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The role of research universities in the implementation of the country's innovation policy

The article deals with the various aspects of the development of research universities in the innovative development of the state. The main tasks are identified that are carried out in the Republic of Kazakhstan for the industrial-innovative development of the economy. Key indicators of innovation development of the country are analyzed. The role of the Republic of Kazakhstan in the Global Competitiveness Index of world countries is identified. The features of the creation of a research university, is equally effective to carry out educational and research activities based on the principles of integration of science and education, is fully consistent with global trends in the field of education and science are revealed. The recommendations for universities to integrate into the world community in terms of innovation-oriented economy are offered.

Key words: innovation, university, education, research, competitiveness.

During the years of independence Kazakhstan has become a recognizable by the world community with a vibrant economy and a highly intelligent nation. Our success is weighty, and the proposed initiatives are understanding and support in the international arena.

The Republic of Kazakhstan was one of the first countries that have expressed the need for industrial-innovative development of the economy, given the importance of new technologies. The development and launch of the State program on industrial-innovative development for 2010–2014 (SPAIID) became a respond of the country to the challenges generated by the economic crisis. This program has laid the basis for further industrial growth and is considered one of the examples of public system approaches to develop its own industrial base. The aim of SPAIID is to ensure sustainable and balanced economic growth through diversification and enhancing its competitiveness. SPAIID became one of anti-crisis tools of support of industry in terms of the global financial crisis.

The concept of industrial development of Kazakhstan for 2015–2019 years was developed in accordance with the Message of the President of the Republic of Kazakhstan to the people of Kazakhstan on December 14, 2012 «Strategy Kazakhstan — 2050»: new political course of the established state».

The purpose of industrial development of Kazakhstan till 2020 is to create incentives and conditions for the diversification and increase of competitiveness of the industry.

To achieve this goal it is necessary to fulfill five key objectives:

- 1) The rapid development of the manufacturing industry due to the demand of resource sector and new export opportunities in the macro-region;
- 2) improvement of the quality of the business environment for industrial development, including the creation of favorable conditions for the development of fair competition;
- 3) establish a framework for the future development of the sectors through the creation of innovation clusters and the development of innovation infrastructure;
- 4) promotion of entrepreneurship and development of small and medium-sized businesses in the manufacturing industry;
- 5) creation of productive work places [1].

The starting point in understanding the features of the process in terms of the national economy is that innovative development must be seen not just in terms of the use and creation of technological innovations, because under the conditions of weak development of innovative sector of our economy is inaccessible due to the high cost of launching of this process. But the world's scientific and technological advances and their use in the economy of our country are fully applicable. It also provided a modern national system of economic management: the introduction of innovative approaches in management.

There is no doubt that there are a great amount of effort on innovation and innovation activities in the Republic of Kazakhstan. Understanding the need for innovation as a tool to stimulate economic activity, it contributes to the diverse focus of their implementation. Initially the work with the innovations must be sup-

ported at the legislative level, with a view to their fast distribution, and according to the strategic objectives set by the state. Introduction of innovations should be purposeful and the most effective tool for regulation of economic activities, creating additional opportunities for overcoming the economic and financial crisis.

We consider the amount of innovative products produced by Kazakhstani enterprises from 2003 to 2013 according to the Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan (Fig.).

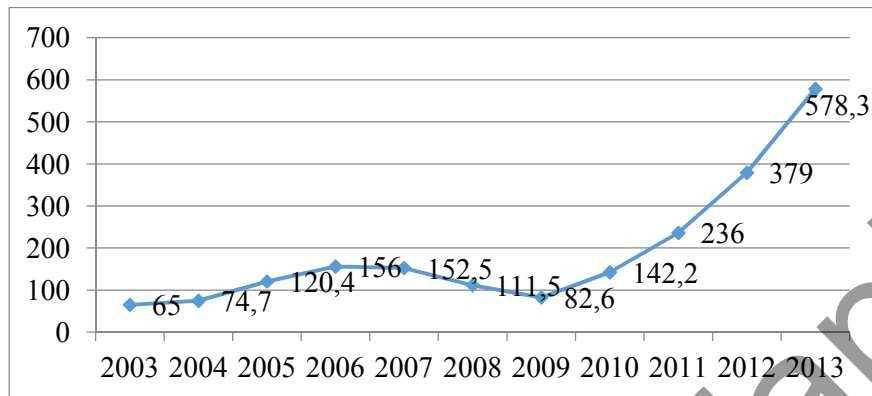


Figure. The volume of innovative products in Kazakhstan from 2003 till 2013, bln. tenge (made by author based on the data of resource [2])

It is obvious that with the adoption of SPAIID Program for 2010–2014 there is a significant increase in the volume of innovative products, starting from 2010.

