

Problems of the development of the national innovation system of Kazakhstan and increasing its competitiveness

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Abstract

The national innovation system is the most important factor in achieving the competitive advantages of innovative business, provides access to the necessary resources, including financial ones, the need for which is most acute in the implementation of innovative projects. The article examines the functioning of the national innovation system, where the importance of innovation in the activities of modern enterprises is determined. The study analyzes the structure of the NIS, its functioning, and determines the activity of regional forms of the innovation system. The characteristic of the Institute for the development of methods of financing innovative developments is given. The role of ministries in financing R&D vertically and the National Agency for Technological Development and the DAMU Foundation vertically is established. They provide significant support to the development of the innovation system and increase the innovation activity of domestic enterprises. NIS infrastructure and development institutions generate and transform scientific knowledge into new technologies, products, services, as well as ensure their commercialization. The article notes that one of the main directions of state policy in the field of scientific, technical and innovative activities is the creation of specialized subjects of an innovative nature, such as technoparks, technological business incubators, technopolises, high-tech companies. The article also shows the characteristic disadvantages that are unfavorable for the development of innovation: the underdevelopment of links between university science and industry, the disconnection of the banking sector from lending to innovative processes, low innovation activity of private capital. Research methodology. The methodology is based on a comparative analysis, using the method of systematization, the method of statistical and economic analysis and synthesis, observation and collection of facts to determine the most effective ways to improve the competitiveness of the national innovation system. Based on the foregoing, we believe that business structures, sources of financing and government support directly affect the innovative development of the economy.

Keywords: national innovation system, free economic zones, research and development, innovative entrepreneurship, innovative technologies, commercialization

Қазақстанның ұлттық инновациялық жүйесін дамыту және оның бәсекеге қабілеттілігін арттыру мәселелері

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Түйін

Ұлттық инновациялық жүйе инновациялық бизнестің бәсекелестік артықшылықтарына қол жеткізудің ең маңызды факторы болып табылады, ол қажетті ресурстарға, соның ішінде инновациялық жобаларды іске асыру кезінде аса өткір болып табылатын қаржылық ресурстарға қол жеткізуді қамтамасыз етеді. Мақалада қазіргі заманғы кәсіпорындардың қызметінде инновацияның маңыздылығын анықтайтын ұлттық инновациялық жүйенің (ҰИЖ) жұмыс істеуі қарастырылады. Зерттеу барысында ҰИЖ құрылымы, оның жұмыс істеуі талданды, инновациялық жүйенің аймақтық нысандарының белсенділігі анықталды. Даму институтының инновациялық әзірлемелерді қаржыландыру әдістерінің сипаттамасы берілген. Министрліктердің ҒЗТҚЖ-ны қаржыландырудағы рөлі вертикальды және Технологиялық даму жөніндегі ұлттық агенттік мен ДАМУ қоры – тігінен белгіленді. Олар инновациялық жүйені дамытуға және отандық кәсіпорындардың инновациялық белсенділігін арттыруға айтарлықтай қолдау көрсетеді. ҰИЖ инфрақұрылымы мен даму институттары ғылыми білімді жаңа технологияларға, өнімдерге, қызметтерге генерациялауды және түрлендіруді жүзеге асырады, сондай-ақ олардың коммерциялануын қамтамасыз етеді. Мақалада ғылыми-техникалық және инновациялық қызмет саласындағы мемлекеттік саясаттың негізгі бағыттарының бірі технопарктер, технологиялық бизнес-инкубаторлар, технополистер, жоғары технологиялық компаниялар сияқты мамандандырылған инновациялық субъектілерді құру болып табылатыны атап өтілген. Мақалада инновацияның дамуына қолайсыз сипаттағы кемшіліктер де көрсетілген: университет ғылымы мен өндіріс арасындағы байланыстардың дамымауы, банк секторының инновациялық үдерістерді несиелеуден ажыратылуы, жеке капиталдың инновациялық белсенділігінің төмендігі. Зерттеу әдістемесі. Әдістеме ұлттық инновациялық жүйенің бәсекеге қабілеттілігін арттырудың тиімді жолдарын анықтау үшін жүйелеу әдісін, статистикалық-экономикалық талдау және синтездеу, бақылау және фактілерді жинау әдісін пайдалана отырып, салыстырмалы талдауға негізделген. Жоғарыда айтылғандарға сүйене отырып, бизнес құрылымдары, қаржыландыру көздері және мемлекеттік қолдау экономиканың инновациялық дамуына тікелей әсер етеді деп есептейміз.

