

DEVELOPMENT OF SCIENCE IN KAZAKHSTAN IN THE PERIOD OF INDEPENDENCE

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Abstract. The twenty-first century is the century of science and innovation. At the turn of the century the functional field of science has expanded in modern society. The article describes the functions of science in economic, social, cultural and political spheres. The development of science in the Republic of Kazakhstan in the period of independence has been analyzed in the logic of global trends, system of periods for scientific development in Kazakhstan from 1991 has been suggested. Specifically, the development of university research was highlighted which is sharply standing issue due to the transformation of 12 leading universities of Kazakhstan into research and innovative universities.

Keywords: science, research, development, world trends

Introduction

The modern development of the society is characterized by high dynamics of development of science and innovation. „The competitiveness of the economy“, „transition to an economy based on knowledge“, „innovation economy“ – is the concept of a modern XXI century. Kazakhstan – a new independent state, is actively conducting research. The development of science over 20 years of independence was of a contradictory character. In the first approximation, we can clearly distinguish two time periods: the crisis of science in Kazakhstan and the dynamic transformation, aimed at the industrial-innovative development of an independent state, the formation of a „smart economy“.

If the first time period longer reflect regional trends, the second time period is longer in the logic of world trends of development of an innovative economy. As you know, „knowledge triangle“ – research, education and innovation - defined as the main factor of European efforts to meet the Lisbon objectives of the strategy of the European Union to transform the EU economy the most dynamic and most competitive economy in the world. Such an understanding is approximated for the development of Kazakhstan's XXI century.

Purpose of the article – analysis and periodization of the development of science in Kazakhstan and to identify features of the scientific policy of Kazakhstan, development of new directions in line with global trends, identify problem areas R & D. Since the authors are members of university research, we will focus on the features of the present stage of development of university science.

The expansion of the functional field of science in modern society

In the XX century science becomes a powerful social institution. The importance of science in public policy in the countries of the world's leading high. As you know, at the end of the last decade in most developed economies the share of domestic expenditure on research and development amounted to an average share of GDP 3.0% (in Sweden – 3.8%, Finland – 3.5%, Japan – 3.04%, Switzerland – 2.73%, USA – 2.84%, Germany – 2.44%, while the state's share of these costs was on average 25–34%) (National Program for the Development of Science of the RK for 2007–2012 years).

Accordingly, the extended function field of science in modern society. This vision of the projected functions similar to the formation of A.M. Osipov in the sociology of education (Osipov, 2006).

In the *economic sphere*, science becomes a productive force of society, is attracting significant economic resources for the development of science, and therefore society's expectations of him are high. In addition, there is an internal reallocation of resources for scientific activities, in particular, for example, between regions, urban and rural areas, etc. As you know, in Kazakhstan the most developed in the scientific field is the city of Almaty, Astana, East Kazakhstan region, etc.

In the *field of science* contributes to culture, on the one hand, the broadcast, professional development and expansion of human cultures through the production of new knowledge and technologies, on the other hand - innovation in the field of culture. Thirdly, scientific activity is the production and reproduction of social intelligence of the country through the reproduction of social technologies of intellectual activity.

In the *social functions of science* aimed at: a) the reproduction of scientific communities, socio-professional groups, and b) science is becoming one of the channels of mass social movements, social mobility, and c) promotes personal self-scientists, and their success in the creative and professional activities. The functions of science in the socio-political sphere, improving the image of the country (Figure 1).

Expanding the functions of science in society are natural, they allow a clear understanding and full consideration to explore productive development of science and society as a whole, will help in building an innovative economy in Kazakhstan.

