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Evaluation of Mechanisms' Effectiveness of State Regulation of Innovative Activity

Abstract

Main problem: Rapidly changing trends in development of economies of countries require a rational approach to state regulation of innovative activity and investments directed to organization of real sector of the economy. At the same time, for analysis of modern state policy in the system of innovative development, it is necessary to assess the effectiveness of state regulation mechanisms of innovative activity in the economy of the Republic of Kazakhstan.

Purpose: to assess mechanisms of state regulation of innovative activity in the Republic of Kazakhstan in the global competitiveness system.

Methods: synthesis, content analysis, accommodation, monographic method, factor analysis, economic and statistical research method.

Results and their significance: The assessment of the mechanisms of state regulation of innovative activity in the Republic of Kazakhstan in the global competitiveness system allowed to fully assess effectiveness of mechanisms of state regulation of innovative activity in the economy. Examining the sub-indices of international rating of the World Economic Forum for 2021-2022 in relation to 2017-2018, the authors came to conclusion that in Kazakhstan today there is the decrease in all the sub-indices of rating and their factors ("basic requirements" and "business complexity"), with exception of "innovation" sub-index. This sub-index was significantly reduced due to a sharp deterioration in macroeconomic environment, which is directly related, according to the authors, to significant losses in oil export revenues. This, in turn, affected the deterioration of the state budget indicators. The article pays special attention to place and role of state regulation of innovative activity in the socio-economic policy of the country. Organizational and methodological problems in development and implementation of innovative policy in the Republic of Kazakhstan are researched in detail, which makes it necessary to solve them in order to achieve the effectiveness of innovative policy at the regional and national levels.

Keywords: system of expert assessments, innovative activity, methodology of the Global Competitiveness Index of the World Economic Forum, world competitiveness system.

Introduction

Rapidly changing trends in the development of economies require a rational approach to the state regulation of innovation and investment directed to the organization of the real sector of the economy.

For the analysis of modern state policy in the system of innovative development, it is fully necessary to assess the effectiveness of mechanisms of state regulation of innovative activity in the economy of the Republic of Kazakhstan in the world system of competitiveness.

Assessment of the mechanisms of state regulation of innovative activity in the Republic of Kazakhstan in the global system of competitiveness allow fully assess the effectiveness of state regulation mechanisms of innovative activity in the economy.

For this purpose, it is possible to use the expert assessment system, which is realized as method of the Global Competitiveness Index of the World Economic Forum (further GCI WEF).

Materials and methods

The authors investigate the ranking of WEF in economy of the Republic of Kazakhstan, in particular, assessment of the carrying out of innovative activity in the country. In accordance to the WEF, competitiveness is the set of factors that determine the level of labor productivity in separate countries and, thereby, the level of the country's development level that is possible to achieve in the economy [1].

The most competitive is the economy, which is growing faster both in the medium and long term.

In recent years, the state has realized certain systemic measures to form the innovative system in a full-fledged form and supported a number of initiatives in this sphere.

Within a relatively short period of time, a number of these measures have been realized, certain positive results have been achieved, which is reflected in the increase of main indicators of realization of innovative activity according to the assessment of the WEF (table 1).

In the rating of the WEF for 2021-2022, the Republic of Kazakhstan has 57th place, having reduced by seven positions in comparison with 2017-2018. Throughout 2017-2022, the positions of the Republic of Kazakhstan were relatively stable. Moreover, according to the results of the 2019-2020 rating, Kazakhstan made a breakthrough and reached the 42nd place, raising its rating by 8 points compared to 2014. It should be noted that this result is the best in the history of participation of the Republic of Kazakhstan in the rating of the WEF.

