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ҚАЗАҚСТАН РЕСПУБЛИКАСЫ
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Х А Б А Р Ш Ы С Ы

ВЕСТНИК

НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК
РЕСПУБЛИКИ КАЗАХСТАН

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NAS RK is pleased to announce that Bulletin of NAS RK scientific journal has been accepted for indexing in the Emerging Sources Citation Index, a new edition of Web of Science. Content in this index is under consideration by Clarivate Analytics to be accepted in the Science Citation Index Expanded, the Social Sciences Citation Index, and the Arts & Humanities Citation Index. The quality and depth of content Web of Science offers to researchers, authors, publishers, and institutions sets it apart from other research databases. The inclusion of Bulletin of NAS RK in the Emerging Sources Citation Index demonstrates our dedication to providing the most relevant and influential multidiscipline content to our community.

Қазақстан Республикасы Ұлттық ғылым академиясы "ҚР ҰҒА Хабаршысы" ғылыми журналының Web of Science-тің жаңаланған нұсқасы Emerging Sources Citation Index-те индекстелуге қабылданғанын хабарлайды. Бұл индекстелу барысында Clarivate Analytics компаниясы журналды одан әрі the Science Citation Index Expanded, the Social Sciences Citation Index және the Arts & Humanities Citation Index-ке қабылдау мәселесін қарастыруда. Web of Science зерттеушілер, авторлар, баспашылар мен мекемелерге контент тереңдігі мен сапасын ұсынады. ҚР ҰҒА Хабаршысының Emerging Sources Citation Index-ке енуі біздің қоғамдастық үшін ең өзекті және беделді мультидисциплинарлы контентке адалдығымызды білдіреді.

НАН РК сообщает, что научный журнал «Вестник НАН РК» был принят для индексирования в Emerging Sources CitationIndex, обновленной версии Web of Science. Содержание в этом индексировании находится в стадии рассмотрения компанией Clarivate Analytics для дальнейшего принятия журнала в the Science Citation Index Expanded, the Social Sciences Citation Index и the Arts & Humanities Citation Index. Web of Science предлагает качество и глубину контента для исследователей, авторов, издателей и учреждений. Включение Вестника НАН РК в Emerging Sources Citation Index демонстрирует нашу приверженность к наиболее актуальному и влиятельному мультидисциплинарному контенту для нашего сообщества.

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Zh. Abylkassimova[1], G. Orynbekova[2], M. Alibayeva[1], O. Osadchaya [3]

[1]Shakarim State University of Semey, Semey, Kazakhstan;
[2]«Turan-Astana» University, Astana, Kazakhstan;
[3]Rubtsovsk industrial Institute (branch) FSBEI HPE "Altai STU named after I. I. Polzunov", Russia.
E-mail: zhibekmm@mail.ru

ANALYSIS OF INNOVATION ACTIVITIES OF ENTERPRISES OF KAZAKHSTAN

Abstract. The article noted that the development of the innovation potential of enterprises in the regions of Kazakhstan contributes to the transition of the innovation economy, where goods with high added value will be produced. The article examines the factors affecting the innovation activity of the regions, considers the dynamics of innovation activity and identifies problems and tools for the development of innovative entrepreneurship.

Key words: innovation, innovation activity, region, industrialization, human potential, infrastructure

In modern conditions of economic development, technological and social changes are possible only with effective innovation potential, which determines the success of the activities of economic entities. The innovation should correspond to the trends in the chosen area and be economically demanded. Each year, WIPO assesses the innovative activity of 126 countries by 80 parameters according to such criteria and pits as the political situation, education, infrastructure development, business, finance research sector. Kazakhstan occupies the third place among the countries of South and Central Asia in this ranking, 74th position [1]. According to experts, despite the improvement of individual components of the index, the development of the national support system and the introduction of innovations in Kazakhstan are at the formative stage, thereby explaining the gap between the leading countries of the world. Issues of innovative development are reflected in many strategic documents. The State Program of Industrial Innovative Development of the Republic of Kazakhstan for 2015-2019 noted that the country needs to create an effective industry base, new points of industrial growth, conditions for the emergence of highly efficient export-oriented industrial entrepreneurship, and prerequisites for the emergence of a critical mass of innovative - active business. A key theme of the program is an innovative development of priority sectors of the economy, by improving technology development centres on the basis of scientific research institute, whose role will be in the implementation of STP results in the real economy. The program also indicates that the educational and scientific community will be involved in the development of detailed Road Development Cards, and the demand for innovations will be provided through the development of a mechanism for purchasing high-tech products by state-owned companies. And the issue of transferring technology parks to the competitive environment is being worked out [2].