The system of indicators characterizing innovation is not yet fully developed and does not allow assessing the current state and the trends of the economy development. The structure of statistical indicators does not correspond to today tasks. The statistics reflect the key parameters of the innovative development come after a long delay and in a timely manner can not be taken into account when making decisions on innovation policy. The most commonly used indicators characterize the volume and cost structure on innovation, the share of innovative products in the total output, the amount of introduction of new technologies.

The indicators characterizing the development of the company quite well reflected in the statistics and cover various aspects and results of operations. Indicators of the innovation development, in most cases, do not have a sufficient degree of specificity and is not always possible to clearly associate them with indicators of the industrial development. More than half of them characterize the proportion of enterprises engaged in certain types of innovative activities as a percentage of the total number of enterprises. To conduct any economic calculations on the basis of such indicators is not possible. To some extent they can be used in the administration.

If the indicators of innovation expenses are clearly quantifiable and recorded in reports of organizations, the indicator of the production of innovative products is calculated primarily on the basis of expert assessments, which reduces the possibility of their comparison with other indicators and final counting.

Economic development in recent years is characterized by the growth of most indicators. However, making this trend sustainable is required a transfer to a new development model, which is based on the application of high technologies, intellectual capital growth and widespread innovation. Achievement of high-quality economic growth required to solve the task of forming a modern innovative educational, scientific and technological infrastructure, providing the expanded reproduction of the intellectual capital of the country, the generation of new knowledge and innovation, their capitalization, conversion to new products, services and technology, distribution, and consumer markets.

Increasing the country's innovative potential also decide such important issue as increasing the competitiveness of the country. One of the main priorities of development in recent years is to ensure competitive advantages of national economies in world markets. Foreign countries do that, creating favorable conditions for business, development of a competitive market environment, supporting those areas where competitive advantages for one reason or another can not be realized only by means of the mechanism of the free market. Achievement of the goals should based on the use of a range of measures, which include fiscal, monetary, antitrust, science and technology, innovation and other mechanisms.

But in the former Soviet Union, which includes Kazakhstan, innovative sphere is underdeveloped, which is confirmed by low technological level of the country, and the small number of innovative enterprises, small share of the introduced new technologies at the macro, meso and micro levels, and many other factors.

An important indicator of economic growth in the country is its competitiveness, which ensures the survival of the companies in the long run, output produced goods and services to the world markets, thereby increasing the level of development of the national economy. For example, Table presents data on the Global Competitiveness Index, calculated by the Global Economic Forum.

Table

Global Competitiveness Index in different countries in 2015–2016

Countries	Index	Institutions	Infrastructure	Macroeconomic environment	Health and primary education	Higher education and training	Goods market efficiency	Labor market efficiency	Financial market development	Technological readiness	Market size	Business sophistication	Innovation
Switzerland	1	7	6	6	11	4	9	1	10	2	39	1	1
Singapore	2	2	2	12	2	1	1	2	2	5	35	18	9
USA	3	28	11	96	46	6	16	4	5	17	2	4	4
Germany	4	20	7	20	13	17	23	28	18	12	5	3	6
Netherlands	5	10	3	26	6	3	10	17	31	10	23	5	8
Hong Kong	7	8	1	16	29	13	2	3	3	8	32	16	27
South Korea	26	69	13	5	23	23	26	83	87	27	13	26	19
China	28	51	39	8	44	68	58	37	54	74	1	38	31
Kazakhstan	42	50	58	25	93	60	49	18	91	61	46	79	72
Russia	45	100	35	40	56	38	92	50	95	60	6	80	68
Armenia	82	76	82	72	95	72	50	58	94	75	116	97	107
Kyrgyzstan	102	115	114	80	98	80	81	88	102	95	118	118	125

Note. Comprised by authors based on the Global Competitiveness report [3].

Table shows the index of global competitiveness in various countries and the indices of parameters that contribute to the first indicator. Index takes into account three groups of sub-indices:

1. Basic requirements, which include institutions, infrastructure, macroeconomic environment, health and primary education. Kazakhstan takes 46 place on this sub-index.

2. Efficiency factors, which include higher education and training, goods and labor market efficiency, financial market development, technological readiness and market size. Our country is on the 45 place this sub-index.