Table 1 - Current positions of Kazakhstan in the rating of the WEF

Indicators of the Republic of Kazakhstan in the rating of the WEF	2017- 2018	2018- 2019	2019- 2020	2020- 2021	2021- 2022	Deviation to 2012-2013, positions, +/-
Number of countries in the WEF ranking	148	144	140	138	137	-
General Global Competitiveness Index	50	50	42	53	57	-7
Subindices:						
Basic requirements	48	51	46	62	69	-21
Effectiveness factors	53	48	45	50	56	-3
Factors of innovative development, including:	87	89	78	76	95	-8
Business sophistication	94	91	79	97	108	-14
Innovation	84	85	72	59	84	-
Note – Compiled by the authors based on sources [2,3,4,5,6]						

However, in 2021-2022, according to the rating results, the Republic of Kazakhstan had 57th place, having decreased by 4 positions in comparison with the previous period.

Considering the subindices of the rating in relation to 2013-2014, it can be noted that in Kazakhstan today there is the decrease in all subindices of the rating and their factors ("Basic requirements" and "business sophistication"), except for the "Innovation" subindex.

This subindices were significantly decreased due to sharp deterioration in the macroeconomic environment, which is directly related, in opinion of the authors, to significant losses in revenues from the export of oil, which affected the deterioration of the state budget's indicators.

The rating is based on 12 factors that are institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, goods market efficiency, labor market efficiency, financial market development, technological readiness, market size, business sophistication, innovation.

It was outlined that Kazakhstan has achieved improvement in indicators such as health and primary education, higher education and training, technological readiness and market size.

Thus, on the factor "Health and primary education" the position of Kazakhstan has improved from 94th to 59th place mainly due to the improvement of statistics on primary education coverage. According to the factor "Higher education and training" Kazakhstan's position increased from 57th to 56th place. Eight Kazakhstan universities entered the ranking of the best universities in the world QS (Quacquarelli Symonds World University Rankings), four of them are in the TOP 500.

At the same time, international rating agencies "Standard&Poors", "Moody's" and "Fitch" have assigned Kazakhstan a "stable" rating. Besides, there are slight declines in a number of indicators, which are directly related to the weakening of the macroeconomic environment and the development of the financial market.

In addition, in 2022, the ranking was led by the United States of America, which has held a leading position for the past five years. Following the USA are Singapore, Germany, Switzerland and Japan [7].

As noted in the 2022 GIK WEF report 2022, Kazakhstan took 59th place with an average score of 61,8 and remained in the same position as last year. Improvement occurred on 5 factors out of 12. The rating was downgraded by 4 factors and the positions remained unchanged by 3 factors. Of the 98 indicators, improvement occurred on 50 factors, there were no changes on 14 indicators.

In 2022 the Republic of Kazakhstan has taken the third place among all CIS countries, giving up only to Russia (43rd place), but at the same time, ahead of such countries as:

- Armenia (70th place);
- Georgia (65th place);
- Azerbaijan (69th place);
- Ukraine (83rd place);
- Moldova (88th place);
- Kyrgyz Republic (97th place);
- Tajikistan (102nd place).

At the same time, the countries such as Uzbekistan, Belarus and Turkmenistan didn't participate in the rating of the WEF in 2022.

According to the information provided by the GEF VEF in 2020-2021, the Republic of Kazakhstan has moved from the category of the transition group of countries that are driven by "production factors" and "management effectiveness" (group 1-2) to the higher-ranking group of countries that are located between countries, driving by "management effectiveness" and "innovations" (group 2-3).

The stages of development of the country are determined by the level of GDP per capita and the degree of conditionality of the country by the basic factors.

It should be noted that in Kazakhstan the structure of production largely consists of products from the extractive industry [8].

About 70 % of the total potential of industry and export is the oil and gas sector, which is proof of the country's direct dependence on raw materials and it doesn't provide opportunity to attribute the economy of the Republic of Kazakhstan to the group of countries that are on a higher development position.

At the same time, the total number of countries that participate in the rating of the WEF changes yearly.

In addition, according to the analysis, in obedience to the indicator such as "Patent activity", there is a worsening of positions in 2021-2022 compared to 2017-2018 (68th place, -1 position), and the negative trend for this indicator continues, starting from 2015 year.