Research of innovative activity of regions of Kazakhstan showed a positive trend in increasing the resources involved in innovation (table 1). Table 1 presents the main indicators of innovation activities in the East Kazakhstan region over the past 5 years.

The analysis of the dynamics of innovation in enterprises showed that the share of innovatively active enterprises increased from 4.0% (2009) to 10,6% in 2018. The volume of sold innovative products (goods, services) amounted to 1 179 200 million tenge, which is more than 6 times higher than the analogous indicator of 2010. The analysis showed that the largest number of enterprises with innovations are located in Astana (19%), Almaty (18%) and the third place is in East Kazakhstan region (10%), the least is in Mangistau region and West Kazakhstan (1.0%).

Table 1 – Dynamics of key indicators of innovative activity*

Indicators	2013	2014	2015	2016	2017	2018
GDP, billion, tenge	35 999,0	39675,8	40 884,1	46 971,2	53 101,3	59613,7
Domestic expenses on R & D, million tenge	61 672,7	66347,6	69 302,9	66 600,1	68 884,2	72200,0
The part of domestic R & D, costs from GDP, %	0,17	0,17	0,17	0,14	0,13	0,12
The amount of organizations engaged in R & D, units	341	392	390	383	386	384
The amoun of employees performing R & D, people	23 712	25 793	24 735	22 985	22081	22400
Volume of innovative products (goods, services), million tenge	578263,1	580 386	377 197	445 776	844 735	1179200
The level of activity in the field of innovation, %	8,0	8,1	8,1	9,3	9,6	10,6
*http://stat.gov.kz/ [3].						

The main factor of innovative development is enterprises introducing innovations into their production (table 2).

Table 2 – The level of activity in the field of innovation, %

	Amount of enterprises – total, units	Of them	The level of activity in the field of innovation, %
		Having innovations	
The Republic of Kazakhstan	30501	3230	10,6
Akmola	1 207	93	7,7
Aktobe	1 174	125	10,6
Almaty region	1 830	151	8,3
Atyrau	1 161	96	8,3
West Kazakhstan	952	50	5,3
Jambyl	841	96	11,4
Karaganda	2 289	336	14,7
Kostanay	1342	163	12,1
Kyzylorda	756	92	12,2
Mangystau	1 128	45	4,0
South Kazakhstan	2 499	119	11,7
Pavlodar	1 272	116	9,1
Turkestan	927	60	6,5
East Kazakhstan	2 050	317	15,5
Nur-Sultan city	3975	583	14,7
Almaty city	6997	670	9,6
Shymkent city	1587	118	7,4
*http://stat.gov.kz/			

The condition for the innovative development of enterprises in the region is primarily the availability of the resources necessary for its implementation. Regional enterprises have paid attention to achieving the effectiveness of their innovation by adopting new products or technologies in production, as well as modernizing products or services, borrowing them from more advanced enterprises. The increase in costs for these goals in 2018 brought up to 72224,6 million tenge, which is 2 times higher than the similar costs in 2010, indicating a number of successful investments in innovative projects. However, despite the growth in R & D costs, this indicator lags significantly behind GDP growth. The share of Kazakhstan's GDP spent on research and development is currently 0.13% (in other countries, similar expenses are higher: from 2.08% in China and 2.73% in the United States to 4.15% in South Korea and 4.21% in Israel). In the long run, developed countries with a powerful raw materials sector can serve as a guide for this: Canada, where R & D expenditures amount to 1.62% of GDP, and Australia (2.13%). Comprehensive development of the national innovation system and increasing the country's competitiveness are ensured by the growth of innovative activity. and higher spending on R & D

In the context of the regions of Kazakhstan, the largest share of the volume of innovative products (works, services) of all innovative products produced in the country is observed in Pavlodar (21%), Astana (17%), Shymkent (13%), Kostanay (10%) and in East Kazakhstan region (9.0%), in other regions the figure ranges from 1% to 6% (figure 1)

