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Current state, factors and ways of innovative development of the Republic of Kazakhstan

Abstract. The article considers the main factors influencing the current state, trends of the innovative development of Kazakhstan. The authors have studied the various approaches to the innovative development models of foreign and domestic scientists presented a thorough evaluation of the global innovation index and its components, such as innovation, performance of innovation in different countries, including Kazakhstan institutional, legal and regulatory framework of innovative development of the country, the main indicators of innovative development of Kazakhstan in General, including domestic R&D expenditures, the share of domestic R&D expenditure of gross domestic product, the number of organizations engaged in R&D, research and development by types, sectors of activity the total number of personnel, including specialists researchers, doctors of science, doctors of profile, PhD, PhD in Economics, engaged in the implementation of R&D in terms of the equivalent of full employment, regions, performed SWOT analysis and proposed trends in innovative development in the Republic of Kazakhstan.

The structure, institutional base, the main innovative regions have been created such as Almaty, Nur-Sultan have been created, there are research staff, however, there are not enough funds for effective innovative development.

Key words: innovative development, innovation, R&D, law, research staff.

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Introduction. Current state of the global economy in terms of competitiveness, growth of production, an excess of finished products require an innovative approach to development to improve the quality, relevance of the products, potential use of new technologies and products of the sixth technological order, and in case of change of innovation development of economy, every state will face the phenomenon of economic and innovative slump, this is ultimately related to the globalization of innovative development of the national economy.

The importance of the innovation has been growing every year in economic development, it is the innovative potential and its implementation that ultimately ensure not only the competitiveness but also the economic independence of each country and this is true, the same applies to Kazakhstan.

Therefore, the improvement of innovative development is essential and relevant for Kazakhstan.

Purpose of this study is to research the condition and mechanisms of development prospects of innovative development of the Republic of Kazakhstan.

To achieve the purpose it is necessary to solve the following objectives:

1.to study the global competitiveness index in the field of innovation and the current state of innovation development in the Republic of Kazakhstan;

2.identify the problems of innovative development in the Republic of Kazakhstan;

3.to recommend ways of solving the problems of innovative development of Kazakhstan.

The scientific novelty of the results are as follows:

- assessment of the state of innovative development of Kazakhstan;
- recommendations for improving innovation development in Kazakhstan.

2.Literature review: Well-known scientists in the field of economic and innovative development paid attention to the issues of innovative development. Among foreign authors it is possible to allocate publications of the Russian scientists Degtyarenko V. Yu., Degtyarenko E. A. [1] consider the problems of innovative development of Russia, the factors influencing it, offer ways of development of innovations in the country.

In addition, foreign authors emphasize the important role of scientific models and methodologies for assessing innovative development.

A model – "triple helix" has been proposed by G. Itzkowitz and Professor of the University of Amsterdam L. Leydesdorf in 2000. It was clarified in 2007 at a conference in Singapore in the report of G. Itzkowitz and C. Zhou: "universities create ideas, the government forms a regulatory framework, business provides resources" [2], in a knowledge-based society, the interaction of universities with industry and government increases.

In addition, the state, apart from its traditional regulatory role, may act as a venture investor and public entrepreneur. [2]

Currently another model of the "fourth spiral", described by D. Campbell and Y. Karayan in 2009, is being developed abroad. This model, as the fourth element added to the triple helix model, considers the influence of different social strata of society on the innovation process [3].

Scientist economist Sofina T. N. [4] also suggests that for a dynamic and productive innovation process, all participants must be effectively interconnected for innovative development.

Moreover Morgunov E. V. emphasizes that the features inherent in the innovative development of individual countries are formed: the degree of participation of the state and the private sector in innovation processes; the ratio of large, medium and small businesses in innovation; the ratio of applied and fundamental research; organizational changes and changes in the management system [5].

A number of the authors emphasize the need to compile an index of global competitiveness and innovation.

Therefore, [6] the Author Salnikova V. A. believes that "the field of ICT has evolved at the present time in the main goal of technology development". The indicators are foreign direct investment in technology, the level of technology availability and ICT indicators (number of Internet users, broadband access to the network, the number of mobile subscribers).