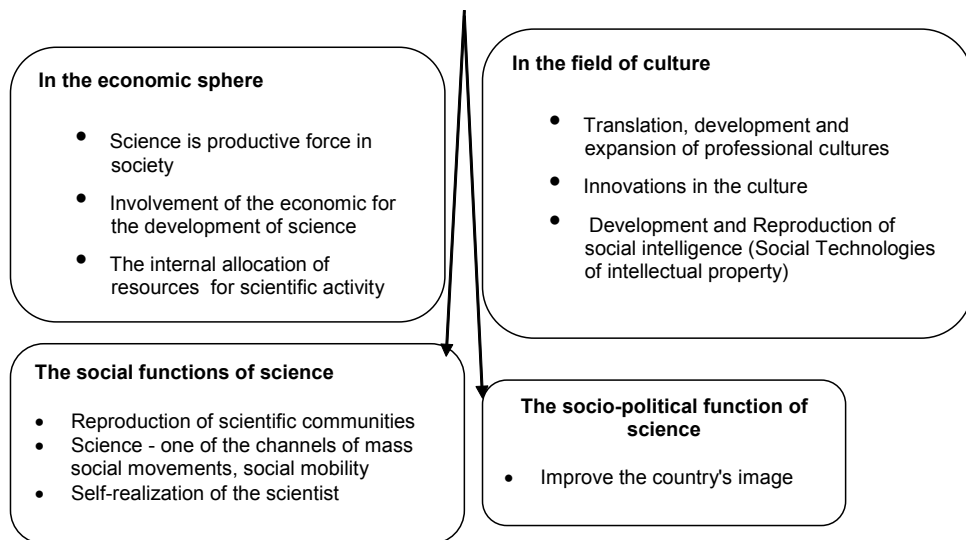


Figure 1 - The functions of science in modern society

Periodization of Science of Kazakhstan

Ranked periodization of science in Kazakhstan, we are based on an analysis of scientific literature, scientific instruments of state policy, as well as analyzing and summarizing the experience of scientific activity during the 20 years of independence.

The materials of JSC „National Scientific and Technical Information“ (2011) is a chronicle of the development of science in Kazakhstan 5-year intervals: 1991–1996, 1996–2001, 2001–2006, 2006–2011 without specifying the names of the stages. It addresses in detail the adoption of new instruments, changes in science policy, etc. This is one of the first publications on the system of reflection and evaluation of the trajectory and the vector of development of science in Kazakhstan for 20 years.

The most well-known analytical reports on the development of science in Kazakhstan were previously presented in the papers, B.A. Kembaeva and Y. Komleva (1999) and others, about the current state and problems of scientific activity, K.A. Sagadiev, Z. Mansurov, A.K. Abdymomunov, Suleimenov E. (2005), B.T. Jumagulov, etc.

We have identified three stages of development of science:

1991–2000 – The crisis of science in Kazakhstan;

2001–2006 – Stabilization of the development of science;

2007 – to date – the strategic development of science, aimed at industrial and innovative development, and becoming one of the 50 most competitive countries in the world.

Social Science Institute in Kazakhstan inherited from the Soviet era complex system: academic, industry, university and plant science network of research institutes, laboratories, universities, and other indicators the number of shots were close to the leading countries in the world. Well-known scientific schools were formed.

Over 20 years of independence was made three generations of the laws of science.



Figure 2 - Three generations of the Laws „On Science“

First Law of RK „On Science and Science and Technology Policy“ was adopted January 15, 1992, he was replaced by the Law of RK “On Science” from July 9, 2001 February 18, 2011 adopted a new Law „On Science“ third generation.

The first law was aimed at creating an independent national science and technology policy and management science of the country. The transition from administrative to a task-target method of planning and research funding was realized. Since 1995 has been implemented regulatory and methodological framework, the system of state registration of scientific programs, the state introduced a system of independent scientific and technical expertise, formed the first national research centers. In 1999 he founded the Higher Scientific and Technical Committee – an advisory body under the Government of Kazakhstan (based on the NC STI, 2011).

In 1990–1997 as a percentage of GDP spending on science indicators decreased from 0.8% in 1990 to 0.24% in 1997 In addition, during the 90s – a period of inflation, delayed funding, reduce funding for the year (with respect to planned). The number of research workers has declined by almost 3 times the cost of R & D of 6.6 times.

In 2000 it adopted a new concept of science and technology policy in Kazakhstan.

