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CONDITIONS FOR FORMING AN INNOVATIVE ENVIRONMENT OF THE AGROINDUSTRIAL COMPLEX OF THE EAST KAZAKHSTAN REGION

The article presents an analysis of the innovation activities of the regions of the Republic of Kazakhstan, identifies the reasons that impede the formation of the innovation environment, in which the components of growth of regional competitiveness are still poorly developed. General approaches to the formation of the term "innovative environment" are analyzed. The authors of the article noted that the solution to the problem of forming an effective innovation environment lies in two interrelated planes, caused, firstly, by the need to create external conditions conducive to innovation development, which include a combination of institutions and organizations in the structure of national innovation systems. Secondly, the presence of objective prerequisites for the transition to an innovative development path for business entities. Particular attention is also paid to the use of competitive advantages of the regions of Kazakhstan. The authors suggested ways to create an effective innovation environment and improve the innovation partnership of all participants: the state, business, science and education. In assessing the innovation activity of the regions of the Republic of Kazakhstan, these indicators were used: expenditures on research and development, expenditures on technological innovations, output of innovative products per person in the region, etc., based on the results of the research a SWOT analysis was conducted, a model of innovative development of the enterprise was proposed, where the general strategic goals of the enterprise and the main directions of innovative development would be agreed.

Key words: innovations, region, innovative environment, agroindustrial complex, competitive advantages, model, state support.

JEL Classification: R11

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Шығыс Қазақстан облысының агроөнеркәсіптік кешенінің инновациялық ортасын қалыптастыру шарттары

Мақалада Қазақстан өңірлерінің инновациялық қызметінің талдауы ұсынылған, өңірлік бәсекеге қабілеттіліктің өсуінің құрамдас бөліктері әлсіз дамып жатқан инновациялық ортаны қалыптастыруға кедергі келтіретін проблемалар анықталды. Өңірдің «инновациялық-орта» ұғымын қалыптастырудың негізгі тәсілдері талданды. Авторлардың айтуынша, тиімді инновациялық ортаны қалыптастыру проблемасын шешу екі өзара байланысқан жағдайлармен, біріншіден, ұлттық инновациялық жүйелер құрылымында институттар мен ұйымдардың жиынтығын жатқызуға болатын инновациялық дамуға қолайлы сыртқы жағдайлар жасау қажеттілігінен шартталған. Екіншіден, шаруашылық жүргізуші субъектілерде дамудың инновациялық жолына көшу үшін объективті алғышарттардың болуымен шартталған. Сондай-ақ, ҚР өңірлерінің бәсекелестік артықшылықтарын пайдалану мәселелеріне ерекше назар аударылды. Авторлар тиімді инновациялық орта құру және барлық қатысушылардың инновациялық әріптестігін

жетілдіру жолдарын ұсынды: мемлекет, бизнес, ғылым және білім. ҚР аймақтарының инновациялық белсенділігін бағалау кезінде көрсеткіштер пайдаланылды: зерттеулер мен әзірлемелерге шығындар, технологиялық инновацияларға шығындар, өңірдің жан басына шаққанда инновациялық өнім шығару және т.б. зерттеулер нәтижесі бойынша SWOT-талдау жүргізілді, кәсіпорынның инновациялық даму моделі ұсынылды, онда кәсіпорынның жалпы стратегиялық мақсаттары мен инновациялық дамудың негізгі бағыттары берілген.

Түйін сөздер: инновация, аймақ, инновациялық орта, агроөнеркәсіп кешені, бәсекелестік артықшылықтары, модель, мемлекеттік қолдау.

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Условия формирования инновационной среды агропромышленного комплекса Восточно-Казахстанской области

В статье представлен анализ инновационной деятельности регионов Казахстана, выявлены проблемы, препятствующие формированию инновационной среды, в которой пока слабо развиваются составляющие роста региональной конкурентоспособности. Проанализированы основные подходы к формированию понятия «инновационная среда» региона. Авторами отмечено, что решение проблемы формирования эффективной инновационной среды лежит в двух взаимосвязанных плоскостях, обусловленных, во-первых, необходимостью создания внешних условий, благоприятствующих инновационному развитию, к которым можно отнести совокупность институтов и организаций в структуре национальных инновационных систем. Во-вторых, наличием у хозяйствующих субъектов объективных предпосылок для перехода на инновационный путь развития. Особое внимание также уделено вопросам использования конкурентных преимуществ регионов РК. Авторами предложены пути создания эффективной инновационной среды и совершенствования инновационного партнерства всех участников: государства, бизнеса, науки и образования. При оценке инновационной активности регионов РК были использованы показатели: затраты на исследования и разработки, затраты на технологические инновации, выпуск инновационной продукции на душу населения региона и др., по результатам исследований проведен SWOT-анализ, предложена модель инновационного развития предприятия, где будут согласованы общие стратегические цели предприятия и основные направления инновационного развития.

Ключевые слова: инновации, регион, инновационная среда, агропромышленный комплекс, конкурентные преимущества, модель, государственная поддержка.

