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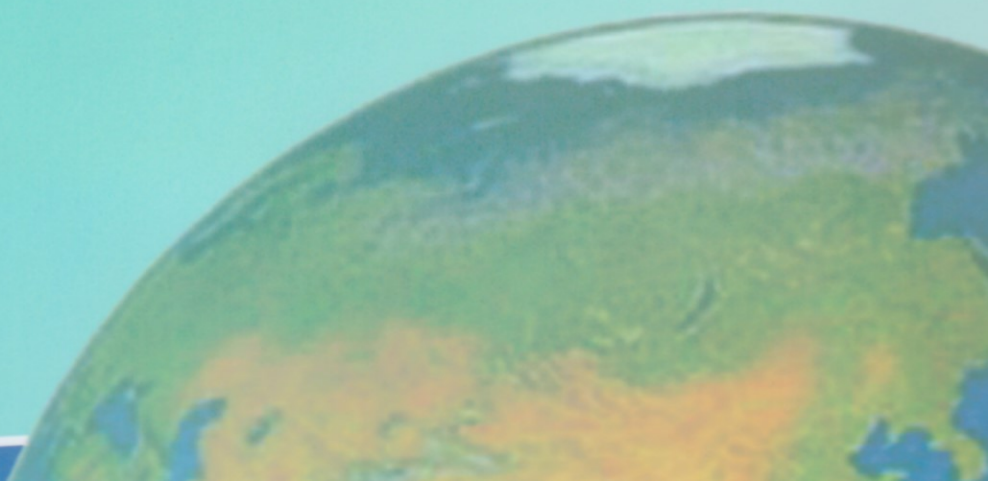


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Problems of structural transformation in the conditions of formation of innovative economy (on the example of the Republic of Kazakhstan)

Introduction

Use of innovations and new technologies in production became an integral part of successful economic development of the countries, a tendency and a challenge at the same time. In the 21st century the management of the Republic of Kazakhstan has chosen a course towards industrial innovative development and modernization of economy. The government has developed the Programs and strategy aimed at innovative development. For ensuring sustainable development of Kazakhstan on the basis of diversification and modernization of economy, creation of conditions for production of competitive types of production and export growth, the Decree of the President of the Republic of Kazakhstan of May 17, 2003, has approved the Strategy of industrial innovative development of the Republic of Kazakhstan for 2003-2015 [1]. This program has been aimed at achievement of sustainable development of the country by diversification of branches of economy and withdrawal from raw orientation of development to processing, stimulation of creation of the knowledge-intensive and hi-tech export-oriented productions.

Body

In December, 2012 Strategy "Kazakhstan – 2050" has been presented to the people of the country in the Message of the Head of state in which the main thesis was heard: "The mankind is on a threshold of the Third industrial revolution which changes a concept

of production. Technological inventions cardinally change structure and requirements of the world markets". The main goal is creation of society of prosperity on the basis of the strong state, developed economy and opportunities of general work, inclusion of Kazakhstan to thirty of most developed countries of the world [2].

The state program of industrial innovative development of the Republic of Kazakhstan for 2015-2019 has been adopted in 2014 and is logical continuation of the State program on the forced industrial innovative development of the Republic of Kazakhstan for 2010-2014 (SPFIID) and considers experience of her realization. The program is a part of industrial policy of Kazakhstan and is focused on creation of basic conditions for effective development of manufacturing industry.

In 2013 the Concept of industrial innovative development of RK for 2015 - 2019 has been accepted [3]. The purpose of this concept is also creation of incentives and conditions for diversification and increase in competitiveness of the industry.

In the Message to the people of Kazakhstan of 2015 the president Nazarbayev N.A. I noted: "Global crisis is not only danger, but also new opportunities ... The new sectors of economy created within innovative industrialization become drivers of economic growth in Kazakhstan" [4].

In the Message to the people of Kazakhstan of 2017 the president Nazarbayev N.A. said: "It is necessary to create a new

model of economic growth which will provide global competitiveness of the country ... The first priority is the accelerated technological modernization of economy. We have to cultivate the new industries which are created with use of digital technologies. It is an important complex task.» [5].