WEF experts consider technological innovations to be the decisive factor of competitiveness. [7] as the main indicators, the authors of this methodology chose the quality of education, the cost of research, the number of scientists and engineers, data on intellectual property.

In general, the WEF experts took a detailed approach to the study of global competitiveness and for the first time divided the level of technological development of the economy and innovation potential.

Innovation development indices clearly illustrate only some aspects of a complex process. Quantitative characteristics of scientific and technical activities can only be multidimensional. [8]

Kazakhstani researchers F. Dnishev, A. Gabdulina note that the national innovation system is a set of not only economic entities, but also relations between them that pays special attention to the institutional aspects of its formation [9]. From their perspectives, the concept of innovative development focuses on the institutional context of innovation.

According to the Russian scientist A. Varshavsky, considering science as a primary element of national innovation development, believes that in the conditions of insufficient development of the sphere of research and development it is impossible to expect great results [10].

3. The methodology of the research consists in the use of such methods of scientific knowledge as statistical, comparative and historical analysis, measurement (qualitative and quantitative assessment), analysis and synthesis, induction and deduction allow to investigate changes in the relationship of innovative development.

4. Main part

Results: National innovation development can be summarized as follows: it is a set of different institutions, both public and private, which individually or in cooperation contribute to the creation and development of new technologies within a particular country. The content is based on the development, accumulation, transfer of new innovative scientific knowledge, intellectual potential in order to create competitive products and services.

In 2018, the index characterizing the innovative development of countries is the global innovation Index (Global Innovation Index – GII), calculated by the method of the international business school INSEAD (France) [8] Kazakhstan occupies 74th place, including 55th place in terms of innovative potential, and 91st place among 144 countries of the world according to the results of innovation.

To improve the international rating and the actual state of innovative development in Kazakhstan, to stimulate innovation and new technologies, a number of legislative acts were developed, approved and launched [11-18].

One of the important conditions in the formation and development of the industrial industry and the business sector is comprehensive support for innovation, were announced by the first President of the Republic of Kazakhstan in his Address to the people of Kazakhstan on January 31, 2017 in the framework of "The third modernization of Kazakhstan: global competitiveness" [17, 13]. The main operator [13] of the program was elected JSC "Science Foundation" [18] and started in 2016 as part of the commercialization of RNNTD projects. In 2017, this project was continued in the form of a competition, the purpose of the project was distributed to priority sectors of the country's economy due to the stimulation of sectors of the economy that do not correspond to the proper level of development.

The amount of the grant allocated for the implementation of one project amounted to 300 million KZT. The results of the competition are shown in Table 3. [18]

Table 2

Distribution of projects by legal status for 2017

№	Legal status of grantees	Total space		Grant amount	
		Total number	Number % of total share	KZT	% of the total share
1	Higher educational institutions	3	4,23	468 586 003,00	2,94
2	Research Institutes	25	35,21	4 430 378 747,00	27,77
3	Private partners	15	21,13	3 828 740 291	24,00
4	Newly created startup companies	11	15,49	2 850 311 192,00	17,87
5	Research and production enterprises	17	23,94	4 376 543 390,00	27,43
Total:		71	100	15 954 559 623	100
Note: Compiled by the author based on source data [18]					

As you can see from the Table 2, according to the results of the 2017 Competition, 71 projects totaling 15.9 billion KZT are in implementation. Of these projects, 61 projects have co-financing from business entities in the amount of 2.1 billion KZT, and 11 startup companies were

formed to implement the projects. [18] in October 2016, Nazarbayev University launched the "ABCQuickStart" program to support startups.