Introduction

In modern conditions of development, Kazakhstan has taken a course to build a new model of the economy based on knowledge. This model provides an opportunity to ensure a sustainable competitive economy. Achieving the goal of the successful development of a new economy is the development of national and regional innovation systems. Today Kazakhstan has developed and implemented basic documents aimed at the development of innovative processes in the country, which have stimulated the formation of innovative processes. Different models and schemes for the development of innovation processes in the country as a whole and in the regions, in particular, were proposed. However, assessing the current state and trends in the development of innovation activities in the regions of Kazakhstan, we can conclude that innovation processes at the regional level are extremely slow due to a number of economic, financial, administrative, legal and other problems.

The development of the regions today is one of the priority tasks of the economy of Kazakhstan, since dynamically developing and competitive regions constitute the foundation of the national policy to reduce regional disparities and promote a more balanced development. The regions of the country have a significant resource potential and are now in conditions of industrial-innovative development. In order to use their competitive advantages, the regions, first of all, should ensure all conditions for the development of innovation activities to improve competitiveness. The solution of this task requires new developments and approaches, primarily in the agro-industrial complex of the region, which is the

main structure-forming element of the economy. As noted, in the framework of the President's message to the People of Kazakhstan "New Opportunities for Development under the Fourth Industrial Revolution", the agro-industrial complex (APC) of Kazakhstan was given a task to drastically increase labor productivity and increase exports of processed agricultural products in 5 years so that it is at least 2.5 times bigger.

Increasing the competitiveness of the agro-industrial complex of the region is possible only in the conditions of creating an innovative environment. The innovative environment of the agroindustrial complex of the region should be understood as a set of information, regulatory, financial, personnel, organizational, economic and other conditions that ensure the development and implementation of innovations. The agro-industrial complex of the region continues to noticeably lag behind in terms of the main indicators that determine the level of scientific and technological development in comparison with the industry of the region, despite the positive results achieved in conducting scientific research in the agro-industrial sector, including a wide range of studies, also in the field of agriculture and plant growing, animal husbandry and veterinary medicine, in the field of storage and processing of agricultural raw materials, in the field of mechanization and electrification of agriculture, and in the field of natural resources. Therefore, innovation has not yet become a significant factor in the development of the agro-industrial complex of the region. This is explained to some extent by the specifics of the functioning of the agro-industrial complex of the region, which is characterized by a huge variety of climatic and soil conditions, and the level of bioclimatic potential. In addition, the creation of an innovative environment in the agro-industrial complex is hampered by the low productivity of scientific research, the low level of personnel skills and the relatively low efficiency of state administration. Agrarian science does not meet the needs of the business. In production, only 8% of the results of scientific and technical activities are used. Obsolescence of science, detachment from advanced technologies and the global scientific community are the main problems of agrarian science.

In order to change the current situation, to ensure the competitiveness of the agro-industrial complex of the region, in the long-term period, it is necessary to form a coordinated vision of its technological future among all participants – the state, business, science, population and together create an innovative environment in the agro-industrial complex of the region. At the same time, the key role in the organization of this process belongs to the state not only as its initiator, but also as a guarantee of the implementation of the agreements reached.

Solving this problem requires completely new approaches in the agro-industrial complex of the East Kazakhstan region, which has great export potential and high potential for introducing innovations. The purpose of the study is to analyze the innovation activities of the regions of Kazakhstan, identify problems and find ways to create an effective innovation environment.

Methodology

The methodological system of the research work consists of a review of the theoretical foundations of the formation of the innovation environment of regional enterprises using the methods of analysis and generalization of the studied statistical data. A review of the literature on the research topic allowed to systematize the main approaches to the definition of "innovation environment".

In assessing the innovation activities of the regions of Kazakhstan, the following indicators were used: expenditures on research and development, expenditures on technological innovations, output of innovative products per capita in the region, etc.

To solve the problem of forming an effective innovation environment in the regions of Kazakhstan, both the external and internal environment of economic entities were analyzed using a systematic approach, from the standpoint of which any enterprise is considered as an open system that interacts with the external environment.

To assess the effectiveness of innovative projects included in the portfolio, an integral indicator was used, combining the financial and non-financial components:

$$INPVi = NPVi\frac{Si}{Smax} \quad (1)$$

where Si is the sum of the scores for all non-financial indicators, Smax is the sum of the maximum values of non-financial indicators. Taking into account that the sum of requirements for a k resource should not exceed its margin, we obtain the following system of inequalities: Offer X is accepted with maximum utility (sentence X is accepted if its utility exceeds the predetermined allowable value Z:

$$\begin{cases} Xi \rightarrow INPVmax \\ \sum_{n}^{k=1} Rk \leq K \end{cases} \quad (2)$$

Xi – some innovative project; R is the amount of resources of each type; K is the total amount of resources that can be used for innovation.

The task of forming a portfolio (f) of innovative projects of an enterprise is as follows:

$$f=INPV_1X_1+INV_2X_2+...INPV_nX_n \rightarrow \max \quad (3)$$

Considering that the analysis of the organization's innovation environment is complex and time consuming, in addition to the system analysis, the "SWOT-analysis" method was used. After compiling a list of strengths and weaknesses of the potential of regional enterprises, as well as opportunities and threats from the external environment, establish links between them. external internal competitive analysis. For the formation of an information base for the study of the innovation environment of the region, foreign and domestic sources of literature, periodicals, government programs and the database of the Committee on Statistics of the MNE RK were used.