In Kazakhstan the state support of innovative activity is carried out according to the legislation in the following main directions:

- stimulation of innovative activity;
- definition of priorities of innovative development; formation and development of innovative infrastructure;
- assistance to development of hi-tech and knowledge-intensive productions;
- promotion of domestic innovations on foreign markets;
- international cooperation and attraction of investments into the sphere of innovative activity, including acquisition of innovative technologies;
- reorientation of production to resource-saving technologies, production of environmentally friendly products;
- creation of conditions for introduction of innovations, etc. [6].

One of the main factors of effective functioning of economy in modern conditions is the forced modernization and development of innovations. For Kazakhstan diversification and increase in competitiveness of economy is a difficult task if we consider a declining condition of manufacturing industry and agriculture, scientific and technical potential, extremely low level of all infrastructure system and quality of service. The country should not just organize production of new types of production, undertake measures for increase in their quality and reduction of prices, but to radically modernize the economy [7].

The author of the concept of the Third industrial revolution is the American scientist Jeremy Rifkin who wrote: «Industrial revolution on the basis of fossil fuel has reached peak and the climate change caused by activity of a man leads to planetary crisis of unprecedented

scale... Great economic revolutions happen in the history when new communication technologies merge together with new power systems. The new power modes make possible more interconnected economic activity, expand commercial exchange and also promote closer and comprehensive social relations... Internet technologies and renewables sources are already ready to connect and create a new powerful infrastructure for the third industrial revolution» [8].

Innovations and innovative development of a certain economy became serious challenges of the present. For years of independence the economy of Kazakhstan has dynamically developed thanks to the high prices of mineral and raw and fuel and energy resources in the world commodity markets. Our country endures today long and deep crisis which has captured all countries and regions of the world. Kazakhstan is the developing, open and small economy which delivers raw materials to the world markets therefore it strongly depends on an environment of the world raw markets [9].

Innovations as positive changes in society, economy and production have huge value for sustainable economic development of all countries. Introduction of innovations by means of which the planned changes of various character in all spheres of society are made provides use of new tools of improvement of quality of life and production efficiency [10].

Innovations and structural changes interact, cause and influence at each other. Structural changes are changes of specific weights of separate branches in economy gross domestic product. Structural changes in economy result from action of market mechanisms of the competition, a modulation of the capital and aspiration of businessmen to receiving profit. At the expense of an intra-branch, interindustry and interregional modulation of the capital there is a change of branch and territorial structure of economy. Innovations play an important role in change of structure of economy.

In Kazakhstan after the beginning of world financial and economic crisis of 2008 there were some attempts of creation of an innovative cluster capable to provide innovative economy. However, without essential structural changes it is impossible to realize the programs and strategy directed to increase in innovative components of national economy. In this regard structural changes are a backbone factor of creation of innovative economy.

Innovative development of a certain economy first of all is connected with development of economy of knowledge. In the broadest sense the economy of knowledge is an economy in which knowledge and innovations play the dominating role in economic development of countries. Here the crucial importance belongs to not just production of knowledge, but their commercialization and transformation in innovations. Introduction of innovations in industrial production promotes increase, both in profit of separate enterprises, and competitiveness of economy in general.

Innovations act as that closing contour which forces to move all components of economy, leads to the economic growth, increase in welfare and improvement of quality of life of people.

As a result of introduction of innovations in production the branches of traditional industry are transformed to branches of innovative production. Besides, there is a development of not only traditional branches, but also essentially new branches or services appear.

Intensity and efficiency of communications between science and the real sector are important characteristics of innovative capacity of the country. The countries which have realized the concept of system approach to carrying out innovative policy have managed for the short historical period of time to create the effective national innovative systems which are turning on mechanisms of interaction of the state, business, science, education and to achieve increase in the general knowledge intensity of GDP [11].

