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RESEARCH ARTICLE
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Innovative Potential of the Oil and Gas Industry of Kazakhstan

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Abstract

The article is devoted to analysing the innovative potential of enterprises in Kazakhstan's oil and gas sector and developing ways for its effective implementation. In the current economic conditions, the issue of increasing efficiency, modernization, innovative activity and strategic partnership in the oil and gas sector is becoming especially relevant. This is since the raw material orientation of the industry poses a threat to the economic security of the country, which means that increasing the innovative potential of such an important sector for the country's GDP is an urgent problem. The authors of the article analyzed the relationship between the innovative potential of the oil and gas sector and the internal costs of innovation, and the volume of innovative products. An analysis was carried out on benchmark indicators of the country's global competitiveness index, as well as an analysis of measures to introduce innovation in Kazakhstan's oil and gas industry. The most significant technological innovations in the main segments of the oil and gas complex are given. On the basis of the research, proposals were made to increase the innovative potential of the enterprises of the oil and gas industry in Kazakhstan. The most critical strategic prospects for developing Kazakhstan's oil and gas sector are substantiated based on two directions: an increase in internal costs for innovation and an increase in the volume of innovative products.

Keywords: Economics, Innovations, Innovation Potential, Oil And Gas Sector, Oil And Gas Companies, Development Prospects

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1. INTRODUCTION

The raw material orientation of the industry will not be able to ensure the sustainable economic development of Kazakhstan. The general technical and technological backwardness of oil and gas enterprises, the need for a compelling connection between science and production, and the raw material orientation of oil exports threaten the country's economic security.

According to the Address of the Head of State Kassym-Jomart Tokayev to the people of Kazakhstan (2022), the primary vector of development of the economy of the Republic of Kazakhstan for the coming decades is defined as the transition from the export-raw material component of economic growth to the industrial-innovative stage of development. In this regard, the actual problems are the research of the essence of the processes affecting the increase in the efficiency of the national economy - diversification, modernization, innovation, identification of their subordination and interconnection.

In current conditions, the balance and strategic orientation of indicators is paramount for improving the national economy's efficiency. The system of performance indicators of the national economy should be based on the principles of balance and strategic orientation. The purpose of this project is to develop theoretical approaches to innovation, to analyze its current state, on the basis of scientific justification, to determine ways to organize and form a mechanism for a comprehensive assessment of innovative potential in the field of priority areas for the development of the economy of the oil and gas industry of the Republic of Kazakhstan. In the oil and gas sector this year, the share of domestic goods and services purchases amounted to 44%. In order to increase the share of production of local goods, it is necessary to monitor the purchase of goods on an ongoing basis and carefully control the existing manufacturing enterprises of the country. It is essential to pay special attention to creating working groups for developing domestic content in oil and gas projects, to expand the list of goods capable of import substitution (Maldynova, 2022).

According to the data of the Bureau of National Statistics (2022), the Republic of Kazakhstan belongs to the countries of the world that have significant development prospects through the development of identified oil and gas resources. Occupying the 12th place in the world in terms of explored reserves of oil and condensate, Kazakhstan ranks 23rd in the ranking of the leading oil-producing powers. Oil makes up about 30% of the total energy production in Kazakhstan, and gas - 13-15% of the total share. The main sources of increase in production at present and in the forecast period will remain the already explored fields of Western Kazakhstan involved in this stage. An increase in production from new sources on the Caspian shelf will make it possible to maintain the dominant role of the oil and gas industry in the national economy in the next 10-15 years (Asanov, 2021).

An analysis of the dynamics of the development of the economic potential in the oil and gas-producing regions of Kazakhstan allows us to state with complete confidence that the total volume of raw materials prepared for extraction in relatively new fields, forecasts regarding the oil and gas potential of structures that are at the stage of geological exploration, as well as the existing prerequisites for increasing reserves in the post-salt complex on the old areas, are a sufficient reason for the republic to become one of the countries of the near and far abroad that are attractive for investing in the oil and gas industry (Slepov, 2019).