At the same time, the formation and realization of innovations is one of the leading factors in the growth of the country's competitiveness [Foster, R. Innovation].

The indicator "PCT patent application / million populations" is also the indicator of efficiency throughout the system of development and research. The number of patents received by the country testifies to the scope of the performed scientific research, and also demonstrates their effectiveness.

However, the low ratings for this indicator in the "Innovation" factor demonstrate the insufficiently high level of technological development of the state, which underlines the country's growing dependence on foreign developments and technologies.

So, in 2020, China (38.1%) and the USA (20.4%) submitted the largest number of international patent applications through the World Intellectual Property Organization (further WIPO) at the United Nations (further UN).

This, according to WIPO data, is the seventh record in the conditions of WIPO's overall increase in managed global systems in the protection of intellectual property (further IP). Then it is followed Japan - 11.0 %, South Korea - 7.4% and the European Union - 5.5 % (European Patent Office).

In 2020-2021 the distribution on developed clusters is deteriorating in comparison with 2020-2021 year (119th place, -4 positions).

Results

The deterioration in the state of cluster development indicator by 4 positions in the factor "Business sophistication" in comparison with the previous period indicates that the system-wide measures in this area aren't being used effectively enough, including, improving legislative measures

in the business environment, solution of problems of staffing and creating infrastructure elements, realizing specific investment projects.

Even in comparison with 2017-2018, this indicator decreased by 9 points, which indicates the need to take the necessary measures in this direction.

Because there is no single model for establishing the necessary and rational structure of organized cluster, extensive and complete research of cluster complexes is necessary. Many cities and territories have created their own strategies for cluster development.

Typical for all these clusters was the fact that their functioning was organized on base of partnership positions and focused on the commercialization of research-scientific works and innovative component in order to achieve success in global competitiveness [9; 115].

In this regard, it is possible to emphasize the significant configurations in the state innovative policy:

- direct budgetary assistance in the creation and commercialization of new technologies;
- indirect assistance in the form of tax policy and administrative regulation;
- investment in the education system;
- assistance to the significant factors of the economic infrastructure that are necessary for the rapid promotion of innovations;
- stimulating interaction between research institutes and the industrial sector through simplifying the administrative regulation of innovative programs.

Thus, in most countries of the world last time active process for the formation of clusters has taken place.

Cluster approaches allow considering as a "point of growth" of the region not a single enterprise, but the whole set of interconnected enterprises [10]. Enterprises that are members of the cluster have the opportunity to work together and effectively use human, financial and other resources.

Thus, owing to the cluster it is generated a certain synergistic effect, as a result of which the cluster potential exceeds the sum of all the potentials of the elements entering into it.

In the Republic of Kazakhstan, in our opinion, the formation of cluster is aimed at creating the necessary conditions for the development of competitive production in the non-raw materials sector of the economy.

In 1992-2016 in the Republic of Kazakhstan, The National Institute of Intellectual Property (further NIIP) issued more than 30 thousand documents protecting the right of IP.

National inventions include technologies in construction, metallurgy and pharmacology. In addition, over the last period, Kazakh scientists are increasingly beginning to work in the field of software and microelectronics .

However, for a number of characteristics, NIS of Kazakhstan lags behind innovative systems in foreign countries.

In general, based on the considered indicators, the following main differences between NIS of Kazakhstan and NIS of developed countries can be noted. For 2017-2022 in Kazakhstan, the total increase in issued protection documents for IP objects, according to the NIIS data, was 43.3%.

At the same time, the main share of registered objects is trademarks (84.2 % in 2020). It should be noted that high activity among foreign applicants has been maintained for the last five years (70 % in 2021).

Despite the increase in the Republic of Kazakhstan of issued protection documents in recent periods, the receipt of patents for inventions, copyright protection today is one of the most actual problems for the science of Kazakhstan. Only insignificant part of patents in Kazakhstan is approved in the patent offices of the USA, Japan, as well as the European Patent Office. In opinion of the authors, the main problem is the discrepancy of applications to the principles of novelty.