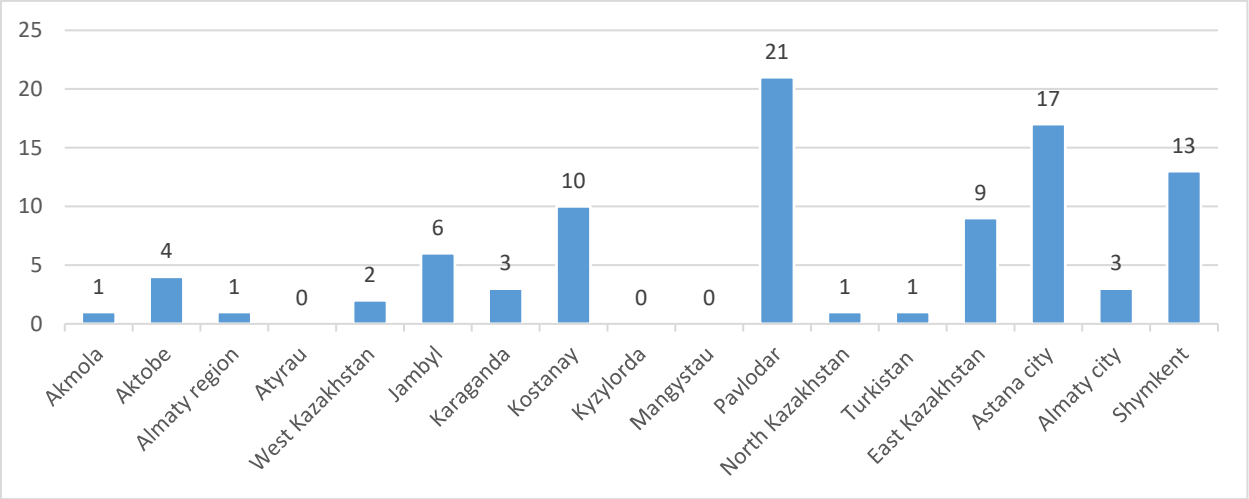

Figure 1 – Dynamics of volume of innovative production in the Republic of Kazakhstan

However, the problem of Kazakhstan's innovation policy is the weak domestic demand for innovation. The low level of competition and specialization at low rates of technical progress explains the lack of interest of companies to innovate. In addition, most of the innovations in the country occur in the machinery market, and the share of innovations in the production of consumer goods is insignificant due to inexperienced consumer demand, the limited size of the market, and dependence on imports. Such low demand is also aggravated by inadequate production capacity in the country, emerging industries satisfy their technological needs abroad, since the underdeveloped research sector in Kazakhstan is not yet able to meet their needs. The creation of fundamentally new products in modern conditions is possible only on the basis of the development of fundamental research, and, first of all, at the intersection of scientific disciplines [4].

In Kazakhstan, of the four main types of innovations (organizational, marketing, product and process), process and product innovations prevail. As for organizational and marketing innovations, there are no serious innovations in this area in Kazakhstan. Therefore, it is still not easy for our country to offer organizational and marketing innovations to the world market.

Product Innovation - is the introduction of a product or service with new or significantly improved properties or method of use. Improved product specifications, software, or user-friendliness can be the essence of product innovation. Process innovation – is a significant improvement in the method of production or delivery of the product.

Figure 2 presents data on the costs of product and process innovations by source of funding.