Kazakhstan has a close relationship with the world market, and the dynamics of the country's development can be observed using the analysis of the Global Competitiveness Index (2022). The calculation of this index is based on 12 leading indicators, which are disclosed in more detail using 114 variables. One of the important indicators is the country's innovative potential. The dynamics of changes in the indicators of the global competitiveness index over the past three years is shown in Figure 1.

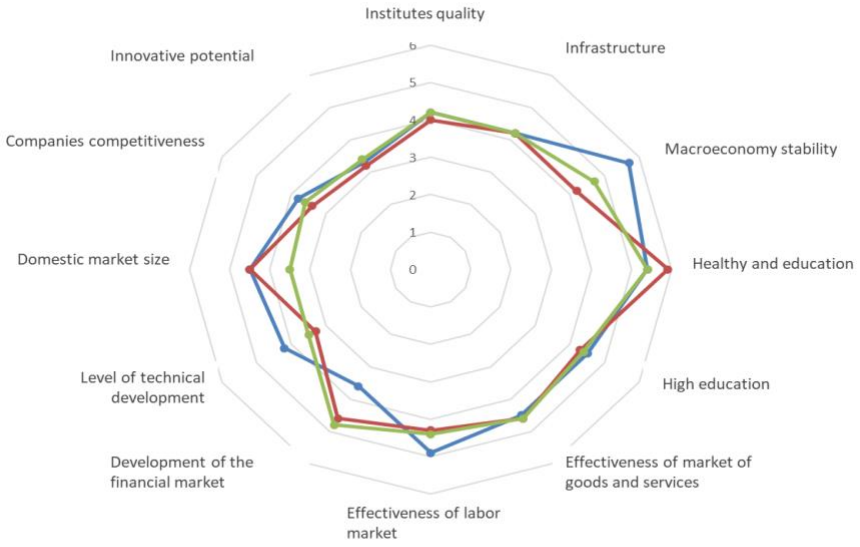

FIGURE 1. GCI Benchmarks of the Republic of Kazakhstan, 2019-2021

Note: Complete by authors Based on World Competitiveness Ranking (2022)

Unfortunately, the indicator of the innovative potential of Kazakhstan has a negative development trend. However, in 2021, Kazakhstan managed to improve its performance and take a worthy position in the ranking ahead of, for example, Russia and Turkey and taking 35th place. In Kazakhstan, when it is necessary to develop the demand for innovations, the market situation is developing so that only an innovative proposal is formed.

TABLE 1. Global Competitiveness Ranking 2019-2021

2018-2019	2019-2020	2020-2021	Country
5	3	1	Switzerland
2	10	10	USA
1	1	5	Singapore
4	4	4	Netherlands
7	17	15	Germany
3	5	7	Hong Kong
8	6	2	Sweden
9	19	18	Great Britain
6	34	31	Japan
11	13	11	Finland
28	20	16	China
43	50	45	Russia
61	46	51	Turkey
55	**42**	**35**	Kazakhstan
85	55	54	Ukraine
Note: comiled by authors based on World Competitiveness Ranking (2022)			

Data shows that the indicator of the development of innovative processes shows a low level. Analyzing the reasons, one can note a low number of innovative developments, the absence of an active process for issuing patents, and the lack of communication between business and science. At the same time, oil and gas sector experts argue that with innovation, it will be easier to achieve competitive positions and high profits. Logically, innovations should be prolonged, not just the presence of innovative activity, but its modernization.

Table 2 presents the most significant technological innovations in the four main segments of the oil and gas complex: exploration, drilling and completion of wells, production, and organization of good workover.