So, many developments, priority at the international level 3-5 years ago, have lost their novelty. In addition, for individuals or legal entities in Kazakhstan, due to their low patent literacy and the legal status in the sphere of IP, patenting abroad is often a very burdensome process.

This situation developed during the Soviet time and is still not overcome, although there is a tendency to increase the number of patents in the country.

As a result, despite unchanged positions over the last five years according to such factor as "Innovation' (84th place), positions of Kazakhstan' continue to be weak, which is intensified by the deterioration of most indices on the factor "Business sophistication" (108th place, - 14 positions).

Discussion

For Kazakhstan, which is striving to drive to the third group "Economy, driven by innovation", the impact of these components on total rating of the country is significant according to the following reasons:

- regardless of the stage of development, the introduction of innovations increases competitiveness and productivity in any market;
- in order that the country received benefits from the use of these or those technologies, they should be mainly developed within the country (the ability to produce independently technological innovations is more important than the ability to adapt technology from abroad).

This is confirmed by the example of the USA, which is annually included in the number of leaders in the factor of "Innovation" (4th place in 2020-2021).

The companies of this country are highly innovative, supported by effective system of universities, which are closely connected with the private sphere in the realization of R&D.

Combining the scales of opportunities that are represented by the volume of the market, these factors allow to make the USA economy more competitive in the world scene.

As a consequence, there are no connections between entrepreneurs and researchers (60th place in 2022 from 140 countries according to the WEF rating). In addition, the mechanism of approbation and introduction of created technologies at industrial enterprises doesn't function.

Conclusion

As a result, the authors can conclude that the NIS in the Republic of Kazakhstan doesn't fully create conditions for the introduction of R&D, developed by scientists of the country.

It is complex cross-sectoral cooperation and coordination of science, business and the state in the realization of the priority directions in the technological development. There is no long-term planning in the creation of business incubators, special research zones, science cities, technology parks, etc. As a result there are unexamined expensive projects, the lack of results in the realization of innovative activity, ineffective state expenses.

The lack of demand for R&D in business as a result affects negatively the provision of opportunities for scientists and researchers to receive higher wage, which may lead, in opinion of the authors, to the outflow of qualified personnel, especially young scientists, from scientific sphere. In addition, effective system of measures to stimulate demand for science hasn't yet been developed.

In this regard, at this stage, the state order is the main source for financing the realization of applied research and carrying out fundamental research.

The inadequacy of financing in the scientific sector (the share of science expenses in GDP is 0,13 % during 2017-2022) doesn't provide an opportunity to increase the science intensity in the national economy.

In this turn, the development of effective NIS should be based on highly qualified scientific and technical personnel, modern scientific and technological base, stable market demand for the results of scientific and innovative activity, mechanism for the protection of IP rights.

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Инновациялық қызметті мемлекеттік реттеу тиімділігін бағалау

Негізгі мәселе: Елдер экономикаларының қарқынды дамып келе жатқан даму үрдістері экономиканың нақты секторын ұйымдастыруға бағытталған инновациялық қызмет пен инвестицияларды мемлекеттік реттеуге ұтымды көзқарасты талап етеді. Сонымен қатар,

инновациялық даму жүйесіндегі қазіргі заманның мемлекеттік саясатын талдау үшін мемлекеттің Қазақстан Республикасының экономикасындағы инновациялық қызметті реттеу тетіктерінің тиімділігін бағалау қажет.

Мақсаты: Жаһандық бәсекеге қабілеттілік жүйесіндегі Қазақстан Республикасындағы инновациялық қызметті мемлекеттік реттеу тетіктерін бағалау.

Әдістері: синтез, мазмұнды талдау, факторлық талдау, аккомодация, монографиялық және экономикалық-статистикалық әдістер қолданылды.