The beginning of the second period is marked by the adoption of the new Law on Science, 2001. Stabilize funding for science and research. In academic circles, discuss a new version of the management of science-based models of Finland, the USA and other countries. In 2002 the Law „On innovation activity“, which determines the main directions, principles and shapes of the implementation of state policy innovation, was passed. In 2003, the National Academy of Sciences became a public organization; its institutions were transferred to the line ministries.

In 2003 developed and adopted a strategy of industrial-innovative development of Kazakhstan till 2015, set the tone for the development of economy and science.

In our opinion, this is a turning point, giving the vector of the strategic development of our state. All government policies, government programs of various sectors under the control and co-directed this vector.

It creates the National Innovation System, established five development institutions - the Development Bank of Kazakhstan, the Investment Fund, the National Innovation Fund, Center for Engineering and Technology Transfer, National Insurance Corporation for Export Credit and Investment. In 2006, President Nursultan Nazarbayev announced in his message to the people of Kazakhstan „Strategy of Kazakhstan’s top 50 most competitive countries in the world. Kazakhstan on the threshold of a new leap forward in its development“ (Nazarbayev, 2006).

Macroeconomic analysis of technological development in Kazakhstan showed that the proportion of new scientific production in GDP in these years does not exceed 1.1%, the activity of enterprises for the production of scientific output – 2.3%.

A new period of strategic development begins with the adoption of State Program of Science of the RK for 2007–2012.

Purpose of the program – to achieve competitiveness and balance of science, providing acquisition, generation and transmission of knowledge, demand for sustainable socio-economic development. According to the program plan to achieve the share of spending on science in 2015 at the level of developed countries (2.5% of GDP).

In 2010, Kazakhstan adopted a new program of forced industrial-innovative development for 2010-2014. In 2011 a new law of RK „On Science“ was passed. It implements a new model of management science: science funding „basic funding + software + targeted funding grant funding“, entered the national research councils in areas of science in the domestic and foreign scientists, attracting private sector funding for research, introduces the status of „research university“. National Center of State Scientific and Technical Expertise (based on the NC STI, 2011) was created. Note that the State Program for Development of Science of Kazakhstan has lost its force in accordance with Presidential Decree of 01.04.2011 № 1179. New directions for the development of science defined by the law of science in 2011. Already in 2012 increased funding for research, identified five new scientific development priorities: energy, deep processing of raw materials and products, information and telecommunications technologies; life sciences, intellectual potential of the country.

It should be emphasized policy change training of the teaching staff. In accordance with the accession to the Bologna process in 2011, terminated the protection of the Soviet system, candidates and doctors of sciences, the transition to training doctors PhD.

Periodization of university research in independent Kazakhstan

Because we represent the branch of university research, we consider the transformation of the article, especially high school science in Kazakhstan since independence. The peculiarity of such a periodization of university science, the difference in the boundary of the second and third period, due to the transformation of the system of training of the teaching staff. Postgraduate stage began postgraduate education in 2005 started training doctors PhD, in 2011, as noted above, the end all of protection to the Soviet system, candidates and doctors of science.

The development of university research in the period of Kazakhstan's independence can also be divided into *three stages*.

I period – from late 1991 to 2000. Trend and policy of preserving the traditions of Kazakh University research in the difficult economic period in the development of Kazakhstan (the economic crisis, the emergence of statehood). Unstable funding of university research, inflation, downsizing, etc. Universities looking for additional sources of funding from international foundations of science, etc.

II period – 2000 to 2004. – Stabilization of the financial situation in the financing of science, the relative independence in the development of university science, defined by the institutions. The preliminary stage of preparation of the transformation of scientific training of the graduate school - to a new system of doctoral research training „master's degree – Doctor of Philosophy“ in accordance with the direction of integration into the global educational and research space.

III period – from 2005 to present – the strategic development of science in Kazakhstan and high school science in particular. Active integration into the global scientific and educational space. Implementation of training doctors PhD. Priorities for Development of Education and Science: focus on the formation of a competitive nation and the project „Intelligent Nation“ President of the Republic of Kazakhstan Nursultan Nazarbayev.