TABLE 2. The most significant technological innovations in the main segments of the oil and gas complex

Segments of the oil and gas complex	**Technological innovation**
Intelligence service	3D seismic; 4D visualization; Remote measurement; Subsalt Imaging.
Drilling and completion of wells	Hydraulic fracturing with a mixture of CO2 and sand coil pipes; Horizontal drilling; Telemetric system for determining parameters while drilling; Multilateral drilling; Offshore drilling; Pneumatic drilling; Drilling of small wells; Synthetic drilling fluids;
Mining	Gas purification from components; Artificial lift optimization; Coal seam gas production; Freeze and thaw/evaporation cycle; Gas to liquid conversion; Gas shrinkage by glycol injectionModern mining processes; Gas leak protection; Pneumatic equipment for reducing pressure in the well; Offshore platforms; Downhole separation of oil and water; Environmental protection programs; Installation for the return of vapors to the liquid phase.
Organization of well repair	Progressive approaches to organizing well workover; Drilling rig for offshore fields; Creation of infrastructure.
Note: compiled by authors based on reference (Afonin, 2022)	

The largest companies are doing their best to maintain technological barriers for as long as possible to maintain certain competitive advantages concerning national oil companies and independent companies.

2. LITERATURE REVIEW

Economic literature for many years of oil and gas sector development has been studying innovation problems. In the scientific works, the scientist Panagiotis (2019) concludes that it is

possible to achieve profit in companies in the oil and gas sector using the “mix” method, that is, to combine marketing, production, supply of raw materials, and trade when managing a company. This approach is also innovative due to the coordination and synchronization of all departments of enterprises. Thus, innovation management becomes the basis for the successful functioning of the company.

According to Kusainov (2005), in order to meet the increasing energy needs of the national economy in Kazakhstan, it is necessary to develop the country's innovative potential in the oil and gas sector, which should be based on the introduction of innovations, the application of innovative technologies in geological exploration and mining. Many works by Russian and foreign scientists are devoted to the formation of an enterprise development strategy: Ansoff and McDonnell (1988), Schumpeter (1980), Timofeeva (2014). Kazakh scientist Zhumagulov (2009) considered the strategic ways of development of Kazakhstan's oil and gas industry in the conditions of integration into the world economic system, substantiated the need for the development of all parts of the industry, identified success factors in the development of innovative potential. Karenov (2015), in his research, revealed the trends in the development of the global oil industry, substantiated the crucial role of the oil and gas sector in the development of the country, and revealed the central role of innovation in the development of the industry. Kazakh scientists claim that the oil and gas sector is a driver for introducing and applying innovative solutions.

Arslanbekova (2019), having studied the innovative potential of Kazakhstan's oil and gas sector, concluded that modernisation and innovation are critical in developing and maintaining the competitiveness of oil and gas enterprises. Increasing the innovative potential of this sector will allow reaching a new progressive level throughout the country.

An essential scientific contribution was made by the scientist Kuandykov (2008), who determined the essence of innovative processes in Kazakhstan's oil and gas sector and revealed their features. The author, in his writings, substantiated the importance of introducing innovations for the further successful development of the country's oil and gas industry. At the same time, it is necessary to understand that the availability of qualified scientific and technical personnel, focus on long-term strategic economic indicators, investment in all stages of the company's activities, and taking into account risks, are paramount for innovative development of the oil and gas industry of the Republic of Kazakhstan.

According to Maldynova, there are three main directions for innovative development (Maldynova et al., 2022): (1) improvement of the personnel training system. When preparing specialists for production, educational institutions must ensure the dual nature of training and focus on practical activities; (2) investment in research institutes; (3) cooperation of research institutes with international partners and knowledge sharing. Thus, the analysis of the scientists' research showed that in economic science, the concept of innovation in the industrial market had significantly evolved. However, it should be noted that some problems in the development of the oil and gas sector of the Republic of Kazakhstan are insufficiently developed.

3. METHODOLOGY

The study's novelty lies in its use for the analysis of several factors that can explain the high innovative potential in the oil and gas sector. This article presents the basic principles of modeling used to form a structure with hidden variables. The conceptual framework is presented by internal factors (internal costs of innovation and the volume of innovative products) that affect the innovation potential in the oil and gas sector.