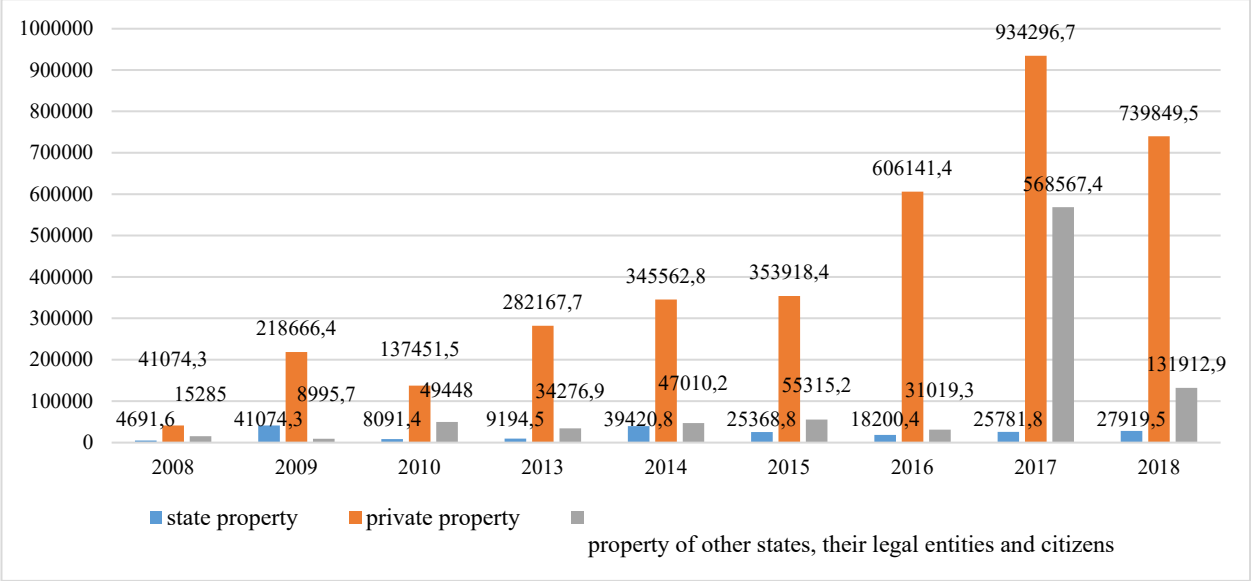

Figure 2 – The cost of product and process innovations by source of funding

An analysis of the cost of product and process innovations by source of financing has shown that the cost of innovation is carried out mainly at the expense of own sources of enterprises. This is a positive trend. The highest indicator of total costs was observed in 2017 (1528645.9) in 2018 there was a decrease (899681.8). The decline occurred in terms of the property of other states, if in 2017 their share was 37.0%, then in 2018 the indicator dropped to 14.0%. The most significant contribution in all types of innovations was made by large enterprises [5].

National expenses on R&D include fundamental, applied research, development and technological developments and are considered one of key indicators of scientific and technological development of the country.

Table 3 – Internal R & D costs by type of work

	2013	2014	2015	2016	2017	2018
Total	61672,7	66347,6	69302,9	66600,1	68884,2	72224,6
Including:						
Scientific researches and workers:						
Fundamental researches	18197,0	15260,7	15838,8	13809,2	10785,9	10629,0
Applied researches	33369,4	38394,8	36959,0	35841,1	40909,6	43278,3
Experimental-constructive designs:						
Design and technological works	7447,3	9 488,1	12658,2	12341,7	14817,7	16387,9
Manufacture of prototypes, batches of products	1365,5	1 830,4	1 478,4	2 478,1	885,3	1518,6
Project works for construction	1293,5	1 373,7	2 368,5	2 130,0	1 485,7	410,8
*http://stat.gov.kz/						

AT last five years the amount of domestic costs of R&D in Kazakhstan hesitated in the limits from 61.7 billion tenge to 69.3 billion tenge**.** The largest volume was recorded in 2016 – 66.6 billion tenge vs. 68,9 billion at 2017 and 72.2 billion at 2018 (at the same time, fluctuations in the national currency exchange rate should also be taken into account).

Table 4 – Domestic R & D costs by branches of science

	2013	2014	2015	2016	2017	2018
Total	61 672.7	66 347.6	69,302.9	66 600.1	68,884.2	72224,6
including:						
natural sciences	22361.4	23556.8	25334.2	23496.2	22428.3	21083,9
engineering and technology	23937.9	26864.3	29618.3	30,193.4	31459.4	35596,8
medical sciences	3 450.4	2 795.1	2 735.4	2,277.9	3 278.3	2207,7
agricultural sciences	5,628.1	7 331.7	7602.4	6884.6	6528.0	7953,5
social sciencies	2857.1	1486.2	850,5	1072.2	1 650,8	1586,9
humanitarian sciences	3437.6	4313.5	3 162.1	2 675.8	3539.4	3795,8

In 2018 costs on R&D compared to previous year increased on 3.4% . At the same time, the share of costs for applied research in total amount was 59.4%**,** on experimental-constructive designs – 24.9%**,** on basic research – 15.7%.