Literature review

The category "innovation environment" is currently being actively developed by foreign and domestic scientists from the point of view of various methodological approaches. In modern conditions, the formation of the innovation environment is of decisive importance, since changes in all its properties directly affect the innovative development of the system. On the need to form an appropriate innovation environment as the most important stage in the development of an innovation environment, allowing to strengthen institutional relationships, establish missing communications between participants in the innovation system, and speed up the formation of an innovation economy (Chistyakova, 2011: 450) One of the first to define the concept The "innovation environment" was a scientist, one of the leading sociologists of our time, specializing in the theory of the information society, he considered the innovation environment "as specific set of relations of production and management, based on the organization, which is generally shared work culture and instrumental goals aimed at generating new knowledge, new processes and new products" (Castells, 2000: 60). The following definition of the innovation environment as a set of complex networked informal social relations in a limited geographic space, often defining the external image and special specific internal representations and feelings of "belonging" that stimulate the innovativeness of the territory through synergy and collective learning processes, is taken as the basic one (Camagni, 1991 : 6). According to another author, the territory's innovation environment is a system that includes several subsystems, including research and educational, innovative enterprises and organizations, institutional and political support, investment services, and others (Nesterov, 2012: 37). The innovation environment is also considered as one of the varieties of a regional innovation cluster (Hart, 1996)

Analyzing the approaches of Russian scientists who determine the components of the innovation environment, it is revealed that some authors adhere to the concept of identifying external factors influencing innovation activity and determining the internal components of the innovation environment (Lavrishcheva, 2013: 96). One of the important prerequisites for the formation and development of the new economy is the maturity and stability of the institutional environment (Vladyko, 2007: 169).

Analysis of the literature allowed to systematize the main approaches of foreign scientists to the definition of innovative environment (Table 1).

In all the above approaches, the innovation environment is considered from all sides, but all of them together are an interconnected theory. One of the notable trends in the development of innovation processes, which manifest themselves far not only at the national, but also at the global level, was the strengthening of the role of the process characterizing the formation of the innovation environment in the economic system. The perceptible concentration of innovation activity in individual regions and other local "growth points" is explained by the location of the innovation business and knowledge production centers, the availability of the necessary human resources, the quality of the innovation infrastructure, etc. Most authors adhere to the concepts of identifying external factors influencing innovation and determining the internal components of the innovation environment.

Other authors adhering to the position of the resource approach, through a set of different types of resources used for innovation, an institutional approach that gives the innovation environment the value of a set of tools, mechanisms, methods, rules for the relationship of participants in innovation processes with the inclusion of various institutions responsible for their formation and execution (Raikhlina, 2017; 2016: 3).

Table 1 – Overview of the main approaches to the concept of "innovative environment"

Author	Definition
Cooke, 1993: 544	in addition to the innovation system, the innovation environment includes the innovation environment of the system, the links between the system participants and the governing bodies.
Malinen, 2005: 39	The innovation environment is a newer and deeper conceptual view that focuses attention on objects as part of a wider environment, including various types of systems, clusters, territorial and institutional links.
Jensson, 2004: 5	a prerequisite for the emergence of an innovation environment is the presence of social relations and networks at various levels – local, regional, national, ensuring the exchange of ideas and information.
Hart, 1996	Social connections in the innovation environment are established between individual employees in one company and employees of other companies. And these relationships are based primarily on past joint work experience.
Kolehmainen, 2002: 27	The concept of agglomeration, based on A. Weber's "theory of optimal allocation of industrial production", lies at the heart of the concept of the innovation environment. Agglomeration, in this case there is a cluster, or a concentration of industrial production in any place, arising from the social nature of production

Innovative environment was studied in different planes. The concept of "proximity", which is inextricably linked with cluster theory, has become one of the popular trends of scientific thought in relation to the innovation environment. This theory, which expands the understanding of the mechanisms of knowledge transfer in a certain geographically limited territory, was developed in the early 1990s. The most extensive classification of proximity was proposed where 5 types of proximity were considered: cognitive, geographic, organizational, social and institutional. When shaping the innovation environment, according to this theory, institutional and social affinity contribute to the efficient transfer of information and know-how, provided that local firms generate innovations (Boschma, 2001: 257). Another popular scientific concept associated with the development of the theory of innovation environment is the concept of "agglomeration". Agglomeration, in this case, "there is a cluster, or a concentration of industrial production in any place arising from the social nature of production. Such accumulation can be expressed in the form of simple expansion and enlargement of production units or as a result of co-location of these industries that were previously dispersed throughout the territory. The benefits of such concentration are associated with lower production costs, created not by the concentration of industry itself, but by proximity to one or another geographical point" (Friedrich, 1929: 189).

In our opinion, in a generalized form, the innovation environment can be represented as a set of systems: entrepreneurship, a system of technical and technological developments, and science and education, which ensure the functioning of the innovative production system and form the innovative product system.

Thus, the variety of interpretations unites a single vision of the essence of the innovation environment as a set of elements contributing to the intensification of innovation activity and on this basis the innovative development of the territory.

Results and Discussion

To increase the competitiveness of enterprises of the regional economy is possible only in the conditions of creating an innovative environment. After all, the sphere of innovations is the sphere of formation of competitive advantages of the regions of Kazakhstan and such an innovative environment is needed that would stimulate not only the creation but also the commercialization of innovative ideas.