The economic crisis (the fall of economic ties, the destruction of the planned economy), the transition to a market economy, the political crisis (collapse of the Soviet Union), the creation of independent states, the emergence of independent Kazakhstan have been exacerbated by the crisis in the productive forces and the transition to a new technological structure. In the 90's there is a dual trend: a general fall in spending on science and education in economic development and growth in the number of educational organizations, expanding the network of universities. However, most universities do not have the real sector of scientific research. Has been optimized network of regional public universities, which the merger becomes universities. Traditions of research remain just only in the oldest universities in Kazakhstan.

If we consider the Kazakh universities, research institutes, which as relatively autonomous, self-financing units appear in the Kazakh National University in the early 90s of the twentieth century. In the XXI century under

conditions of independence of Kazakhstan, the reform of science and, based on the experience of developed countries, Kazakh national and public universities everywhere are research institutes. Thus, actively taken over and improved the experience of research universities. Moreover, are prerequisites for the specific innovation environments in accordance with the direction of the innovation economy of Kazakhstan.

The distinctive features of high school science in the period of independence: greater autonomy of universities for the development of science and financing, which proved the competitiveness of university research in the new environment, the active involvement of international organizations, grants, funds and programs, conservation management science departments (patent offices, scientific information); creation of independent research institutes at universities, the creation of science and technology parks as an attempt to strengthen the implementation of R & D in manufacturing (Mynbayeva, 2010).

With globalization, manifested the need to strengthen the international activities of universities in several directions: intensification of joint R & D, activation of publications of research results in international leading journals in foreign languages, increasing participation of scientists of universities in international forums and conferences, presentations, etc.

Large reserve of university science is a human capacity, as well as a wide network of universities, are generally well distributed over the territory of Kazakhstan. The existing system is a diversified science in Kazakhstan in a competitive environment for research promotes the development of science. University sector science has proven vitality and competitiveness through the established traditions for nearly a century of scientific development in Kazakhstan.

Summary and Conclusions

Kazakhstan's policy is focused on innovation development of economy in line with global trends. Economic growth is directly linked to the development of science and innovation in society. Scientific and scientific-technical policy of the state actually contributes to the development as a vector alignment and consolidation of the scientists and the exchange of ideas, knowledge and experiences between States. Vector construction of industrial and innovation-based economy, the competitiveness of the state, entering into the world of scientific and educational environment requires strengthening the social institution of science and scientific sectors. Therefore, it is important to understand the format of contemporary reform of science, in a landmark move to end.

Analysis of the trajectory of development of Kazakhstan for 20 years of independence shows the complexity of the distance traveled, major fluctuations in science policy. Three stages of development of science – crisis, stabilization and translational motion are marked. To determine the steps for further

development of Kazakhstan has actively studied the experience of leading foreign countries, a few times to assess the development of foreign Science. For example, in 2002 – an international audit of science, in 2011-2012 to the examination of applications for the research systemically attract foreign professionals. Traditions of international partnership in the new modern stage quality are increasing. It helped to look at the research with fresh eyes, objectively identify strengths and weaknesses of the Science of Kazakhstan, to determine the vectors of further development.

The complex phases of the crisis and renewed formation of science were all CIS countries, Eastern European countries. We hope that familiarity with the experience of Kazakhstan, exchange of experience can help further development of effective states.

Science of Kazakhstan continues to wait for major changes that would require consolidation of the state, the scientific community and the partners of Kazakhstan.

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РАЗВИТИЕ НА НАУКАТА В КАЗАХСТАН В ПЕРИОДА НА НЕЗАВИСИМОСТ

Резюме. Двадесет и първи век е векът на науката и иновациите, когато се разширява функционалното поле на науката в съвременното общество. Статията разглежда нейната роля в икономическата, социалната, културната и политическата сфера. Анализира се развитието ѝ в Република Казахстан в периода на независимост в контекста на световните насоки на развитие, като особено внимание е отделено на университетските проучвания.

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