The priority direction of R&D financing in 2018 was research in engineering and technologies whose share in total internal costs of R&D compiled 45.6%. Costs research in field of natural sciences accounted for 32.6% , in field of agricultural sciences – 9.5%, humanities – 5.1%, health care – 4.8%, social – 2.4%.

One of the most important indicators, the value of which characterizes the region's involvement in innovation processes, is the share of enterprises that carried out innovation activity in their total number.

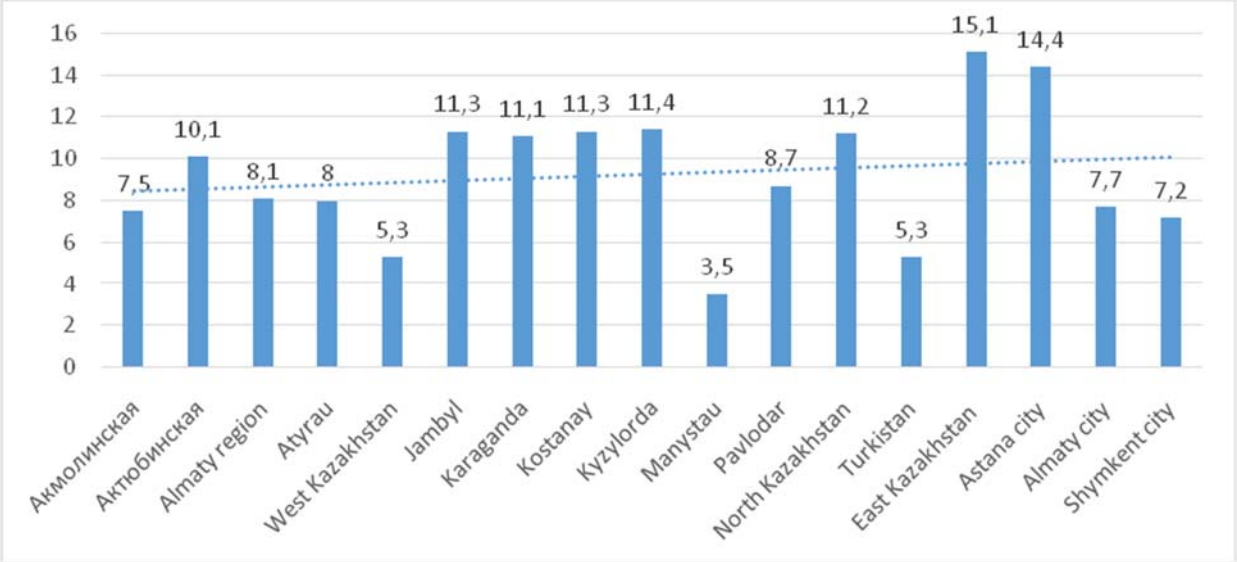

Figure 3 – The level of innovative activity of enterprises for all types of innovations

A comparative analysis by region showed that 8 of them exceeding the average national level of innovation activity (EKR - 2017 - 15.1%, 2016 - 11.5%) the region came in first place ahead of Astana (14.4%), followed by Kyzylorda and Kostanay regions. The smallest share of innovative - active enterprises is occupied by Mangystau (3.5%), West -Kazakhstan and Turkestan regions (5.3%). The reason for this situation is the raw material orientation of individual regions.

The study showed that the concentration of the bulk of the investment projects in several major cities has led to regional imbalances. In order to eliminate these disparities state creates conditions for increasing the investment attractiveness and economic development of the newly region where level of innovative activity is low. In the regions, regional programs have been developed taking into account the competitive advantages of the regions.

The regions are faced with the task of concentrating state support measures on priority sectors of the economy and key diversification projects, creating their own special economic zones (SEZ) and industrial zones (IZ), developing an investment policy concept, forming an investment portfolio and doing specific work with specific partners. One of the reserves for production growth is the resuscitation of idle facilities, their modernization, and assistance in obtaining various government support measures.