For 2019 in the sphere of innovative infrastructure it is possible to allocate:

1. Innovation cluster "Astana Business Campus"

2. Program "ABCQuickStart" to support Start-up ideas on the basis of Nazarbayev University.

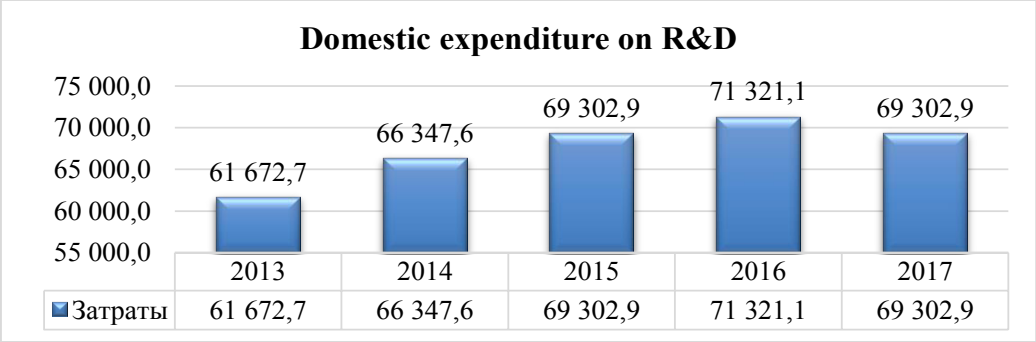
Innovation cluster "Astana Business Campus" is differentiated by several fragments:

1. The office of commercialization;
2. Business incubator;
3. Experimental shop;
4. Pilot industrial Park.

In the period from 2013 to 2017, 17 projects were financed:

• 7 projects-in the field of biomedical technologies;
• 4 projects - in information technology and robotics;
• 3 projects - in the field of energy-saving technologies;
• 3 projects - in the field of new materials.

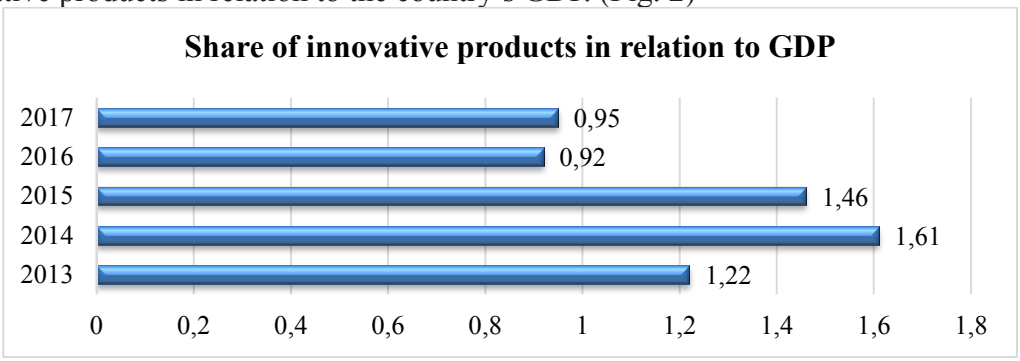
One of the factors that affects the sphere of innovation and the work of their quality is the internal costs of R&D. Growth financing implies the growth of the sphere and all its aspects, including population. Figure 1 shows the level of costs in the dynamics of 2013-2017.



Note-compiled by the author himself on the basis of source data [19]

Figure 1- Domestic R&D costs in Kazakhstan

In Figure 1 shows that in Kazakhstan own funds of scientific organizations are more than 3% of the budget. The interpretation indicates that among the population the demand for innovative products and activities is rising, then falling, and it confirms the following graph – the share of innovative products in relation to the country's GDP. (Fig. 2)



Note-compiled by the author on the basis of source data [19]

Figure 2. - Share of innovative products in relation to GDP

From the figure 2 it can be seen that in the dynamics of 5 years (2013-2017), the share of

innovative products in relation to GDP has a Jumpy nature. The largest figure was observed in 2014. It amounted to 1.61% of the total GDP of the country. The lowest in terms of value is in 2016. The difference between 2016 and 2017 is only 0.03%. On the one hand, this is bad, since there is no significant growth, but on the other hand, this is the first sign of growth in demand for innovative products among the population of the country.

Thus, this is confirmed by the Minister of MoES of Kazakhstan A. Aimagambetov, who confirms that funds for science are allocated very little. However, before increasing funding, it is necessary to build effective mechanisms for the development of budget money in the industry. "We talk a lot about the fact that today spending on science does not exceed in 2019 - 0.12% of GDP - it is disastrously small..."[20].

The above indicator was also reflected in the personnel factor of innovative development, i.e. the number of people employed in the field of R&D, shown in Table 3.