In the conditions of transition of economy of Kazakhstan to an innovative way of development the role of the state on coordination and stimulation of process of commercialization of scientific developments increases. New funding mechanisms are entered: basic, program and target and grant. National scientific councils which include scientists, representatives of business and foreign experts are created [12]. At the same time, the level of public financing of science grows. (Table 1)

Table 1 – Amount of financing of research and development, million tenge

Years	2007	2008	2009	2010	2011
Amount of financing of research and development	26835,5	34761,6	38988,7	33466,8	43351,6
Share from GDP, %	0,21	0,22	0,23	0,15	0,15
Years	2012	2013	2014	2015	2016
Amount of financing of research and development	51253,1	61672,7	66347,6	69302,9	66600,1
Share from GDP, %	0,16	0,17	0,17	0,17	0,14
Note: made by authors on the basis of data [13]					

For stimulation of the advanced basic researches of innovative projects in the scientific and business world the governments have to finance ambitious research programs more actively. Partnership between the state and private sectors in the field of researches also has to be directed to creation of knowledge and the human capital for general advantage [14].

As table 2 shows, despite growth of the amounts of financing of research and development shows, in Kazakhstan the share of the made innovative production in relation to GDP remains low.

Table 2 – A share of the made innovative production in relation to GDP, %

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Share of innovative production in GDP	1,19	0,69	0,49	0,65	0,84	1,22	1,61	1,46	0,92	0,95

Note: made by authors on the basis of data [13]

In most cases scientific developments of domestic scientists don't take root into production due to the lack or low interest from the state and business. Here, as the President of the country has noted in the Message "an important condition of formation of the new industries is support of innovations and their introduction in production. Universal introduction of elements of the Fourth industrial revolution has to become a major factor here. It is automation, robotization, artificial intelligence, exchange of "big data" and others" [5].

One of the priority directions of development of economy is transition from an extensive, raw way of development to industrial innovative one. This transition is impossible without development of the national innovative system (NIS) which represents the system of the interconnected institutes for creation, storage, transfer of knowledge and technologies having the internal structure established by the state or impact on innovative process. Also NIS is part of the interconnected structures occupied with production and commercial realization of

scientific knowledge and technologies within national borders. At the same time NIS is a complex of the institutes of legal, financial and social character which are providing innovative processes and having strong national roots, traditions, political and cultural features [15].

Results of any carried-out structural transformations in economy have to introduce the corresponding amendments directly in structure of GDP, export and import, payment and trade balances, in structure of employment of the population on branches of economy.

In Kazakhstan the problem of training of the qualified personnel capable to carry out innovative activity is still badly solved. The enterprises are practically not engaged in training of innovative managers who could provide implementation of innovative projects. And the state participation in training for technological business only begins to develop [16]. However, the qualified personnel prepared at the expense of budgetary funds doesn't remain in the scientific sphere because of a rather low level of the salary.

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Table 3 – The number of the workers who are carrying out research and development, men

Years	2007	2008	2009	2010	2011
The number of the workers who are carrying out research and development	17774	16304	15793	17021	18003
Years	2012	2013	2014	2015	2016
The number of the workers who are carrying out research and development	20404	23712	25793	24735	22985
Note: made by authors on the basis of data [13].					

Thus, formation in the first half of the 21st century of a post-industrial technological way of production, development and distribution of the sixth technological way in the conditions of formation of global innovative and technological space have defined modern economic policy of many states of the world [17]. Economic progress is generated by knowledge, technologies and innovations which we collectively create, and then we apply it to creation of something that has economic value [18].

Today innovations are considered much more widely, including not only the result of scientific and technical activity which has received realization in the form of new or advanced production, or the technology having qualitative advantages in comparison with the applied analogs but also social processes which assume interrelation between economic subjects and the environment surrounding them. From this point of view, an innovation represent purposeful change of economic system, including process of introduction of new advanced methods of the organization and management of human activity [19].

Summary and Conclusions

Government support of business, the state and private partnership, creation of a favorable business environment and investment climate is necessary for a solution of the problem of creation and development of innovative economy, it is necessary to increase support of domestic manufacturers, agriculture, it is necessary to overcome technical and technological backwardness, to develop business infrastructure, to develop a transport and logistics system of Kazakhstan.

The uncontested course towards industrial innovative development through diversification of economy and leaving from raw dependence will provide the steady and balanced growth of economy, development of national innovative system, technological modernization and increase in competitiveness of the country at the global level. For this purpose the country leaders should carry out more rapid structural changes more actively.

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