For the formation of an innovative environment, the improvement of the legislative framework in the field of innovative development should contribute. The solution of these problems lies in two interrelated planes, caused, firstly, by the need to create an external environment conducive to innovative development, which include the totality of institutions and organizations in the structure of national innovation systems. Secondly, the presence of necessary internal environment among business entities – an innovative potential that is able to generate ideas and carry out the process of their commercialization throughout the entire innovation cycle.

One of the indicators of innovative development is the dynamics of the number of enterprises engaged in research and development. At the end of 2018, 384 R&D organizations were registered in

Kazakhstan with a total staffing of 22.4 thousand employees. The main number of employees is researchers (17.5 thousand people), including 1.7 thousand doctors of sciences, 4.4 thousand candidates of sciences and 0.9 thousand doctors of PhD. Since 2014, the number of employees engaged in research and development has tended to decrease, but in 2018, compared to 2017, this indicator increased slightly (Figure 1).

Domestic expenditures on research and development in 2018 amounted to 700,206.2 million tenge, which is 3.0% lower than in the previous year. Of the total amount of the budget accounted for 52.2%. A positive point was the increase in the structure of financing by 14% of the costs of applied research and by 1.4% – for experimental development, which respectively amounted to 40.9 and 17.2 billion tenge. It is obvious that Kazakhstan pays attention to the development of human capital in order to increase the growth potential of the country and create a favorable innovation environment. However, despite the progress that has been made, the lack of qualified personnel is holding back the growth of the private sector.

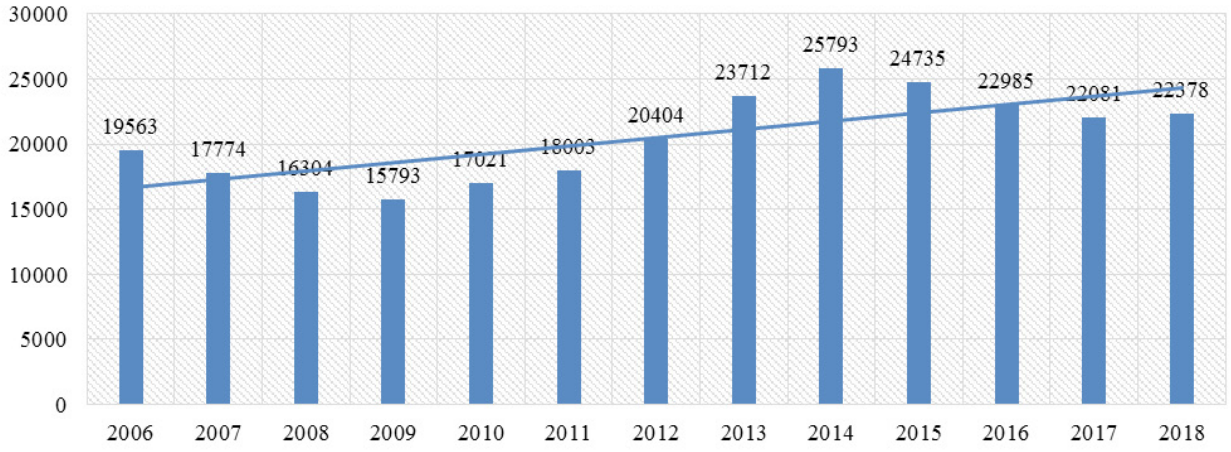

Figure 1 – The number of employees engaged in research and development, people
Source: official website of Statistic Committee of MNE RK http://stat.gov.kz

Today, the countries – technology leaders maintain the indicator of knowledge-intensive GDP at the level of 2.7-4.3%. Critical for scientific and technological safety is considered to be if this indicator is equal to or less than 1. In Kazakhstan, according to the Committee on Statistics of the MNE RK, over the past five years, the scientific knowledge averaged 0.16%, that is, more than 6 times lower than the critical level. To increase the knowledge-intensiveness of GDP, it is necessary to increase the cost of 1 researcher According to UNESCO, this figure in Kazakhstan is on average 47 thousand (at purchasing power parity), in Russia – 54, Ukraine – 42, USA – 300, Germany – 234, Japan – 209, China – 202.

High costs per researcher are observed in technically and technologically developed or rapidly developing countries, where, in general, science funding is at a high level. Hence the need to carry out innovation activity is an inevitable condition for overall economic well-being. It is important to take into account that technological change is a decisive source of economic growth, and high returns are characteristic of R & D costs. So far, this figure is only 0.15-0.13% of the country's GDP (Figure 2).

As we see, knowledge generation opportunities in the regions of Kazakhstan are limited, which is a reflection of the low costs of research activities in the public and, especially, in the private sectors. There is a low level of interest in introducing innovations to the real sectors of the economy (especially small businesses) and the lack of communication between research programs and enterprise innovation plans. This suggests that the mechanisms for transferring knowledge to the real sector are inefficient.

