



# Development of Innovation Management and Entrepreneurship in Higher Education Kazakhstan

## Desarrollo de Gestión de la Innovación y Emprendimiento en Educación superior Kazajstán

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#### ABSTRACT:

This paper deals with the theoretical concept of entrepreneurial university and its practical applicability in the higher education system of the Republic of Kazakhstan. Some of the essential functional characteristics of the phenomenon of entrepreneurial university using in the international scientific literature are described. Relevance, conditions, problems, as well as the first steps of forming entrepreneurial universities in Kazakhstan and their participation in the model of «triple helix» - «government, business and education» are investigated. Keywords: Republic of Kazakhstan, entrepreneurship, entrepreneurial university model "triple helix", higher education, innovation, innovation and entrepreneurial infrastructure, academic entrepreneurship.

**Keywords:** Innovation, the role of universities in innovation development, small business innovation, resource economics graduates, funding science, creation of a new economy based on business innovation

#### RESUMEN:

Este artículo aborda el concepto teórico de la universidad emprendedora y su aplicabilidad práctica en el sistema de educación superior de la República de Kazajstán. Algunas de las características funcionales esenciales del fenómeno de la universidad emprendedora. Relevancia, condiciones, problemas, así como los primeros pasos para formar universidades emprendedoras en Kazajstán y su participación en el modelo de "triple hélice" - "gobierno, negocios y educación" son investigados. Palabras clave: República de Kazajstán, emprendimiento, universidad emprendedora, triple hélice, educación superior, innovación, innovación e infraestructura empresarial, emprendimiento académico.

**Palabras clave:** Innovación, el papel de las universidades en el desarrollo de la innovación, innovación en pequeñas empresas, graduados en economía de recursos, financiación de la ciencia, creación de una nueva economía en la innovación de las pequeñas empresas

# 1. Introduction

As society develops, people's attitudes toward their main institutions change. As for the education system, on the whole it is very conservative, and its subsystem - universities - especially. This is due to many reasons, the main one of which is the habit of people to reproduce the way knowledge is transmitted, through which they have learned themselves.

Since the creation of the modern University model by W. Humboldt, its main functions were the generation and dissemination of knowledge. However, the nature of knowledge demanded by society has gradually changed: the industrial era has ended, and humanity has stepped into the "knowledge society", when the generation of knowledge ceases to be solely of scientists: social knowledge is born, for example, in business, when consumer behavior is being comprehended.

Accordingly, a rethinking of what knowledge the university should generate and disseminate is required. The change in the nature of this knowledge, in turn, requires revision and methods for its dissemination.

By the end of the industrial era, intellectual property and intellectual capital were formed. In the transition to a new economy in which knowledge becomes the main source of competitive advantages and the engine of economic development, the problem arises: how long will the situation remain in which the owners of financial capital receive the lion's share of the profit generated by the application of knowledge to the generation of which they are not directly related? It is from this that the attempts to expand the concept of capital follow, adding to the financial and intellectual form of capital the concept of "social capital".

Another area of change concerning the activities of universities is related to the relationship between cultures. In the early 1960's. In almost all developed countries, the publication of the report of Ch. Snow "Two Cultures", which emphasized the danger of mutual hostility between representatives of humanitarian and natural science cultures, now there is a need for work that could be called "three cultures". To the confrontation between the humanitarian and natural science cultures described by Snow, the hostile misunderstanding of their representatives by the formed business culture has been added [1]. However, the current systemic crisis of the world economy, which is characterized by profound changes caused by the emergence of new technologies, changes in demand for goods and high uncertainty, has created the need to create a new innovative structure of the economy and dictates the need to reduce or eliminate the confrontation between the academic environment and business.

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## 2. Methodology

Under the new conditions, society, business and the state expect universities to not only understand the new realities, but also actively participate in the struggle for efficiency growth based on innovative development. This is painful for universities by reducing government spending on education in the structure of spending on the social sphere (for example, in UK universities the budget of universities is reduced by 2025%). A key role in the modern economy is due to innovation processes. Now in the most acute competition in the markets of sales, new knowledge creates competitive advantages of certain countries to a greater extent than their natural resources. Today, up to 90% of Japan's GDP is provided through the introduction of innovative technologies and new competitive products. In the US this indicator is 70%, and we have it is negligible - less than 20%.