Кілттік сөздері: ұлттық инновациялық жүйе, еркін экономикалық аймақтар, зерттеулер мен әзірлемелер, инновациялық кәсіпкерлік, инновациялық технологиялар, коммерцияландыру

Проблемы развития национальной инновационной системы Казахстана и повышение ее конкурентоспособности

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Аннотация

Национальная инновационная система является важнейшим фактором достижения конкурентных преимуществ инновационного бизнеса, обеспечивает доступ к необходимым ресурсам, в том числе финансовым, потребность в которых наиболее остро проявляется при реализации инновационных проектов. В статье рассматривается функционирование национальной инновационной системы, где определяется значение инноваций в деятельности современных предприятий. В исследовании проанализированы структура НИС, её функционирование, определена активность региональных форм инновационной системы. Дана характеристика институтом развития методов финансирования инновационных разработок. Установлена роль министерств в финансировании НИОКР по вертикали и Национального агентства по технологическому развитию и фонда «ДАМУ» - по вертикали. Они оказывают значительную поддержку развитию инновационной системы и повышению инновационной активности отечественных предприятий. Инфраструктура НИС и институты развития осуществляют генерацию и трансформацию научных знаний в новые технологии, продукты, услуги, а также обеспечивают их коммерциализацию. В статье отмечается, что одной из основных направлений государственной политики в сфере научно-технической и инновационной деятельности является создание специализированных субъектов инновационного характера, таких как технопарки, технологические бизнес-инкубаторы, технополисы, высокотехнологические компании. В статье также показываются характерные недостатки, неблагоприятные для развития инновации: неразвитость связей между вузовской наукой и промышленностью, отключенность банковского сектора от кредитования инновационных процессов, низкая инновационная активность частного капитала. Методология исследования. Методология основана на сравнительном анализе, с использованием метода систематизации, метода статистического и экономического анализа и синтеза, наблюдения и сбора фактов для определения наиболее эффективных способов позволяющих повысить конкурентоспособность национальной инновационной системы. Исходя из вышесказанного полагаем, что на инновационное развитие экономики прямым образом воздействуют бизнес-структуры, источники финансирования и государственная поддержка.

Ключевые слова: национальная инновационная система, свободные экономические зоны, научно-исследовательские и опытно-конструкторские работы, инновационное предпринимательства, инновационные технологии, коммерциализация

Introduction

The essence of the national innovation system can be formulated as follows: it is a certain set of various public and private institutions that contribute to the creation and development of new technologies within a particular country, individually or through interaction. The content of the NIS is based on the development, accumulation and transfer of new scientific knowledge in order to create competitive products and services.

NIS unites the potential of the state, organizations of the scientific, technical and educational spheres, and the business sector in order to implement the results of innovative activities. The implementation of innovative projects is risky and requires NIS to attract significant material and financial resources.

Enterprises need an innovative system that helps to increase the efficiency of innovative developments and their commercialization. The innovative development of the economy forms an effective national innovation system (NIS). Forms and mechanisms of NIS characterize the interaction of the whole complex of economic, social, political, organizational and other factors.

The state, which initiates specific tasks in the program documents in achieving innovative development, forms support for creative entrepreneurship, which includes innovative mechanisms. The national innovation system includes four main elements - scientific potential, innovative entrepreneurship, innovative and financial infrastructure. Innovative technologies originate from research and development activities.