Despite the positive dynamics of individual indicators, the level of innovative development of Kazakhstan still lags behind the countries of Europe: Switzerland, Sweden, the Netherlands, which are leaders in their region. European countries are strong in terms of human capital, research, infrastructure and business development on the share of highly qualified specialists in total employment, cooperation of university and industry research structures, the number of patent applications and scientific and technical articles and the quality of scientific publications.

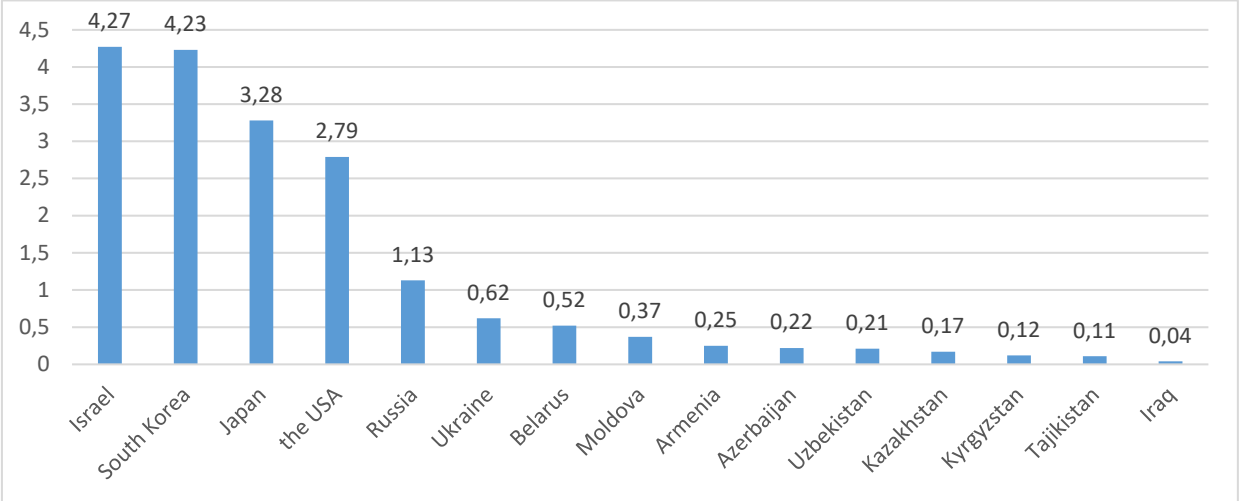

Figure 4 – Expenditures of the world on R&D, % of GDP

According to the latest UNESCO ranking for 2015, among 74 countries of the world, Israel spends the largest share of its GDP on R & D – 4.27%, which is a leader in this indicator in last years. South Korea is next – 4.23%, and then goes Japan – 3.28%, Sweden – 3.26% and Austria – 3.07%.

Kazakhstan is located in bottom of the list – on 63rd place with 0.17% (in 2017 – 0.14%). Uzbekistan is above us with an indicator 0.21%, slightly lower Kyrgyzstan – 0.12% gdp [6].

Based on foreign experience, it is clear that in no country in the world has the innovation system been formed by the market, by the private sector on its own. In all countries, to enhance the competitiveness of the national economy, the state plays a leading role on the basis of a systematic approach in creating an innovative economy with a social bias. From 2020, the implementation of the 3rd program of industrial-innovative development will begin, which will follow the following principles: continuity of industrial-innovative policy; support for efficient manufacturers; the development of the "economy of simple things"; conjunction of industrial-innovative and spatial development; Synergy of industrial-innovative development and digital technologies [7].

World experience indicates the need to decentralize financial support for the business sector. In the context of the implementation of the program, it is important to enable regions to participate in the formation of regional innovation policy and the financing of small and medium-sized business projects. In this regard, the share of funding from the regional budget to support the activities of the innovation infrastructure and promising innovative projects by 2020 should increase significantly. A special place among the sources of financial support for innovative projects in the entrepreneurial sector is taken by venture financing [8].

The study of the innovation economic space showed that most of the domestic patents and inventions are unknown for the manufacturing sector, and their own research organizations, as a rule, are not conducted due to the lack of venture capital funds and specialists of the required level of qualification,

which certainly does not contribute to timely materialization of opportunities for the formation of innovative management technologies and a new culture of production and processing of products .