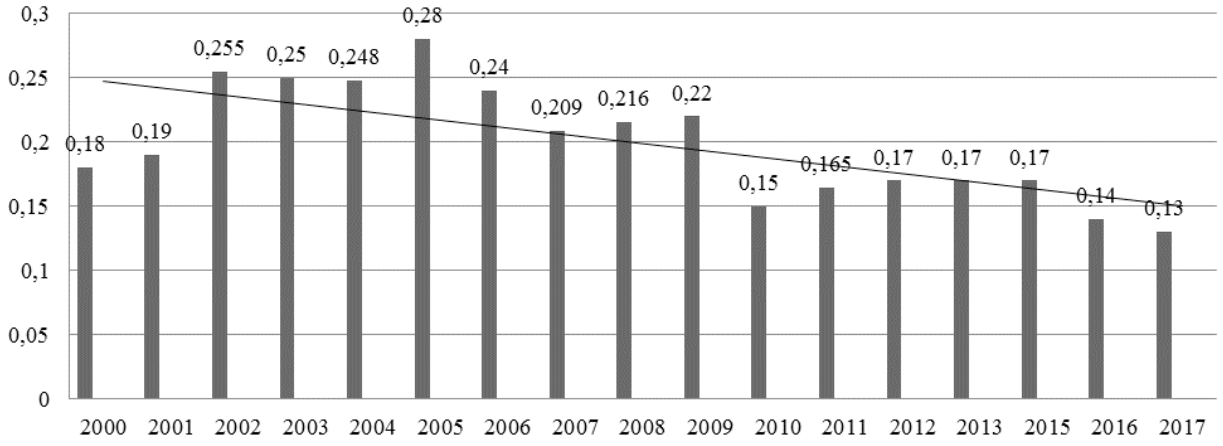

Figure 2 – The proportion of domestic expenditures on research and development in GDP, %
Source: official website of Statistic Committee of MNE RK http://stat.gov.kz

As we see, knowledge generation opportunities in the regions of Kazakhstan are limited, which is a reflection of the low costs of research activities in the public and, especially, in the private sectors. There is a low level of interest in introducing innovations to the real sectors of the economy (especially small businesses) and the lack of communication between research programs and enterprise innovation plans. This suggests that the mechanisms for transferring knowledge to the real sector are inefficient. As research has shown in general, the level of innovation activity of Kazakhstan enterprises remains very low. In 2018, it was 10.6%.

Figure 3 shows the level of innovation activity of the Republic of Kazakhstan.

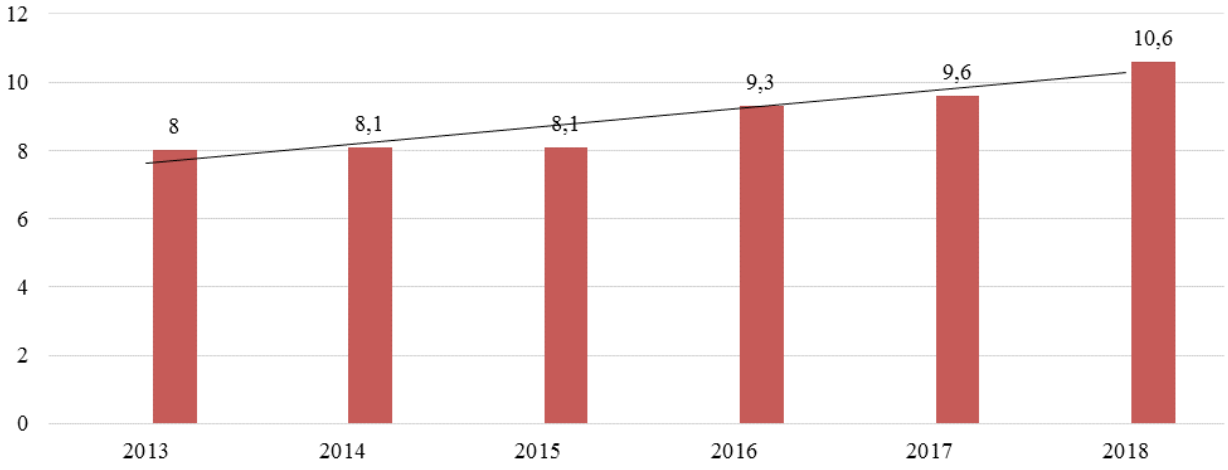

Figure 3 – Level of innovation activity of the Republic of Kazakhstan
Source: official website of Statistic Committee of MNE RK http://stat.gov.kz

There is a significant differentiation of the regions of Kazakhstan in terms of innovative development. Reduction of measures to stimulate innovation processes in the regions leads to further differentiation of the subjects of the Republic of Kazakhstan. An active regional policy makes it possible to compensate for unfavorable external conditions. At the same time, not only to develop forms of support for innovative business, but also to actively invest in the development of human capital, which is an important success factor in the innovation policy of many developed and developing countries of the world. The development and introduction of new technologies is a tripartite process, the state,

scientists and businesses that are able to master these developments and offer a competitive product to the market should be interested in it. That is, the innovation activity of enterprises is of decisive importance.

By 2020, Kazakhstan plans to increase the share of innovation-active enterprises to 20% of all business entities, and the share of innovative products in total GDP to 2.5%. To achieve such results, it is necessary for the state to create favorable conditions for doing business in order to reduce the technological gap in traditional industries, the development of new production lines in Kazakhstan.

At present, domestic science does not have stable ties with production; a scheme of sustainable partnership between science and business has not yet been built on the basis of the reciprocal movement of applications from innovation-active enterprises and universities and scientific organizations. The key resultant characteristic of the innovation activity of enterprises, reflecting their contribution to the country's economy, is the production of innovative products (new and improved technologies (Figure 4).