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## 3. Results

Vital for the academic environment of change, when its sustainable development can not already depend only on state support and the increase in the number of students, have led to the emergence of entrepreneurial universities. In theory, there are three main missions of the modern university. First, the creation of new knowledge, and secondly, the translation of this knowledge in the learning process, and the third, the transfer of the intellectual "product"

developed within the university to the real economy. The manifestation of the so-called "third (or entrepreneurial) mission" of universities - their ability to ensure the application of new knowledge in the external environment and to promote social and economic development, is realized through innovative and entrepreneurial activities [2].

The term "entrepreneurial university" is used in a variety of works published since the mid-1990s. However, there is still no clear definition of this concept. As noted by B. Clark, one of the most famous developers of the concept under consideration, "an entrepreneurial university is an institution that is ready" to accept risks when mastering new practices, the result of which is unclear "[3].

In the opinion of G. N. Konstantinov and S. F. Filonovich, the term "entrepreneurial university" is understood to be either a higher educational institution capable of attracting additional financial resources to support its activities; or a university using innovative teaching methods; or a university that closely interacts with industry, where the development of university scientists is being introduced. This diversity makes it difficult to identify the notion of "entrepreneurial university" and leads to the fact that many universities declare themselves entrepreneurial for the purposes of self-promotion [1].

Very often, when defining the notion of "entrepreneurial university", the following requirements to universities are simply listed:

- the university should demonstrate entrepreneurial behavior as an organization;
- University members
- teachers, students, employees
- should be entrepreneurs
- interaction between the university and the environment should lead to a "structural interface" between the university and the region.

B. Clark, as one of the most famous developers of the concept under consideration, believes that the main sign of the entrepreneurial university is the absence of fear of commercializing the generation and dissemination of knowledge, since members of such a university do not see the commercialization of danger for academic traditions and the quality of education. This approach implicitly assumes diversification of the sources of funding for the university. Clark emphasizes that an important condition for the effective functioning of an entrepreneurial university is a management style that provides flexibility and strategic interaction with the external environment.

Entrepreneurship is based on three essential elements: an organizational action; initiating changes; money income as a goal and criterion of success. One of the most capacious formulations of entrepreneurship was given by Harvard Business School professor Howard Stevenson: "Entrepreneurship is a quest for opportunities beyond the resources currently controlled." This definition is especially good in that it is not limited to the sphere of business: according to Stevenson, entrepreneurship is possible in virtually all spheres of human activity.

Including this formulation is based on the definition of entrepreneurial university, given by G.N. Konstantinov and S.R. Filonovich: "An entrepreneurial university is a higher educational institution that systematically makes efforts to overcome limitations in three areas - generating knowledge, teaching and transforming knowledge into practice - by initiating new activities, transforming the internal environment and modifying interaction with the external environment".

At the same time, scientists believe, it is wrong to exaggerate the significance of any of these spheres to the detriment of others. Such an exaggeration in the long term will inevitably lead to serious difficulties. For example, ignoring innovations in education while concentrating on research activities can lead to the depletion of an important resource: the influx of young talented researchers, pupils of this scientific school will be reduced. Excessive emphasis on teaching to the detriment of research leads to a decrease in the qualifications of teachers. The

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1. Preparation of various groups of producers of innovations in different spheres - in economy, management, finance, social sphere, in education, in culture, in technologies. It is the preparation of a whole class of innovators with innovative entrepreneurial thinking that sets the new type of future economy, the economy of innovation.
2. Production of knowledge and competencies as tools for building up entrepreneurial activity. The production of professional tool kits with which the entrepreneur builds new patterns of interaction, including doing business, organizing and managing, building social communications and so on.
3. Inclusion in the development programs as one of their developers and implementers (depending on the scale of self-determination, the university employs national, world and regional development programs).
4. Development and implementation of new technologies for training professionals, techniques, training methods.
5. Existence as one of the key nodes in regional and national educational infrastructures, entering them with a special function (in conjunction with technology parks, research institutes, business structures, etc.) and realizing the model of the "triple helix" [1].

The Higher School of the Republic of Kazakhstan is undergoing another stage of reform. The Republic implements the "State Program for the Development of Education for 2011-2020" aimed at improving the competitiveness of education, developing human capital by ensuring the availability of quality education for sustainable economic growth [4]. The Law "On Education" introduced a new classification of universities: national research universities, national higher education institutions, research universities, universities, academies and institutes. This classification establishes a rigid connection between the educational programs being implemented, the research activity and the category of the university, which allows raising the overall level of scientific and educational activities of higher education. The academic mobility of students and teaching staff of universities is provided for in law.