Table 3

Total number of the country and the number of people employed in the field of R&D and their specific weight

Country/Period	2013	2014	2015	2016	2017	Deviations 2017/2013	
						+/-	%
The number of people, who employed in the field of R&D							
Kazakhstan, people	23 712	25 793	24 735	22 985	22 081	-1 631,00	-6,87837382
Total population of the country							
Kazakhstan, people	16 934 562	17 231 341	17 423 231	17 732 231	17 987 341	1052 779,00	6,216747738
Share of employed in R&D of the total population of the country							
Kazakhstan, people	14,0%	15,0%	4,2%	3,0%	2,3%	-0,02	-12,3286787
Note-compiled by the author on the basis of sources [19]							

Table 3 shows that the total population of the countries is growing, but the number of people engaged in R & d in Kazakhstan is falling.

As you can see from the table 3, it is possible to observe not stable dynamics of employed number of workers in the Republic of Kazakhstan. This is explained by the fact that in Kazakhstan, the growth in the number of employees in the field of R & d is not observed, namely: the annual decline associated with the annual decrease in funds allocated for R & d.

Table 4 shows the number of research staff by region.

Table 4

Number of research staff by region, people

	2013		2014		2015		2016		2017		Deviations 2017/2013	
	Number	%	Number	%	Number	%	Number	%	Number	%	+/-	%
Republic of Kazakhstan	23 712	100	25 793	100	24 735	100	22 985	100	22 081	100	-1 631,00	-6,88
Akmola region	992	4,184	1 054	4	802	3,242	652	2,837	678	3,071	-314,00	-31,65

Aktobe region	282	1,189	356	1	335	1,354	323	1,405	362	1,639	80,00	28,37
Almaty region	826	3,483	901	3	1 049	4,241	983	4,277	968	4,384	142,00	17,19
Atyrau	400	1,687	398	2	462	1,868	400	1,74	474	2,147	74,00	18,50
East Kazakhstan Region	2 269	9,569	2 377	9	2 303	9,311	2 205	9,593	2 325	10,53	56,00	2,47
Zhambyl	278	1,172	368	1	318	1,286	327	1,423	377	1,707	99,00	35,61
West Kazakhstan	600	2,53	425	2	540	2,183	756	3,289	323	1,463	-277,00	-46,17
Karaganda region	1 387	5,849	1 631	6	1 708	6,905	1 458	6,343	1 360	6,159	-27,00	-1,95
Kostanay	518	2,185	565	2	574	2,321	556	2,419	569	2,577	51,00	9,85
Kyzylorda region	205	0,865	253	1	236	0,954	228	0,992	229	1,037	24,00	11,71
Mangistau	590	2,488	583	2	648	2,62	700	3,045	696	3,152	106,00	17,97
Pavlodar	774	3,264	809	3	716	2,895	693	3,015	654	2,962	-120,00	-15,50
North Kazakhstan	312	1,316	229	1	182	0,736	135	0,587	93	0,421	-219,00	-70,19
South Kazakhstan Region.	1 466	6,183	1 359	5	1 356	5,482	1 088	4,734	1 090	4,936	-376,00	-25,65
Nur-Sultan	3 159	13,32	3 391	13	3 001	12,13	2 939	12,79	3 062	13,87	-97,00	-3,07
Almaty	9 654	40,71	11 094	43	10 505	42,47	9 542	41,51	8 821	39,95	-833,00	-8,63
Note-compiled by the author on the basis of sources [19]												

According to the table 4, it can be seen that Almaty is still the main scientific center of Kazakhstan. The number of employees of NIS Almaty in 2017 was 8.8 thousand people - about 40% of all scientists in Kazakhstan.

The next largest number of researchers in Kazakhstan was Astana, where the share of R & d workers in the total number of researchers was about 14% in 2017. Next are East Kazakhstan region-11%, Karaganda – 6%, South Kazakhstan region-5% and Almaty region-4%.

It should also be noted that the average number of faculty members for three years (2015-2017) amounted to 38180 people. The average number of specialists-researchers for three years in Kazakhstan amounted to 17693 people.