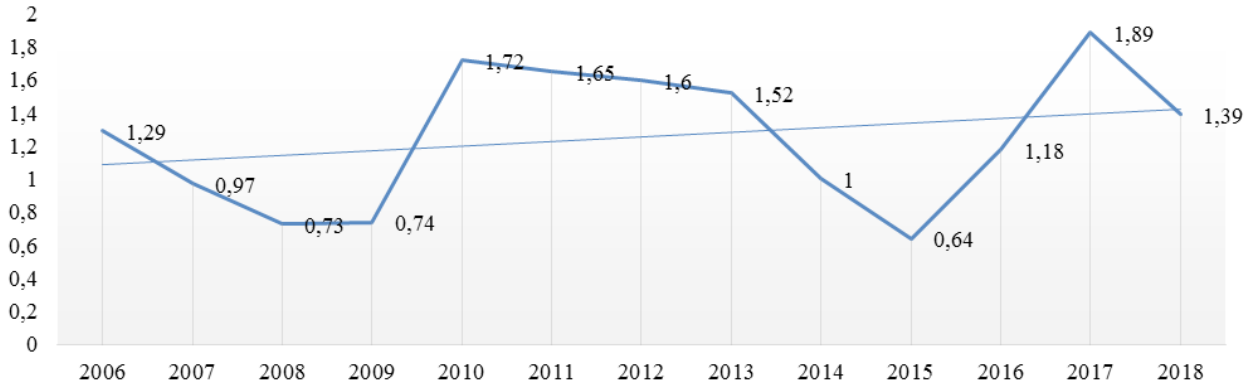

Figure 4 – The volume of production of innovative products in the Republic of Kazakhstan
Source: official website of Statistic Committee of MNE RK http://stat.gov.kz

In 2018, compared to 2017, enterprises in the region of Kazakhstan produced innovative products in the amount of 1179150,2 million tenge, an increase of 1,39 %.However, the growth rate of innovative products since 2015 tended to increase, but in 2018 there is a noticeable decrease. Among the regions, the largest share of innovative products is observed in Pavlodar (21.1%), Astana (17.7%), South Kazakhstan (14.8%), Kostanay (10.8%) and the smallest in Atyrau, Mangistau, Kyzylorda 9.8% of the volume of sold innovative products (854,258.3 million tenge) accounted for export (83,655.6 million tenge).

One of the leading regions of Kazakhstan is the East Kazakhstan region (East Kazakhstan), which has a high scientific and technical potential, sufficient to solve the pressing problems of technical modernization of the real sector of the economy. There are 142 research and development units in the region. At the end of 2017, R & D costs amounted to 6.9 billion tenge, an increase of 1.5 times compared with 2016 (4.7 billion tenge). The number of R & D employees in the region in 2017 amounted to 2,325 people, which is 10% of the total number of specialists performing research and development in the Republic of Kazakhstan. The region takes the 3rd place after Astana and Almaty. Of the total R & D expenditures, 72% is performed by the enterprises themselves without the involvement of outside organizations (domestic costs). In 2017, domestic R & D costs amounted to 5 billion tenge (2016 – 3.5 billion tenge), of which 43% fall on the republican and local budget. Of the republican volume of foreign investment in R & D, 88% comes from East Kazakhstan (1.1 billion tenge).

Since the adoption of the Concept of innovative development of Kazakhstan until 2020, the number of innovative enterprises in the country has increased 3 times (2013 – 99 enterprises, 2017 – 303 enterprises). The volume of innovative products (goods, services) at the end of 2017 amounted to 80.5 billion tenge and increased 1.5 times compared to 2016 (2016 – 54.3 billion tenge). 37% of innovative products are in the manufacturing industry. More than half of the produced and sold innovative products are exported. The growth in the production of innovative products

by the end of 2017 allowed an increase in the share of innovative products in the structure of the gross regional product. In 2016, innovative products in the region amounted to 1.9% of the gross regional product, in 2017 the figure increased and reached 2.7% (RK – 1.6%). This indicator is one of the key indicators of the Concept of Innovative Development of the Republic of Kazakhstan up to 2020.

The first place among the regions of the Republic of Kazakhstan in terms of the level of innovation activity is occupied by East Kazakhstan region (Figure 5).