The relevance of the research topic lies in the fact that in modern conditions it is only possible to increase the efficiency of the economy with the use of innovative technologies and innovative products. Only innovative activity can ensure the country's competitiveness in the world market. The national innovation system facilitates the development of the innovation economy. It provides developments in fundamental and applied research and commercialization of their results. NIS also has an impact on the financing of developments and their implementation in production.

Literature review

The purpose of this review is to clarify the principles used and methods of development of the national innovation system.

The results of the literature review showed that these problems of the country's innovative development are completely insufficiently developed and are very poorly covered, including in regulatory literature. The proposed methods are mainly aimed at using the available reserves.

Domestic and foreign literature widely covers issues related to the activities of innovation systems. The information base of this work was compiled by the following studies: Vasina V.A., Mindelli L. E., Ivanova N., Beksultanova D.E., Ibragimova N.V., Sultanova D. Sh. and others. The relevance of the topic and the surge of interest in innovative development caused by the growth of competition and the widespread development of competition are also evidenced by the works of Beksultanov D.E., Ibragimov N.V., Sultanova D.Sh.

The Kazakhstani scientist F. Dnishev, noting that the national innovation system is a set of not only economic entities, but also the relations between them, pays special attention to the institutional aspects of its formation [1]. In his opinion, the NIS concept focuses on the institutional context of innovation, on the relationship of organizations with each other as elements of a collective system for the creation and use of knowledge and their interactions with economic and, in general, public institutions. It is concluded that the importance of the institutional conditions for innovation activity in Kazakhstan still needs to be underestimated.

The use of own funds in developing and implementing an innovative project provides maximum freedom in making managerial decisions. The implementation of innovative projects proves the effectiveness of the use of debt and equity instruments [2].

In order to develop high-tech industries in the domestic industry, in 2004, the Program for the Formation and Development of the National Innovation System of the Republic of Kazakhstan for 2005-2015 and 2018 was adopted. The concept of industrial and innovative development of the Republic of Kazakhstan for 2022-2025. The purpose of the Program and the Concept is to form an innovative system of an open type that ensures the creation of a competitive end product based on the use of domestic and foreign scientific potential [3].

State funding from the state budgets of various levels is directed to innovative activities of priority importance. At the same time, Kazakhstan is facing several problems related to the reduction of state financial support for the commercialization of R&D results, and the transfer of innovations and technologies [4]. There needs to be more management on the part of state bodies responsible for managing policy instruments in the field of innovative development aimed at supporting the country's competitiveness.

According to Santo B., innovation is a means of economic development. Innovation is such a social - technical - economic process that, through the practical use of ideas and inventions, leads to the creation of products and technologies that are best in their properties, and if it is oriented towards economic benefits, profit, the emergence of innovation on the market can lead to additional income [5].

P.F. Drucker noted that innovation is a unique tool for entrepreneurs, a means by which they use change as a chance to implement a new kind of business or service [6].

The funds allocated to innovation are manifested in specific forms of investment. The main sources of investment in innovation are the company's own funds, state financing, equity financing, bank loans, venture financing, leasing, forfeiting, franchising, mixed financing.

In addition, various funds are functioning, the priority tasks of which are financing and support of innovative projects, for example, the National Innovation Fund, Development Bank of Kazakhstan, Investment Fund, Damu Fund, Venture Fund, Science Fund, State Corporation for Export Credit and Investment Insurance.

Thus, the study examines the problems of transition to an innovative development path, defines the conditions and sources of financing for innovation, and justifies the need to switch to a multi-channel source of funding for creative projects.

Results

The innovative development of the economy forms an effective national innovation system (NIS). The forms and mechanisms of NIS characterize the interaction of the whole complex of economic, social, political, organizational, and other factors.