The next factor characterizing innovative development is the activity of scientific publications of scientists. Thus, the number of publications for the period 2015-2017, publications, publications per 1000 people for 2017, publications and scientific publications per 1 person employed in the field of R&D for 1 year are given in Table 5.

Table 5

Activity Indicators of scientific publications

Country	Total number for the period 2015-2017, people	Number of publications for the period 2015-2017, publications	Number of publications per 1000 people for 2017, publications	Number of scientific publications per 1 person engaged in R&D for 1 year
Kazakhstan	55 873	6 850	123	2,7
Note-compiled by the author on the basis of sources [18]				

According to the table 5, in the dynamics of 2015-2017, according to InCites, the number of Kazakhstani articles amounted to 6850 units. [18] the Indicator of the number of publications per 1000 people for 2017, proved that even with a huge quantitative predominance, quality in Kazakhstan, this indicator is 123 publications.

Assessment of innovative development can not be complete without intellectual potential as an important factor of innovative development, which can include the issuance of security documents-various patents, trademarks, presented in tables 6-8.

Table 6

Dynamics of patent issuance in Kazakhstan, units

Title of protection	2013	2014	2015	2016	2017	1993-2017
1.Patents granted, total	1500	1504	1504	1011	869	36045
1.1.Provisional patent	-	-	-	-	-	15840
1.2.Patents	199	203	250	331	638	5877
1.3.Innovative patents	1120	1091	1084	476	12	9083
1.4. Issuance of utility model patents	98	92	102	490	532	1314
1.5. Patents for breeding achievements	122	6	88	115	80	501
2.Trademark registration	11248	1835	2038	2087	2418	9626
Note-compiled by the author on the basis of sources [21						

Based on the table 6, it can be seen that security documents decreased in 2017, including innovative patents amounted to 12 units, total for the period of independence of these patents-9083 units. Trademark registration is growing, so in 2017 it amounted to 2418 units, in General for the period from 1993 to 2017-9626 units.

Table 7

Dynamics of issuance of protection documents for industrial designs in Kazakhstan, in units

Title of protection	2013	2014	2015	2016	2017	1993-2017
Issued, total	280	282	282	182	129	3138
From them:						
National applicants	148	92	94	72	42	1590
Foreign applicant	132	190	188	110	87	1548

Note-compiled by the author on the basis of sources [21]

In Table 7 shows that the number of issued industrial designs is decreasing from year to year, for example, 148 units were issued to national applicants in 2013, 42 units in 2017, in General, from 1993 to 2017, 3138 units were issued protection documents for industrial designs.

Table 8 shows the final quantitative and qualitative indicators.

Table 8

Assessment of indicators of innovative development of Kazakhstan

Indicator	Kazakhstan
Share of domestic R & d expenditures in GDP for 2017, %	0,129
Share of employed in R & d of the total population of the country in 2017, %	12,3%
Total number for the period 2015-2017, people	55 873
Number of publications for the period 2015-2017, publications	6 850
Number of publications per 1000 people in 2017, publications	123
Number of scientific publications per 1 person in 2017 engaged in R & d, publications	2,7
Share of innovative products in relation to GDP for 2017, %	1,59
Domestic R & d expenditures by type of financing for 2017, including:	
budget funds	44,51%
own funds	47,42%
other funds	5,41%
funds from foreign sources	2,66%
Innovative patents for the period from 2015-2017, in units	1572
Industrial designs for the period from 2015-2017, in units	3138
Registration of trademarks, in units	9626
Note-compiled by the author himself	

One of the main priorities of the state over the past 26 years of Independence was innovative development. By means of the summary analysis (table 8), it is possible to reveal what strengths and weaknesses are at Kazakhstan for the last years of formation.

Table 9

SWOT analysis of innovative development in the Republic of Kazakhstan

Strengths	Weaknesses
1. Strategic orientation of the national innovation policy	1.There are certain shortcomings in the developed strategic programs.