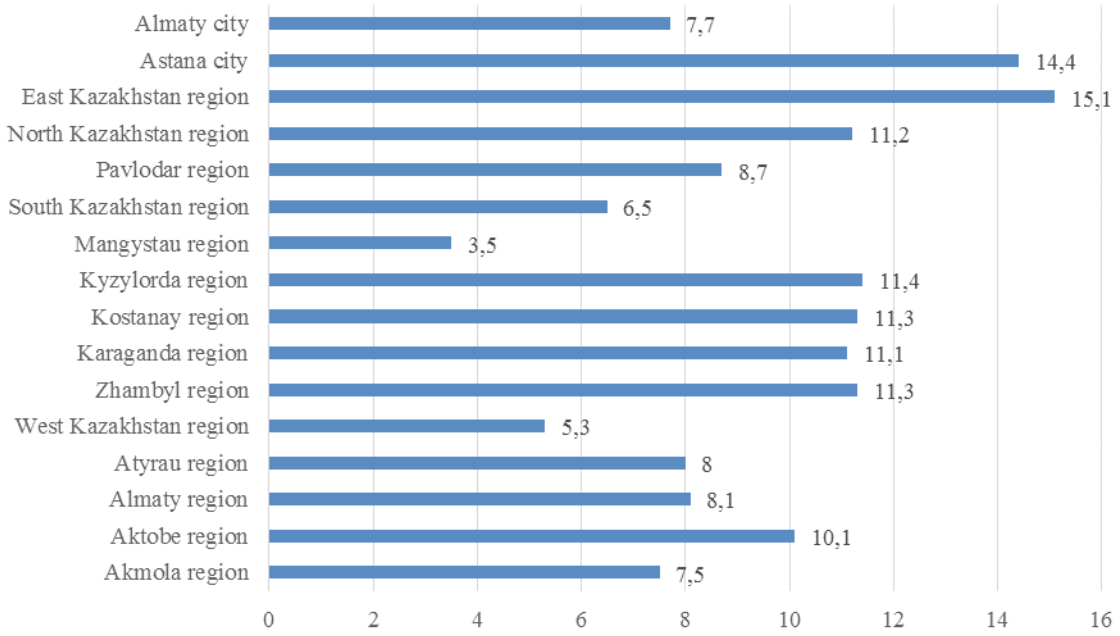

Figure 5 – The level of activity in the field of innovation in the context of areas, in %
Source: official website of Statistic Committee of MNE RK http://stat.gov.kz

In order for the enterprises of the region to intensify and further innovative activity, state support tools are needed (Table 2).

In modern conditions of formation of the innovation environment, an important role is assigned to public-private partnership (PPP), as the main tool for the implementation of economic policy. The role of PPP is determined by: the development of the innovation infrastructure, taking into account the interests and with the active participation of the business; increasing the efficiency of using state property and budget expenditures, including those aimed at supporting innovation; stimulating the private sector to develop entrepreneurial activity in areas with the greatest potential for quality economic growth. The Institute of PPP allows you to use the advantages of integrating the financial resources of private business with limited state budget funds. The foreign experience of PPP includes many projects that are very diverse but united by a common concept, the essence of which is that the main guideline in the implementation of the project should not be aimed at achieving more favorable ratio of price and quality, and to maximize the potential of business in the implementation of joint activities with the state.

The prevailing modern trend in many developed countries is the reduction of direct government intervention in the innovation process and the growth of R & D expenditure on private business. At the same time, the range of measures of indirect stimulation of innovation activity is expanding at the expense of tax breaks, concessional loans, targeted support for small business, the formation of the necessary innovation infrastructure and technology commercialization. European experience shows that a significant part of the nationwide R & D allocations come from private business. In many EU countries, for enterprises that are actively involved in the development and introduction of innovations, the right is established

to form innovative funds from non-taxable profits from the profits. The size of such a fund can be from 16 to 50% of the profits of the enterprise. Tax benefits are also used in the form of tax rebates from the volume or increase in the company's expenses on R&D (Dyatlov, 2016: 414).

Table 2 – Tools of state support for innovation

Government support tools	
stimulating demand for innovative products	legislative and regulatory measures, government procurement, development of standardization, labeling and certification
increasing the efficiency of the knowledge generation sector	orientation of research on the problems of innovative development of the region through the participation of leading universities.
mechanisms for encouraging innovation partnerships: government, business, science and education.	legal, financial, social, tax, venture and other incentive mechanisms
increase in the efficiency of personnel potential of the innovation activity of enterprises	development of «mentoring» for beginning innovators, etc.

There is also a scheme of state lending, which is implemented through specially created guarantee funds. Such a system is developed in the UK: an innovative company is self-applying to a credit institution to receive a conventional loan, and the government provides guarantees of payment of 70–85% of the amount of the allocated loan. In the USA, Great Britain, Greece, Spain, the Netherlands and the developed countries, the equity form of financing innovative projects is widely used, which involves the participation of the state, private business, universities, local authorities and other structures. This form of financing allows better integration of the interests of customers and executors of research and development works (R&D), also contributes to material incentives for researchers, rational distribution of funds raised and the risk of their investment among all participants of innovative projects (Khrustalev, 2011: 18).

The situation is quite different in our country: the mechanism for transferring scientific and technological developments to production is inefficient due to the limited number of innovation-oriented enterprises and the investment policy is little oriented to the commercial use of their developments.

In order for regional agribusiness enterprises to become innovation-oriented, objective prerequisites are needed that are characterized by external factors (development of innovation processes and innovations that qualitatively increase production efficiency; investment attractiveness; reduction in demand and product life cycle;) and the internal environment (deterioration of basic technical economic indicators: the growth of production costs and sales, slowing cash flows). These environmental factors may signal the company that it is necessary to carry out various measures for technological modernization of production, reorganization of the management system, etc. At the same time, in the process of innovation, the management of the company must clearly understand that the company is an open system that is inseparable from the external environment. Then to conduct a strategic analysis, in the process of which the features of the enterprise's interaction with the external environment are identified, and an assessment of the production and financial state is given. Only then can we proceed to develop a model of innovative development of an enterprise, where the overall strategic goals of the enterprise and the main directions of innovative development are consistent.

Taking into account the resource potential and the set of ideas and projects, enterprises can form such a portfolio of innovative projects that would be most effective and would allow to achieve a synergistic effect. The final stage of the implementation of the enterprise innovation development model is the final assessment of the effectiveness of the entire innovation development strategy implemented in the enterprise.

To assess the state of innovation development, the region conducted a SWOT analysis.