3. Innovation factors and sophistication, including the results of business sophistication and innovation. Kazakhstan is located at 78 place by this subindex.

The presented figures show the problems that Kazakhstan should pay attention in order to improve the conditions of business activities and thereby raise the level of competitiveness of the country. So, there are identified the most serious problems: corruption, access to financing, inefficient bureaucracy of government agencies, tax regulations, underdeveloped infrastructure, inflation, inadequate educated workforce, lack of innovation, tax rates, currency regulations, crime and looting, restrictive labor market regulations, low level of ethics in the national labor, the possibility of political upheaval, political instability, poor public health. According to foreign experts, these factors are constraining the development and formation of domestic business.

The model of Kazakhstan's way of development of economy confirmed its vitality and provides effective resistance to global crisis and allowed to go to invest and innovative modernization.

In this regard, a large bet is placed on the development of the education system, a breakthrough in the development of science and innovation renovation of industries. These basic ideas laid down in the State Program of Education Development of Kazakhstan for 2010–2020 [4], which sets out a framework for fundamentally new model of education, taking into account the best international practices. It is very important

that for the first time in the history of independent Kazakhstan at the highest state level the question of prestige of the teacher as the main participant in the process of training and education was raised. It was a great incentive to work for everyone involved in the Kazakhstan education, strengthened their confidence in the future.

The network of smart schools to develop the capacity of talented children was already created. The Ministry of Education and Science creates the research universities, designed to become centers for the integration of education, science and business structures.

Now the country actively search for a new university idea taking into account the world experience and development prospects. And here a special place is occupied by the idea of a research university. Positions of research universities throughout of the world are strengthened. On the basis of the activities of the leading research universities in the world by Shanghai rating and «Times» rating we have analyzed the models of creating of research universities.

The analysis showed that there are two basic models of research universities in the world. Along with all the common features such as the ability to generate knowledge and ensure the commercialization of innovative technologies in the economy, there are some differences between them. The first model is focused mainly on fundamental and applied research (Harvard, Cambridge and Sorbonne).

The second model includes dynamic big university complex with corporate structure and successful entrepreneurship activity — educational zone in the United Arab Emirates (Dubai), Korean, New York polytechnic universities, research centers of number universities of UK and Japan.

In accordance with the Law «On science» «research university is a higher education institution that implements approved by the Government of the Republic of Kazakhstan program of university development and participating in organizing and conducting fundamental and applied scientific research and other scientific and technical development works» [5]. The main objective of the research university is the integration of scientific research and educational process at all levels of higher and postgraduate education.

The main activity of research universities, related to education and research, should be complemented by an innovative component [6], which will allow the university to orientate in the present conditions, and to be an independent participant of market economic relations.

The achievement of this objective will be implemented by executing interrelated on the periods, resources and sources of financial support measures provided by the Program of research university development.

The strategy of innovative development of Kazakhstan requires the development of innovative research universities of international level. Currently the prerequisites for the emergence of a network of universities implementing innovative educational programs are created. In this regard, the most urgent is the problem of development of success achieved in the implementation of the program of forced industrial-innovative development, including the creation in Kazakhstan of national research universities as centers of accumulation and efficient use of educational, scientific and innovative potential, ready to contribute to a breakthrough development of base sectors of the economy. One of these centers could become the National Research Technological University.

2015 in the history of the education system was very special — on the basis of the decision of the Government and the Decree of the President of Kazakhstan Nursultan Nazarbayev № 75 on 08.26.2015, the Kazakh National Technical University named after K.I.Satpayev granted the status of a research university.

Creation of a research university, is equally effective to carry out educational and research activities based on the principles of integration of science and education, is fully consistent with global trends in the field of education and science.

As it is known, earlier in Kazakhstan only two innovative clusters have been established and operate: LLC «Nazarbayev University» in Astana and LLC «Park of innovation technologies» in Almaty. In the country there is a need for a third cluster of innovation in the field of resource saving on the base of first Kazakh National research university — the Kazakh National Technical University named after K.I.Satpayev (KAZNTU). At the end of December 2015 on the instructions of the head of state, Nursultan Nazarbayev, Kazakh-British Technical University and Satpaev KAZNTU were united.

The uniting of two universities will allow to concentrate the available public resources and private investment in the solution of key problems in the sphere of innovation, to strike a balance and sequence of tasks at hand and run the mechanisms of self-development of innovative processes in the economy.