In our country, the process of formation of a national innovation system by the state is underway. This is a reasonable state policy, since until now the formation of all the basic attributes of a modern market system is carried out mainly by state authorities.

The national innovation system includes four main elements - scientific potential, innovative entrepreneurship, and innovative and financial infrastructure. Innovative technologies originate from research and development activities.

The national innovation system is a subsystem of the national economic system. It is a set of interrelated subjects of the innovation infrastructure and institutions of financial, legal, and social aspects. They purposefully carry out the generation and transformation of scientific knowledge into new technologies, products, and services, as well as their commercialization.

The main principles of the NIS's functioning are:

- endowing with an innovative function of all subjects of scientific and innovative activities;

- purposeful and optimal application of the most economical resource use methods;

- mutual consistency of the action of all structures of the system;

- evolutionary development through the development of a phased strategies;

- a corporation of small enterprises with large ones;

- balance of scientific and innovative structures according to the degree concentration, combination and specialization.

The national innovation system includes such economic agents as enterprises, scientific organizations, universities, foundations, investors, and so on, the NIS creates, stores and transfers knowledge, experience and skills that are necessary to generate new technologies, new types of products, new types of equipment.

The NIS of Kazakhstan was formed under the influence of both objective (availability of natural resources) and subjective factors: the presence of research institutes, labor resources. The most important factor in the formation of NIS is human capital. The presence of this factor depends on the financial support of the state and the development of private business.

NIS has certain structures; institutional relations and unites the potential of the state, organizations of the scientific, technical and educational spheres, the business sector, the financial and credit sphere in order to implement the results of innovative activities in the market of high-tech products.

The purpose of the NIS is:

- stimulating the creation, improvement and dissemination new technologies;

- creation, storage and transfer of knowledge, skills, certain new technologies;

- ensuring economic development and growth of the quality of life on the basis of innovation through the generation, dissemination and practical application of innovations;

- production and commercialization of scientific knowledge and technologies across national borders, ensuring innovation processes;
- creation and sale of innovative products and implementation activities within the framework of government policy.

Achieving the goal depends on the level, and development of economic entities and NIS entities, their interactions, and cooperation in the implementation of innovative activities. To achieve the goal it is necessary to implement the following tasks:

- develop a strategy for state innovation policy;
- create a legislative and regulatory support base innovation activities at the state level and stimulating it at the private level;
- organize public and private financial and economic ensuring research and its implementation, the attraction of innovations and their concentration in priority areas;
- ensure the priority of science in innovation and development;
- expand and develop networks of organizations serving technical and technological and scientific transfer and commercialization;
- increase the economic activity of the subjects of innovation activities.

NIS consists of material, technical and technological, information, financial and economic, organizational, personnel and legal structures.

Therefore, depending on the functions they perform, it is possible to subdivide the composition of the structure into two levels: the main level and the supporting level (Table 1).

Table 1 - Functions of the financial component of the NIS

Basic level	Production of innovation
	Implementation of innovation
Providing level	<u>Sources of financing</u> – Government funding – Government-private financing - Private financing <u>Direction used</u> – Financial support for innovation communications – Financing of commercialization – Government incentives for innovation – Financing the professional training and education
Note - Created by authors	

In the group of providing functions, the most important role belongs to finance, which allows financing production and the introduction of innovation, professional training of personnel, and the development of education. Financial support provides financial means for communication and commercialization, as well as state stimulation of innovative activities. In this regard, financial resources perform the following functions:

- ensures the flow of funds at various stages implementation of innovative progress;

- creates incentives and conditions for the development of innovations;
- allows to provide finance for innovative processes;
- influence the choice of topics for innovative projects in accordance with the needs of financing and development of subjects NIS;
- to promote efficient spending of funds for innovation.