2.Adequate enough response of the state policy to the revealed problems, correction of « failures of the market»	2. Imperfection of the legislative framework, «failures of the state».
3. Wide involvement of foreign experience and expertise	3. Weak state policy in the field of antitrust regulation and competition.
4. Using a priority-oriented approach to the implementation of innovation policy	4. Absence or inaccuracy of some fundamental concepts in legislative acts.
5. Focusing on the development of large national corporations that determine the availability of key innovations.	5. The use of a unified program-target principle for all types of scientific research.
6. Focus on significantly increasing the share of research and development costs and optimizing the structure of R & d expenditures.	6.There is no sufficient favorable investment climate to attract foreign investors.
7. Creation of the Higher scientific and technical Commission, which plays a leading role in the management of the scientific and technical sphere of the Republic of Kazakhstan	7. Imperfection of mechanisms of indirect regulation of innovation activity of the private sector, including imperfection of tax legislation.
Opportunities	Threats
1. Increase of transit opportunities of Kazakhstan in the Eastern direction (TRACECA project)	1. The activity of businesses that do not want to take risks and try to save capital until «better times»has sharply decreased.
2. Increasing opportunities for agricultural development in the context of the economic crisis and rising food prices.	2. Decrease in investment activity due to the withdrawal of foreign investors money from the economies of developing countries.
3. Formed innovative development of Kazakhstan with the correct scientific, technical and innovation policy of the state and the revival of the economy.	3. The unfolding of a strong struggle for international markets.
4. Development of integration processes between Kazakhstan and foreign countries, allowing to implement large projects	4. The intense interest of the country's leaders in the economic impact of the development of «breakthrough» technologies somewhat pushes the importance of more effective use of existing technologies to the background.
5. The presence of both formal and informal ties between Kazakh scientists, researchers and foreign (primarily Russian).	5. The selection of international experts should be done with great care, ensuring that they are not only experienced in the area of their interests, but also understand the real situation in Kazakhstan.
6. High level of public attention to innovation processes	6. Over the next years, due to the limitations of its own scientific developments, Kazakhstan will have no choice but to rely mainly on foreign technologies.
Note-compiled by the author	

Discussion: Nowadays, the competitiveness of the country, its economy and social sphere largely depend on innovative progress and the introduction of modern technologies. The analysis of the processes of innovative development in the Republic of Kazakhstan and innovation development showed that the processes of its formation through the active use of numerous tools of administrative and economic nature are carried out, regulated directly by the state, which are not effective enough.

Furthermore, the analysis revealed the problems that are inherent in each innovation system of the country:

- the structure and institutional framework have been created, but institutional reconstruction in the field of innovation is required;

-the main innovative regions, Almaty, Kazakhstan, Nur Sultan;

lack of enhanced control over innovation activities;

- weak support for innovation, not enough funds for effective innovation development;
- there is no provision of a sufficiently favorable investment climate;
- low level of innovative activity of business;
- has the scientific staff, poor funding of research and development.
- the share of domestic R & d expenditures from GDP in Kazakhstan a large degree of R&D funding comes from the own funds of scientific organizations, as well as from the country's budget (the ratio of 6 to 4 towards own funds);
- the share of the population engaged in R&D in relation to the total number is steadily falling;
- the number of scientific publications in the dynamics of 3 years (2015-2017) in qualitative terms, according to InCities, the number of publications per 1000 people in Kazakhstan is 123 publications;
- the share of innovative products in relation to GDP for 2017 in Kazakhstan is 1.59%, in 2019 - 0.12… This suggests that the demand for innovative products is growing in the domestic market of the country and it also confirms that funding in Kazakhstan comes not only from the budget, but also from its own scientific organizations;
- internal costs by types of financing suggests that Kazakhstan has its own funds of scientific organizations, so the demand in the domestic market is observed not only from the state, but also from the population.

Conclusions and suggestions: in innovative development when solving problems in the field of innovation, so it is necessary to improve the following ways:

1. Development of clear goals and objectives of innovation policy. The solution of this problem will entail the elimination of institutional traps existing in the economy of modern countries, and will also create some conditions for regulating and mitigating the turbulence of the country's economy.

2. Commercialization of the country's research potential. To date, the budget financing of innovation in Kazakhstan is 45%. This leads to the conclusion that not only the state, but also the population of the country should be interested in the development of innovation.