Нәтижелері және олардың маңыздылығы: Жаһандық бәсекеге қабілеттілік жүйесінде Қазақстан Республикасындағы инновациялық қызметті мемлекеттік реттеу тетіктерін бағалау экономикадағы инновациялық қызметті мемлекеттік реттеу тетіктерінің тиімділігін толық бағалауға мүмкіндік берді. Дүниежүзілік экономикалық форумның 2021-2022 жылдардағы Халықаралық рейтингінің 2017-2018 жылдарға қатысты ішкі индекстерін зерттей отырып, авторлар Қазақстанда «инновация» қосалқы индексін қоспағанда, рейтингтің барлық ішкі индекстерінің және олардың факторларының («негізгі талаптар» және «Бизнестің күрделілігі») төмендеуі байқалады деген қорытындыға келді. Бұл субиндекс макроэкономикалық конъюнктураның күрт нашарлауына байланысты айтарлықтай төмендеді, бұл авторлардың пікірінше, мұнай экспортынан түсетін табыстың айтарлықтай жоғалуына тікелей байланысты. Бұл өз кезегінде мемлекеттік бюджет көрсеткіштерінің нашарлауына әсер етті. Мақалада елдің элеуметтік-экономикалық саясатындағы инновациялық қызметті мемлекеттік реттеудің орны мен рөліне ерекше назар аударылады. Қазақстан Республикасында инновациялық саясатты әзірлеу және іске асыру кезіндегі ұйымдастырушылық-әдістемелік проблемалар егжей-тегжейлі зерттелді, бұл оларды өңірлік және ұлттық деңгейлерде инновациялық саясаттың тиімділігіне қол жеткізу үшін шешуді қажет етеді.

Түйінді сөздер: сараптамалық бағалау жүйесі, инновациялық қызмет, дүниежүзілік экономикалық форумның Жаһандық бәсекеге қабілеттілік индексінің әдістемесі, әлемдік бәсекеге қабілеттілік жүйесі.

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Оценка эффективности механизмов государственного регулирования инновационной деятельности

Основная проблема: Быстро меняющиеся тенденции развития экономик стран требуют рационального подхода к государственному регулированию инновационной деятельности и инвестиций, направляемых в организацию реального сектора экономики. Вместе с тем для анализа современной государственной политики в системе инновационного развития необходима оценка эффективности механизмов регулирования государством инновационной деятельности в экономике Республики Казахстан.

Цель: оценить механизмы государственного регулирования инновационной деятельности в Республике Казахстан в системе глобальной конкурентоспособности.

Методы: Были применены такие методы, как синтез, контент-анализ, факторный анализ, аккомодация, монографический и экономико-статистический методы.

Результаты и их значимость: Проведенная оценка механизмов государственного регулирования инновационной деятельности в Республике Казахстан в глобальной системе конкурентоспособности позволила в полной мере оценить эффективность механизмов государственного регулирования инновационной деятельности в экономике. Исследуя субиндексы международного рейтинга Всемирного экономического форума за 2021-2022 годы по отношению к 2017-2018 годам, авторы пришли к заключению, что в Казахстане сегодня наблюдается снижение всех субиндексов рейтинга и их факторов («основные требования» и «сложность бизнеса»), за исключением субиндекса «инновации». Этот субиндекс был существенно снижен в связи с резким ухудшением макроэкономической коньюнктуры, что напрямую связано со значительными потерями доходов от экспорта нефти. Это, в свою очередь, сказалось на ухудшении показателей государственного бюджета. В статье особое внимание обращено на место и роль государственного регулирования инновационной деятельности в социально-экономической политике страны. Детально исследованы организационно-методические проблемы при разработке и реализации инновационной

политики в Республике Казахстан, что делает необходимым их решение для достижения эффективности инновационной политики на региональном и национальном уровнях.

Ключевые слова: система экспертных оценок, инновационная деятельность, методика Глобального индекса конкурентоспособности Всемирного экономического форума, мировая система конкурентоспособности.

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