In general, it can be noted that the entire range of NIS financing includes:

- financing innovation of financial and credit organizations, insurance companies, venture, pension and other funds;
- financing of applied innovative developments;
- development of venture investment;
- financing of research and innovation projects, experimental design and technological work;
- financial support for the leasing of a science-intensive unique equipment and instruments;
- financial support for potential and inventive activities assistance in the protection of intellectual property;
- financing of small businesses in tenders for the implementation of innovative programs and projects through public-private partnership.

Development institutions are the main component of the National Innovation System. The development institutions of Kazakhstan were formed considering world practice.

Many developed countries have created Development Institutions (DI) in the form of banks, agencies, corporations, development funds, etc.

The main task of DI is to finance and support projects that contribute to the diversification of the economy, reduce its dependence on primary industries, and develop new industries that ensure economic growth.

Formed in the form of a joint-stock company, the Development Institutes of Kazakhstan are presented in the following table.

Table 2 - Development institutions of Kazakhstan

Institute name	Purpose
1. Center for Marketing and Analytical Research.	Marketing information and analytical support for the process of diversifying the national economy, increasing the competitiveness of product exports.
2. National innovation fund.	Creating a favorable climate for increasing innovation activity in the country.
3. Investment fund of Kazakhstan.	Providing financial support to private sector initiatives.
4. Center for engineering and technology transfer.	Increasing innovative activity and efficiency of innovative activity.
5. Development Bank of Kazakhstan	Improving and increasing the efficiency of the state innovation policy, developing the production infrastructure and the manufacturing industry

6. State Insurance Corporation for Insurance of Export Credits and Investments	Stimulating the development of Kazakhstan's non-commodity exports.
Note - Created by authors	

Development institutions should ensure a continuous chain of development of the innovation process. The goals and functions of development institutions, as well as the National Innovation System as a whole, are aimed at creating Kazakhstani enterprises that produce competitive products and services with a high share of intellectual work. Development institutions create the basis for innovation and give a powerful impetus to the expansion of innovative business in the private sector.

The priority task of the Development Institutions is to finance development and support of projects contributing to the diversification of the economy, reducing its dependence on primary industries through the development of strategic sectors of the economy. All development institutions work in a coordinated manner, mutually agreed on the following scheme (Table 3).

Table 3 - Sequence of coordinated activities of development institutions

Innovation process	Sources of financing
1. Formation of an innovative idea.	The result of the research activities of the scientific potential of the country.
2. Market research market analysis.	JSC Center for Analytical and Marketing Research.
3. Financing the initial stages of the innovation process.	JSC "National Innovation Fund".
4.1 An innovative project goes through two stages: project financing is more than 5 million dollars; the project is sent to the Development Bank of Kazakhstan.	Development Bank of Kazakhstan
4.2 The project requires direct investment; go to an investment fund	Investment Fund of Kazakhstan
5. Providing assistance and support for the export of non-commodity goods and services	State Insurance Company for Insurance of Export Operations
Note - Created by authors	

Until now, the state has dominated the domestic NIS. The research sector is dynamically activating in this direction. Entrepreneurship as a whole is a less included link here, which is largely due to a number of objective circumstances. But overcoming them is the most important task of all components of the domestic innovation system.

The system of cooperative relations between science and entrepreneurship, with the possible participation of state structures, can contribute to the solution of a significant number of topical problems at the regional level, since many of them have their own

comparative advantages that require research and application. But all this is possible when the conditions for their mutual interest in interaction are formed.

The above shows the complexity and scale of the tasks to be solved and the need for a deeper and more responsible approach to the preparation and implementation of important government projects, which fully include the comprehensive development of the national innovation system of the republic in modern conditions and the increase in the efficiency of its functioning.

Entrepreneurship should initially become active in the consumption of innovations - this is, in fact, the focus of state strategies for industrial and innovative development, and in the future, like the state, be an active customer, consumer of innovative developments. This, in turn, should become a real basis for diffusion, in addition to the real sectors of the national economy, into all spheres of life.