3. Develop links between small and medium-sized knowledge-intensive organizations, as well as between large national and international companies. This direction will lead to an increase in high-tech products and will allow to integrate into the global trading platform without hesitation.

4. Improve the business climate. The presence of monopolies in the economy indicates the lack of free competition, and therefore the lack of opportunities in the field of innovation.

5. Implementation of the incentive system. In the motivation system-encouragement and praise, one of the most important and effective ways to motivate potential economic agents. The incentive system can be implemented in the form of a bonus system, which is converted into a General rating among entrepreneurs and other industries. The use of bonuses and exchange for tangible and intangible benefits is an incentive for the population to engage in innovative activities.

6. Introduction of benefits for innovative products. Benefits can be implemented at all stages of implementation of innovative projects. Tax relief, assistance and mentoring in obtaining a license or patent, etc.

7. The introduction of the special certificates of product innovation.

Only the implementation of the above recommendations and ways will increase the innovative development of Kazakhstan

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Қазақстан Республикасының инновациялық дамуының қазіргі жағдайы, факторлары және жолдары

Аңдатпа. Мақала Қазақстанның инновациялық дамуының қазіргі жағдайына, үрдістеріне әсер ететін негізгі факторларды қарастырады. Авторлар шетелдік және отандық ғалымдардың инновациялық дамуының түрлі тәсілдерін, модельдерін зерттеді, инновациялардың жаһандық индексін және оның инновациялық әлеует, түрлі елдерде, оның ішінде, Қазақстанда инновацияларды жүзеге асырудың нәтижелілігі сияқты құрауыштарын терең бағалау ұсынылған, елдің инновациялық дамуының институционалдық, нормативтік-құқықтық базасы, ҒЗТКЖ-ға ішкі шығындарды қоса алғанда, тұтастай ҚР инновациялық дамуының негізгі индикаторлары, жалпы ішкі өнімнен ҒЗТКЖ-ға ішкі шығындардың үлесі ҒЗТКЖ-ны жүзеге асырған ұйымдардың саны, қызмет түрлері, секторлары бойынша зерттеулер мен әзірлемелер персоналдың жалпы саны, оның ішінде, мамандар зерттеушілер, ғылым докторлары, бейіні бойынша доктор, PhD философия докторлары, толық жұмыспен қамту эквивалентіне қайта есептегенде ҒЗТКЖ орындаумен айналысатын экономика ғылымдарының кандидаттары SWOT талдау орындалды және Қазақстан Республикасындағы инновациялық даму үрдістері ұсынылды.

Алматы қаласының құрылымы, институционалдық базасы, негізгі инновациялық аймақтары, ғылыми қызметкерлер бар, бірақ тиімді инновациялық даму үшін қаражат жеткіліксіз.

Түйін сөздер: инновациялық даму, инновация, ҒЗТКЖ, заң, ғылыми қызметкерлер, қаржыландыру.

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Аннотация. В статье рассматриваются основные факторы, влияющие на современное состояние, тенденции инновационного развития Казахстана. Авторы изучили различные подходы, модели инновационного развития, разработанные зарубежными и отечественными учеными, представлена глубокая оценка глобального индекса инноваций и его составляющих, таких как инновационный потенциал, результативность осуществления инноваций в различных странах, в том числе Казахстане, представлены институциональная, нормативно-правовая база инновационного развития страны, основные индикаторы инновационного развития РК в целом, включая внутренние затраты на НИОКР, долю внутренних затрат на НИОКР от валового внутреннего продукта количество организаций, осуществлявших НИОКР, исследования и разработки по типам, секторам деятельности, общую численность персонала, из них специалистов исследователей, докторов наук, докторов по профилю, докторов философии PhD, кандидатов экономических наук, занятых выпол-

нением НИОКР в пересчете на эквивалент полной занятости, регионам, выполнен SWOT анализ и предложены тенденции инновационного развития в Республике Казахстан.

Созданы структура, институциональная база, основные инновационные регионы Алматы, Нур-Султан, имеется научный персонал, но недостаточно средств для эффективного инновационного развития.

Ключевые слова: инновационное развитие, инновация, НИОКР, закон, научный персонал, финансирование.

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