However, the world experience in the development of innovative entrepreneurship is practically not applied in Kazakhstan practice, therefore the old Soviet slogan "Education - Science - Innovations", which is still in force in the system of higher education in Kazakhstan, requires a replacement for "Education - Entrepreneurship - Science - Innovations". Only in this case, the ultimate goal and a guide of this difficult entrepreneurial and innovative stage of development of the Kazakh economy could be the announcement of N. Nazarbayev, the President of Kazakhstan. criterion = 60% of GDP, produced by small and medium-sized businesses to ensure the sustainability of the country.

However, business universities are not only suppliers of technologies, solutions, services to the country's innovation system, which actively interact with development institutions, state corporations and companies. Within their walls, the personnel necessary for the innovative development of the economy and the social sphere-engineering, management, and entrepreneurship, are being prepared. According to P. Schylte [7], the entrepreneurial university sets itself two tasks:

- act as an entrepreneurial institution, organizing business incubators, technology parks, involving students and graduates in this activity, helping them to found their own companies;
- to offer and implement entrepreneurship programs in order to train people who are trying to establish their own business, and to develop entrepreneurial thinking among students studying

in other specialties.

In 2013, the Ministry of Education and Science of the Republic of Kazakhstan initiated the inclusion in business curricula of all specialties of courses aimed at entrepreneurship. Such an approach involves compulsory study of entrepreneurship, gaining knowledge and practical skills.

The main difference between an entrepreneurial university and the ordinary is the large share of the research budget in the university's total revenues. The university must earn on science, forming a critical mass of intellectual property, i.e. patents, knowledge and development, which makes it possible to talk about the existence of an entrepreneurial function.

In the new Strategy "Kazakhstan - 2050", the Head of State N. Nazarbayev paid much attention to the development of science. Here the two main vectors are to raise the quality of research to an international level and directly connect science to economics and innovation. The stimulation of publications of our scientists in foreign rating magazines has begun. Direct cooperation with foreign science is also developing - joint publications, including with scientists from the United States, Britain, Germany and other developed countries.

In 2,5 times - from 20 billion tenge in 2010 to 48 billion in 2012 the amount of financing has increased, and the share of Kazakhstan universities in the implementation of scientific projects for this period has increased from 33% to 57%.

As a result of the strategic partnership of universities with industrial enterprises, university technoparks are being created today on the basis of higher education institutions. The main tasks of such technoparks are the commercialization of existing scientific developments, the stimulation of the scientific activity of teachers and staff of the university, as well as the application of the scientific potential of the university to solve practical problems.

The function of redistribution of potential economic and social benefits from the technology parks being created by regions is performed by network technology parks. Thanks to the network structure, the technopark has increased capabilities, the range of services it provides has been expanded, and the values of its performance indicators have improved. In addition, thanks to the network structure, the technopark is able to ensure its physical presence in large cities important for the development of the technopark.

Unlike technoparks, the activity of coworking centers is shifted from the creation of an infrastructure in its physical embodiment to the creation of communications and work with professional communities. Such centers provide research and development services to business and information support companies, create a favorable environment for the exchange of information between subjects of innovation.

Along with traditional types of research centers, hybrid forms are being formed, which are created to bridge the gap between the results of traditional fundamental research conducted at universities and the needs of industrial companies. Of particular interest is such a form of integration of science and material production as "scientific parks", common in the US and Western Europe, and "technopolis" in Japan.

In Kazakhstan, the model of the triple helix has a certain specificity, which consists in the fact that the bulk of scientific research of a fundamental nature falls not on universities, as in most countries of the world, but on research institutes. Universities carry out training of personnel, including highly qualified specialists, with a rather weak scientific base.

To implement the triple-helix mechanism, it is necessary to form a research infrastructure. And with this, certain problems may arise, since the lack of scientific potential will affect the formation of the infrastructure around the universities, and in the case of its creation with scientific organizations - the shortage of young cadres.

In this direction, some steps have already been taken in Kazakhstan today. In the sphere of integration of education, science and innovation, the breakthrough is the Nazarbayev University, which in the near future will become the Center for Educational and Scientific Cluster

in Central Asia and among the CIS countries. To date, the Center for Energy Studies and Life Sciences, the International Interdisciplinary Instrumental Center, is functioning at the University.

Technical universities in Kazakhstan have the potential to become universities of a new generation that will combine functions both educational, research, and entrepreneurial. But it is necessary to think over the mechanisms of transformation. For example, in Sweden, the transition to entrepreneurial universities began in the 1980s. In all universities of the country, a system of practical entrepreneurial education was created, i.e. as entrepreneurs, entrepreneurs were involved.