This is especially true for domestic agriculture, which is characterized by the presence of a large number of scattered small farms less able to perceive innovation. Therefore, the innovative direction of entrepreneurship development in the agrosphere can be the consolidation of enterprises by their merger or merger. But in the context of globalization and integration in the agricultural production of the regions of our country, it is necessary that innovative activities be based on the ideal tax system, state and market participation in innovative processes, ensuring openness and transparency of development institutions, as well as taking into account the peculiarities of social and economic development, natural conditions, seasonality of production and traditions of the regions [9].

Thus, on the basis of the analysis performed, it can be concluded that the potential of enterprises in the innovation sphere has not yet been fully realized. Its implementation is hampered by numerous institutional factors peculiar to Kazakhstan, which create a significant number of barriers to the development of innovative business, most of which are serious and cannot be significantly weakened in the short term. At the same time, most of the identified constraining factors lie outside the sphere of influence of innovative enterprises, which makes the question of their support from the state paramount. However, it should be noted the emergence of the state favourable environment for the development of innovative business.

Ж. А. Абылкасимова[1], Г. А. Орынбекова[2], М. М. Алибаева[1], О. П. Осадчая[3]

[1]Государственный университет им. Шакарима, Семей, Қазақстан;
[2]Университет «Туран-Астана», Астана, Қазақстан;
[3]Рубцовск индустриалдық институты (филиал) «И. И. Ползунов атындағы АлтМТУ» ФМБЖББМ, Ресей

ҚАЗАҚСТАН КӘСІПОРЫНДАРЫНЫҢ ИННОВАЦИЯЛЫҚ ҚЫЗМЕТІН ТАЛДАУ

Мақалада Қазақстан өңірлері кәсіпорындарының инновациялық әлеуетін дамыту қосылған құны жоғары тауарлар өндірілетін инновациялық экономиканың өтуіне ықпал ететіні атап өтілді. Алайда технологиялық және әлеуметтік өзгерістердің орын алуы шаруашылық жүргізуші субъектілер қызметінің табыстылығын анықтайтын тиімді инновациялық әлеует болған жағдайда ғана мүмкін болады. Бұл ретте инновация таңдалған саладағы үрдістерге сәйкес келуі және экономикалық сұранысқа ие болуы тиіс. Қазақстан өңірлерінің инновациялық белсенділігін зерттеу инновацияға тартылған ресурстардың артуының оң үрдісін көрсетті.

Мақалада өңірлердің инновациялық белсенділігіне әсер ететін факторлар зерттелді, инновациялық қызметтің серпіні қарастырылды және инновациялық кәсіпкерлікті дамытудың проблемалары мен құралдары анықталды. Қабылданып жатқан шараларға қарамастан, Қазақстан өңірлеріндегі инновациялық қызмет қалыптасу сатысында тұр, бұл әлемнің жетекші елдері арасындағы алшақтықпен түсіндіріледі. Жүргізілген талдау негізінде авторлар инновациялық саладағы кәсіпорындардың әлеуеті әлі толық іске асырылмаған деген қорытынды жасайды. Мұндай жағдайдың себебі жекелеген өңірлердің шикізаттық бағдарлануымен байланысты болып келеді. Бірнеше ірі қалаларда инвестициялық жобалардың басым бөлігін шоғырландыру өңірлік теңгерімсіздіктерге алып келді. Осы айырмашылықтарды жою үшін мемлекет инновациялық белсенділік деңгейі төмен болып келетін жаңа өңірдің инвестициялық тартымдылығын және экономикалық дамуын арттыру үшін жағдай жасайды. Өңірлерде өңірлік бағдарламалар өңірлердің бәсекелестік артықшылықтарын ескере отырып әзірленеді. Оны іске асыруға инновациялық бизнесті дамыту үшін кедергілердің едәуір санын құрайтын Қазақстанға тән көптеген институционалдық факторлар кедергі келтіреді, олардың көпшілігі елеулі болып табылады және қысқа мерзімді перспективада айтарлықтай әлсіремейді. Сонымен қатар анықталған тежеуші факторлардың көпшілігі инновациялық кәсіпорындардың ықпал ету саласынан тыс жатыр, бұл мемлекет тарапынан оларды қолдау туралы мәселені бірінші кезекке қояды. Әлемдік тәжірибе бизнес-секторды қаржылық қолдауды орталықсыздандыру қажеттігін куәландырады. Бағдарламаны

іске асыру аясында өңірлерге өңірлік инновациялық саясатты қалыптастыруға және шағын және орта бизнес жобаларын қаржыландыруға қатысуға мүмкіндік беру маңызды.