The development program of these universities focused on staffing not only sectors of the economy and the social sphere, but also the priority areas of science, technology, engineering, development and introduction of high technologies, as well as the active participation of scientists of the University in the formation of an innovative economy through continuous technology upgrades, accelerated the development of innovation, rapid adaptation to current market requirements.

Optimization of financial and administrative resources will contribute to the development of high-tech industries of the country, solving the problems in the social sphere, creation of a platform for effective dialogue of employers and educational institutions, as well as the innovative development of the region. The creation of university, deeply integrated with leading research centers and high-tech enterprises and other regional research centers and companies will have a significant impact on the development of high-tech industries, increase competitiveness in the global market knowledge and high technology, as well as increase the level of skills and professionalism of teachers.

On the basis of a common methodological support and uniform requirements for learning outcomes there will be developed and introduced modern methods of training and cooperation with regional educational institutions, including students' mobility and coordination of distance learning.

The program provides a stable and effective interaction with scientists and professors who work in other regions and abroad on a permanent and temporary basis, the use of their experience, skills and knowledge for the development of science, education and high technologies, to ensure their training, including scientific and research and teaching, the development of training courses on the newest areas of science and technology, the preparation of materials on the scientific directions.

Implementation of the country's innovation development scenario leads to intense structural shifts in favor of the high-tech industries. This increases the demands on graduates who have to be receptive to innovation, have a modern training, qualified in the fields of information technology, economics and management. Such graduates of the university will contribute to a significant increase in the efficiency of high-tech industries and create the resource potential, which is required for urgent structural reforms in the economy. At the same time it requires advanced training and retraining of personnel for the new breed of innovative industries in the region, which is especially important for the implementation of socio-economic development of the regional programs. Complete solution of these problems corresponds to the long-term interests of the country in the creation of an innovative economy.

In recent years, interest in science falls around the world, this is confirmed by many international experts. Our President in considering with this trend suggested a new area of scientific management model, which is designed not only to compensate for this phenomenon in Kazakhstan, but also take proactive measures to integrate science in national development system.

It should be possible to use effective market implementation of their achievements through the process of innovation and create commercial structures. It is necessary to find new mechanisms for the commercialization of ideas and technology transfer.

Thus, in the conditions of innovation-oriented economy of the country and integration into the world community universities should solve the following tasks:

- Improvement of multi-level system of training of specialists on the basis of integration of education, science and industry;
- Introduction of the achievements of foreign scientific schools and advanced scientific and methodological experience to nurture of the intellectual elite and the formation of individuals who are patriots of their country;
- Ensuring the participation of the scientific and pedagogical university staff in the creation of high technologies, new innovative projects and productions;
- Creating the conditions for total innovation orientation training;
- Modernization of the control system of the innovative activity of university aimed at ensuring its dynamic development and financial stability.

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Елдің инновациялық саясатын іске асырудағы зерттеу университеттерінің рөлі

Мақалада мемлекеттің инновациялық дамуындағы зерттеу университеттері дамуының әр түрлі негіздері қарастырылған. Экономиканың индустриялық-инновациялық дамуы үшін Қазақстан Республикасында жүзеге асырылып жатқан негізгі міндеттер анықталған. Елдің инновациялық дамуының негізгі көрсеткіштері талданған. Жаһандық бәсекеге қабілеттілік индексі бойынша Қазақстан Республикасының әлемдік елдер арасындағы рөлі айқындалған. Білім және ғылым байланысы қағидаттарына негізделген білім беру және ғылыми-зерттеу қызметін жүзеге асыру үшін тең дәрежеде тиімді болып табылатын, білім беру және ғылым саласындағы әлемдік үрдістерге толық сәйкес келетін зерттеу университетін құру ерекшеліктері ашылған. Инновациялық-бағдарлы экономика тұрғыдан әлемдік қоғамдастыққа байланысқа шығу үшін университеттерге ұсыныстар берілген.

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Роль исследовательских университетов в реализации инновационной политики страны

В статье рассмотрены различные аспекты развития исследовательских университетов в инновационном развитии государства. Определены основные задачи, которые выполняются в Республике Казахстан для индустриально-инновационного развития экономики. Проанализированы основные показатели инновационного развития страны. Выявлена роль Казахстана в индексе глобальной конкурентоспособности стран мира. Раскрыты особенности создания исследовательского университета, одинаково эффективно осуществляющего образовательную и научную деятельность на основе принципов интеграции науки и образования, полностью соответствующего мировым тенденциям в области образования и науки. Предложены рекомендации университетам для интеграции в мировое сообщество в условиях инновационно-ориентированной экономики.

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