Another problem that needs to be solved is the demand for scientific results, their transformation into modern technologies and competitive products. Today, the share of Kazakhstan science-intensive products on the world market is practically zero. While this indicator of the effectiveness of scientific, technical and innovation activities in the countries of the European Union is 35%, the USA - 25%, Japan - 11%, Singapore - 7%, South Korea - 4%, China - 2%. The reason for this situation is the lack of interest of business in the development and implementation of the results of domestic science in production [8].

In this regard, it is necessary to orient scientific research to the needs of the economy, as well as to develop effective mechanisms for commercializing the results of scientific and technological activities, developing business in the field of scientific innovation, producing and manufacturing competitive high-tech products, and strengthening the human resources potential of science.

Another important institution in the triple helix is business, which is an integral component of the innovation process in the modern economy. For the present, the innovative activity of domestic enterprises in comparison with technologically developed countries is at a low level. According to the Agency of Statistics of the Republic of Kazakhstan - less than 5%. The number of enterprises with innovations is no more than 400 units. For the transition to an innovative development path, innovative entrepreneurs are needed, which, with state support, will be able to ensure the production and dissemination of innovations.

It is necessary to think over the mechanisms of interaction between business and science, mechanisms for the commercialization of knowledge, including their transfer to new applications. For example, in developed countries, a general trend is to achieve a high level of financing for innovation by the private sector of the economy. In the lead countries, for example in the United States, the private sector provides up to 75% of research and development costs, while the 100 largest international corporations account for 90% of this amount.

It can be summarized that at the present stage of development in Kazakhstan only "double", not "triple helix" relations exist and develop. The following types of such visible pair relationships are formed:

1. The state is the raw material industries. Having high incomes, these industries compete in international markets.
2. The state is the rest of the business. Those enterprises that are able to enter the innovative market to create import-substituting products, demand mainly for imported equipment.
3. Science is business. This interaction is still insufficiently developed [8]. Therefore, not the last role in the transition from double-spiral to triple belongs to universities through the realization of their entrepreneurial potential.

In the educational policy of Kazakhstan the official status of the research university was first of all given official status and corresponding institutional support. This is due to the fact that in modern conditions it is risky to build a university strategy based on long-term interaction with business. There is only a small segment (IT-technologies, oil and gas production), where large business shows interest in strong ties with universities. At the same time, relying on long-term state support, research universities can simultaneously develop elements of enterprise in the

scientific and educational spheres. Entrepreneurial University is the next evolutionary step in the development of a research university, creating a new balance between science, education and innovation.

At the same time, the transformation of the university into an entrepreneurial university is impossible, if the initiative will come only from the state or other external counterparts. Consequently, it is necessary to create an innovative environment and entrepreneurial culture within the organization itself. The active work of the university's units and employees in finding tasks and creating new solutions that are of practical importance for the relevant markets - this is the manifestation of enterprise. The task of the university itself is to support the creative initiatives of people who are able to implement innovative projects, create conditions for the development of new products and technologies, implement applied solutions in the economy, in specific companies and enterprises [2].

Prerequisites for entrepreneurial transformation of the university are: - an administrative core, including central management groups and university departments; - the expanded periphery of development (presence of technoparks, research centers, laboratories ready to establish connections with external factors); - diversified funding base (widening the range of sources of replenishment of the budget); - Stimulated academic structures (their potential is a guarantee of sustainable development of education and science); - Integrated entrepreneurial culture (management's perception and leading professors of innovation as an integral condition for the successful and sustainable development of the university).

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## **4. Conclusions**

Thus, in our opinion, it is obvious that for the successful implementation of the entrepreneurial university model, at the university level it is necessary:

- the development of entrepreneurial culture at the university;
- its cooperation and cooperation with strategic partners.
- conducting research on methods of managing innovation infrastructure.

At the macro level, on the part of the state, it is necessary:

- to develop the Kazakhstani model of an entrepreneurial university, which is characteristic of the specifics of the country; Kazakhstan regional, legal, institutional and political conditions;
  - development of effective mechanisms for cooperation between universities, corporations and government institutions;
  - support of universities developing in the model of the entrepreneurial university, by providing resources, grants and other financial instruments;
  - creation of a regulatory framework and mechanisms for ensuring successful development in the model of the entrepreneurial university.
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