Түйін сөздер: инновациялар, инновациялық белсенділік, өңір, индустрияландыру, адами әлеует, инфрақұрылым.

Ж. А. Абылкасимова[1], Г. А. Орынбекова[2], М. М. Алибаева[1], О. П. Осадчая[3]

[1]Государственный университет им. Шакарима, Семей, Казахстан;
[2]Университет «Туран-Астана», Астана, Казахстан;
[3]Рубцовский индустриальный институт (филиал) ФГБОУ ВО «АлтГТУ им. И. И. Ползунова», Россия

АНАЛИЗ ИННОВАЦИОННОЙ ДЕЯТЕЛЬНОСТИ ПРЕДПРИЯТИЙ КАЗАХСТАНА

Аннотация. В статье отмечено, что развитие инновационного потенциала предприятий регионов Казахстана способствует к переходу инновационной экономики, где будут производиться товары с высокой добавленной стоимостью. Однако технологические и социальные изменения возможны только при наличии эффективного инновационного потенциала, который определяет успешность деятельности субъектов хозяйствования. При этом инновация должна соответствовать тенденциям в выбранной области и быть экономически востребованной. Исследования инновационной активности регионов Казахстана показали положительную тенденцию увеличения ресурсов, вовлеченных в инновации.

В статье исследованы факторы, влияющие на инновационную активность регионов, рассмотрена динамика инновационной деятельности и выявлены проблемы и инструменты развития инновационного предпринимательства. Несмотря на принимаемые меры, инновационная деятельность в регионах Казахстана, находятся на стадии становления, чем объясняется разрыв между ведущими странами мира. На основании проведенного анализа авторы делают вывод, что потенциал предприятий в инновационной сфере еще не полностью реализован. Причиной такой ситуации является сырьевая ориентация отдельных регионов. Концентрация большей части инвестиционных проектов в нескольких крупных городах привела к региональным дисбалансам. Для устранения этих различий государство создает условия для повышения инвестиционной привлекательности и экономического развития нового региона, где уровень инновационной активности является низким. В регионах региональные программы разрабатываются с учетом конкурентных преимуществ регионов. Его реализации препятствуют многочисленные институциональные факторы, свойственные Казахстану, которые создают значительное количество барьеров для развития инновационного бизнеса, большинство из которых являются серьезными и не могут быть значительно ослаблены в кратко-срочной перспективе. В то же время большинство выявленных сдерживающих факторов лежат вне сферы влияния инновационных предприятий, что делает вопрос об их поддержке со стороны государства первостепенным. Мировой опыт свидетельствует о необходимости децентрализации финансовой поддержки бизнес-сектора. В контексте реализации программы важно дать возможность регионам участвовать в формировании региональной инновационной политики и финансировании проектов малого и среднего бизнеса.

Ключевые слова: инновации, инновационная активность, регион, индустриализация, человеческий потенциал, инфраструктура.

Information about authors:

Zhibek Abylkassimova, Ph.D, Head of the Department of Economics and Management, Shakarim State University of Semey, Kazakhstan; zhibekmm@mail.ru; https://orcid.org/0000-0001-6803-6075

Gulnar Orynbekova, Ph.D, associate professor of the department "Economics and Innovative Business", «Turan-Astana» University, Astana, Kazakhstan; gulnar_1669@mail.ru; https://orcid.org/0000-0003-4327-1954

Meirash Alibayeva, Ph.D, associate professor of the department "Economics and Management", Shakarim State University of Semey, Kazakhstan; meirasha@mail.ru; https://orcid.org/0000-0003-2584-6216

Olga Osadchaya, professor, Rubtsovsk industrial Institute (branch) Federal state budgetary educational institution of higher professional education "Altai state technical University named after I. I. Polzunov", Rubtsovsk , Russia; olga22766@yandex.ru; https://orcid.org/0000-0001-7086-091X

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