In order to develop high-tech industries in the domestic industry, in 2004, the Program for the Formation and Development of the National Innovation System of the Republic of Kazakhstan for 2005-2015 and 2018 was adopted. The concept of industrial and innovative development of the Republic of Kazakhstan for 2022-2025. The purpose of the Program and the Concept is to form an innovative system of an open type that ensures the creation of a competitive end product based on the use of domestic and foreign scientific potential.

In Kazakhstan, vertically R&D and design bureaus finance ministries, and horizontally - NATR and the Damu Fund. They provide support to innovative enterprises in all sectors of the industry.

In 2010, the Ministry of Investment and Development of the Republic of Kazakhstan launched the Innovation Grants Program. The Program is implemented by the National Agency for Technological Development (NATD). NATD provides effective support to innovation activities in the country. With the participation of the Center for Engineering and Technology Transfer, 12 business incubators and seven regional technology parks were established to support small innovative enterprises.

Special Economic Zones (SEZs) promote technological transfer, creation of national export-oriented companies, attraction of foreign investors. SEZs are: Alatau Innovation Technology Park, Parasat National Scientific and Technological Holding, Atyrau Petrochemical Park, Aktau Sea Port, Ontustik and others.

The created projects of Tech Garden u Astana HUB help innovators develop innovative ideas by providing them with infrastructure, financial support, access to investors and opportunities to exchange experience with foreign innovators.

The task of Tech Garden is the development of advanced companies - start-ups.

Startups are the locomotive of innovative developments that are being introduced into large companies in the mining and metallurgical and oil-producing complexes.

Astana Hub has become a center for the development of innovative projects and is a hotbed of attraction for young talented IT specialists.

In Kazakhstan, the commercialization system is at the stage of development. There are a small number of technology parks and commercialization departments at institutes and venture funds that deal with the implementation of effective developments.

At the same time, there are some unresolved problems in the innovative development of Kazakhstan:

- low innovative activity of enterprises;
- insufficient scientific and technical potential;
- poor productivity and labor productivity;
- low science intensity of the economy and production;
- lack of professional innovation management.

An analysis of innovative activity in Kazakhstan shows that the "Science-Production" cycle, that is, the innovation process, ends at the initial stages, sometimes without going beyond fundamental research or the stage of manufacturing a prototype since domestic enterprises are not able to introduce them into production.

It should also be noted that at the first stage, R&D is dominated by developments that need to be focused on obtaining completely new products and technologies. Developments mainly aim to improve existing ones, adapting foreign technologies to local conditions.

At the same time, it is mandatory to equip the resulting technology with units and components of national production. The development of local materials and components is included in the process of obtaining finished products using foreign technologies. On this, the industrial enterprises of Kazakhstan concentrate their efforts in their innovative activities.

External technology transfer is essential for developing such a direction of innovation as research and development directly at enterprises. So far, this is the weakest link in the innovation system that is being formed in the country.

The most important problem in the development of innovative processes in Kazakhstan is the need for more high-tech industry, which does not allow domestic producers to ensure the competitiveness of their products. Broad commercialization of innovation and the construction of a knowledge economy are possible only under the condition of a comprehensive reform of the scientific and technical sphere.

As the analysis of innovative development in Kazakhstan shows, innovation activity in the country plays a large role. However, innovation activity in the republic has yet to be the main factor in increasing the country's competitiveness in the world market.

In all developed countries, competitive, necessary and affordable innovative goods are produced by private companies, large corporations with great financial capabilities and powerful research and development departments, and high-tech small businesses using the venture financing method.

One of the main directions of state policy in the field of scientific, technical and innovative activity is the formation of an innovative infrastructure, including the creation of specialized subjects of innovative activity of a state, intersectoral, sectoral and regional nature. Today it is obvious that a full-fledged innovation activity in the country cannot develop without such new objects of innovation infrastructure as technoparks, technology business incubators, technopolises, high-tech companies.