Table 3 – SWOT-analysis of the innovative development of the region

Strong sides	**Weak sides**
political stability; favorable economic and geographical position; the availability of mineral resources that can be effectively mastered with the help of innovative companies; high educational level of the population; the presence of universities, research institutes, scientific and technical personnel;	low productivity; weak integrated links between science, industry and education; low returns to research; low level of innovation activity of enterprises in the region; low rates of technical re-equipment of enterprises; low innovative culture; insufficient domestic demand for innovative products;
Possibilities	**Threats**
improving the interaction between production and science; use of state support mechanisms in the field of innovation; reduction of technological lag and transition to higher levels of the technological structure; development of innovation infrastructure; expansion of interaction in matters of attracting investment.	improving the interaction between production and science; use of state support mechanisms in the field of innovation; reduction of technological lag and transition to higher levels of the technological structure; development of innovation infrastructure; expansion of interaction in matters of attracting investment.

Conclusion

The emerging innovative environment of the agro-industrial complex of the region is: developing programs for internships by agribusiness specialists in innovative structures and encouraging innovative entrepreneurship, creating research institutes at leading universities of relevant profile with the involvement of foreign experts, creating consulting centers on agro-marketing, agribusiness, on developing innovative business plans, and legal providing small and medium businesses, the development of legislation on the development of competition, etc.

The effectiveness of the formation of the innovation environment of the agro-industrial complex of the region is affected by a complex of factors: economic, financial, organizational, regulatory and legal. In the East Kazakhstan region there are all conditions for the formation of the innovative environment of the agro-industrial complex: the regulatory framework; research institutes, infrastructure (technoparks, incubators, etc.); international relations and cooperation in various fields of innovation; scientific potential, etc. (table 4).

Intensification of innovation activities will be carried out by informing about the existing mechanisms of state support for industrial innovation in the framework of seminars, meetings, forums, as well as through the media.

Positioning of sectoral and regional technology parks as part of visits by foreign delegations will be carried out on an ongoing basis with the aim of expanding scientific, technical and innovative cooperation between the regions of near and far abroad, which will further create new industries and attract investors to implement priority innovative projects.

Further development of the innovation sector will be driven by the functioning of the region's innovation infrastructure, including industry and regional technology parks (Altai Technopark, Park of Nuclear Technologies JSC), design bureau, research organizations (universities, KazGIPROCvetmet, VNIItsvetmet), the National Nuclear Center, and also SEC "Ertis" and industrial zones of the region.

Development of innovations and promotion of technological modernization of the agro-industrial complex of the Republic of Kazakhstan will be aimed at achieving sustainable development of the agro-industrial complex of the Republic of Kazakhstan by:

– orientation of applied science to the tasks of agricultural modernization;

– creation of a management system for innovative technological development, including a system of technological forecasting and planning, development and implementation of innovative development programs for the agro-industrial complex of the Republic of Kazakhstan, agribusiness entities, creation of regional and sectoral innovation systems;

– development of a system for promoting technological modernization of agriculture in the Republic of Kazakhstan, including: conducting a technology audit, transfer of foreign technologies, promoting the introduction and dissemination of technologies, technology commercialization.

Table 4 – Factors of formation of the innovative environment of the agroindustrial complex of the region

Economic conditions	Financial conditions	Organizational conditions	Regulatory conditions
tax and pricing policies that promote the growth of supply in the agro-innovation market; growth of employment of workers in the field of innovation; provision of services in the field of finance, taxes and benefits to enterprises engaged in the field of innovation in the AIC; participation in the promotion of modernization, technical re-equipment; development of various types of leasing of innovative products; activation of innovative agribusiness; counteraction of unfair competition in the agro-industrial complex; development and support of foreign economic activity in the field of innovation.	providing funding for innovation activities at the expense of budget funds; allocation of direct state investments, grants for the implementation of innovative projects and programs of priority importance for the state; ensuring investment attractiveness in the innovation sphere; provision of grants, concessional loans, guarantees to domestic and foreign investors participating in innovation activities.	development and implementation of innovative programs at the level of the state, industry, region; the formation and development of innovation infrastructure; staff development in the field of innovation, information support for innovation; activation of integration processes, expansion of the participation of the agro-industrial complex in the innovation sphere, promotion of international cooperation in this field; output of innovative products to foreign markets; lobbying the interests of domestic business entities of innovation activities in foreign economic activity.	compliance with legislation in the relationship of economic entities of the agro-industrial complex of the region in innovation activities; protection of intellectual property rights and other interests of participants in innovation activities.

In the Concept of Innovative Development of the Republic of Kazakhstan until 2020, based on technological forecasting in the field of the agro-industrial sector, such critical technologies as progressive technologies in the agro-industrial complex (reproduction of soil fertility, progressive irrigation systems, technologies of intensive development of animal husbandry and advanced processing of agricultural raw materials; biotechnology (engineering enzymology, cell and genomic selection, cell and molecular engineering, technologies for creating biological products, methods for ensuring biosafety of products).

Thus, the conducted studies have shown that for the formation of an effective innovation environment in the regions of Kazakhstan, special regional mechanisms are needed that directly stimulate the introduction of innovations at agricultural enterprises, the use of the scientific and technological potential of universities and research institutes. This should contribute to the improvement of the legislative framework in the field of innovative development in the agricultural sector.

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