and improve the standard of living of the region's population.

* Using existing knowledge and technologies to increase the competitiveness of the regional economy. The technologies that are currently used in the global economy are based on discoveries and inventions from 10-20 years ago, and the technologies that will transform the economy in the coming decades will be based on inventions that have already been made for the most part. The problem is that countries and regions can correctly select the technologies they need, based on the world experience of regional development.

* Forecasting scientific and technological development and participating in the process of making policy decisions. The education system remains the main producer of knowledge and has the necessary understanding of this process. No one can better predict the development of science, as well as the areas and methods of its application. Academic science should be organically integrated into political decision-making related to science and technology.

As for state incentives to deepen the interaction between universities and business, the following measures should be implemented based on the experience of developed countries:

* Introduction of accelerated depreciation tax credit mechanism: The tax credit should have a stimulating effect on the effective conduct of long-term research at universities that is critical for industry. The tax code should be used to track trends towards an increase in the number of short-term studies in the total volume of research papers commissioned by private firms to universities. Tax credits have a positive impact on the early stages of development of innovative firms created around research universities.

Also, in the context of improving the business climate, representatives of the scientific, technical and business communities recognize the importance of writing off current expenditures on their own R & d and excluding them from the amount of annual profits subject to taxation, as well as to conduct accelerated depreciation of their fixed capital - production funds.

* Development of venture financing and small innovative businesses. As part of the financing of strategically important high-tech and science-intensive projects, schemes of partnership between the state and private investors should be used, implemented, in particular, through the creation of special venture funds. These funds are formed on a parity basis, on the one hand, at the expense of equal amounts of budget funds, and on the other, banks, insurance companies, pension funds and other financial institutions.

According to the experience of the Russian Federation, it is necessary to allow Kazakh universities to open small innovative enterprises in order to commercialize research projects and accumulated intellectual property. These small innovative enterprises could also be used by universities as practice bases for students, and to expand the sphere of employment of graduates.

* Expanding the University funding base through endowment funds. In Kazakhstan, there are almost no major financial links between business and universities. It is necessary to take measures at the state level to attract entrepreneurs to allocate targeted capital, to take steps to form venture funds and endowments at universities, to organize practices, and to create a catalog of elective disciplines.

The endowment is designed to provide partial one-time donations and other income, through guaranteed income and the formation of a long-term source of funding for certain non-profit activities. Its advantage is the transparent nature of its activities. Since endowment funds can only be directed to the organization that it was created to support, it cannot be used to minimize taxation (when taxes are reduced due to expenses allegedly going to charity; this is relevant for those countries where charity is not taxed).

Endowments first appeared in the United States and were used primarily for non-governmental support of educational institutions. Currently, the endowment of Harvard University is more than 31 billion dollars, Yale-19.4 billion, Princeton and Stanford-more than 16 billion each. The "national endowment for the arts", which grew out of an endowment, actually serves as the absent us Department of culture.

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