Technoparks are a fundamental element of the national innovation system. The main task set for technology parks, by providing the initiators of innovative projects with production facilities and collective business services, is to provide favorable conditions for the commercialization of scientific developments and their implementation in industrial production.

A two-tier system of technology parks are being formed in Kazakhstan: national science and technology parks and regional technology parks. National technoparks are focused on the creation of new industries in Kazakhstan, which should contribute to ensuring the future competitiveness of the Kazakhstani economy. A distinctive feature of national technology parks is the presence of a special economic zone (SEZ) regime with preferential taxation. National technoparks include Information technology park in the village. Alatau near Almaty, National Industrial Petrochemical Technopark (Aktau), Technopark of Nuclear Technology "Tokamak" (Kurchatov), Space Monitoring Technopark (Almaty, Astana, Priozersk).

Regional technoparks include Almaty Technological Park (Almaty), Technopark "Algorithm" (Uralsk), technopark "Business City" (Karaganda) region in innovative products. The National Innovation Fund (NIF) develops venture infrastructure. The Fund is a partner in six venture funds of Kazakhstan: High Technology Fund Areket JSC, Venture Fund ADVANT JSC, Joint Stock Investment Fund for Risk Investment, Venture Fund Centras, Venture Fund Clotuz Technology Fund JSC, JSC "Almaty venture capital", JSC "Logycom perspective innovations". The funds were created jointly with local investors on the principles of public-private partnership. The share of NIF in Kazakhstani venture funds is up to 49%.

These funds' investment policy aims to find and attract projects in the field of IT technology, new building materials, pharmaceuticals and other promising industries with export potential.

An analysis of the state of the innovation sphere in Kazakhstan shows that both production and science are gradually adapting to the requirements of the market mechanism for creating and disseminating new knowledge and technologies.

However, they still need to become the main links of the National Innovation System that meets the needs of long-term development. A business incubator is an organization that creates the most favorable conditions for the start-up development of small businesses and firms.

The rendered services include a lease on preferential terms of equipped and equipped with appropriate communications office and industrial premises; employee training and provision of various consulting services; initial support for small businesses; assisting entrepreneurs who want but cannot start their own business.

Technopolis is an integral research and production structure created based on a particular city, in the economy of which technoparks and incubators play a significant role. The city has large scientific institutions and industrial enterprises specializing in producing science-intensive products. This complex includes industrial and domestic infrastructure, small and medium-sized businesses, and financial institutions.

Conclusions

In Kazakhstan, the economic environment as a whole is not favorable for innovation. It is characterized by the underdevelopment of links between the state and university sectors of science and industry, the disconnection of the banking system from lending to innovative processes, and the low innovative activity of private capital.

World experience shows that the greatest success in socio-economic development is achieved by innovation-oriented states, the core of whose economic policy is the

formation of a special attitude of business and society to the development of knowledge-intensive industries and large-scale research and development.

In this regard, in Kazakhstan, to solve the problem of increasing national competitiveness, a program-targeted approach is used to ensure effective interaction of scientific organizations and business in the innovation sphere, through the implementation of joint technological programs. Such programs are being developed and implemented in order to enhance cooperation between the state, science and business in order to develop promising areas of technology, ensure a continuous flow of funding for companies conducting scientific research, as well as improve the system of granting grants and maintaining innovative partnerships.

The government should form a special mechanism for the development of innovative activities. It should not be based on such principles as:

- a strong system of tax incentives and incentives for all participants innovation processes;

- complementary participation of the state and the market in innovative processes; sharing of innovation risks between government and business:

- use of decentralized channels of public support of innovative activity;

- ensuring openness and transparency of the activities of institutions development.

The principles of state support of innovation activity in Kazakhstan are:

(1) Priority of national interests in the implementation of innovative activities.

(2) Equality of subjects of innovative activity in obtaining state support.

(3) Complexity and consistency, ensuring constant interaction of subjects of innovative activity.

(4) Transparency of procedures for state support of innovation activities.

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