In preparation for the study, the following research questions are lined up:

1. How do internal costs affect innovation potential?
2. How does the volume of innovative products affect the innovative potential?

Data analysis was carried out using programs for data analysis, the Smart PLS program designed for statistical calculations and graphical analysis. SmartPLS is a graphical user interface software for variance-based structural equation modeling (SEM) using the partial least squares (PLS) trajectory modeling method (Hair et al., 2014). In addition to estimating trajectory models with latent variables using the PLS-SEM algorithm, the software calculates standard performance criteria and supports additional statistical analyses. The research model proposes two types of structures, internal and external, both of which influence the innovation potential of the oil and gas sector. The research puts forward the following hypotheses:

H1: The higher the internal spending on innovation, the higher the innovation potential in the oil and gas sector.

H2: The higher the volume of innovative products, the higher the innovative potential in the oil and gas sector.

Hypothesis variables. To test hypotheses, it is necessary to define 2 types of variables: dependent and independent. A dependent variable is a phenomenon that is explained by something else. The independent variable is causal or explanatory. To test the hypotheses in the research, the following variables were defined (see Table 3).

TABLE 3. Research variables

Type	Variable	Variable Factors
Y	Innovation potential	Internal
		External
X1	Internal costs	Government sector
		Entrepreneurial sector
		Non-Profit Organizations
X2	Volume of innovative products	Product
		Service
Note: compiled by authors based on reference (Zwikael et al., 2006)		

To test the hypotheses, variables such as Innovation Potential will be used, which can be measured using internal and external factors. Internal innovation costs are assessed based on three factors: the public sector, the business sector, and non-profit organizations. The volume of innovative products is calculated according to two indicators: goods and services.

4. FINDINGS AND DISCUSSION

After analyzing the data using the Smart Pls program, for a model with a constant, the coefficient of determination equals a value from 0 to 1. A strong dependence is observed when the coefficient approaches 1, which, when evaluating regression models, is interpreted as the correspondence of the model to the data. The correlation coefficient R-square for the variable "Innovation potential" is 0.569; that is, the constructed model explains more than 56% of the variance of this design. For a detailed analysis of the test results, Table 4 shows the effect of the test.

TABLE 4. Results of the final testing in the SmartPls program

Variable	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
internal costs -> Innovation potential	0,462	0,520	0,162	2,851	0,001

volume of innovative products -> Innovative potential	0,482	0,570	0,178	2,901	0,001
Note: compiled by authors based on Smart Pls					

To demonstrate the reliability of the instruments, indicators of internal consistency are given Table 5.

TABLE 5. Indicators of internal consistency

Variable	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Internal costs	0,435	0,331	0,311
Volume of innovative products	1,000	1,000	1,000
Innovation potential	0,763	0,637	0,652
Note: compiled by authors based on Smart Pls			

AVE. A construct has convergent validity if the average variance extracted is at least .50 (i.e., when the variance explained by the construct is greater than the measurement error). Composite reliability tests the possibility of assuming that a set of variables is based on one common factor. If the coefficient is less than 0.9, the value is excellent; less than 0.8 is good, less than 0.7 is sufficient, and less than 0.6 is doubtful. Hypothesis H1 assumed that the higher the internal costs of innovation, the higher the innovation potential in the oil and gas sector. Based on the results obtained: $\beta = 0.462$, $t = (2.851) > 2.005$, $p (0.001) < 0.05$, the conclusion is formed: the relationship indicated in the hypothesis is confirmed. Hypothesis H2 assumed that the higher the volume of innovative products, the higher the innovative potential in the oil and gas sector. Based on the results obtained: $\beta = 0.482$, $t = (2.901) > 2.005$, $p = (0.001) < 0.05$, a conclusion is formed: the relationship indicated in the hypothesis is confirmed.

As a result of the analysis carried out in the Smart PLS program, there is a relationship between such indicators as internal costs for innovation and innovative potential. The higher the internal innovation costs at the enterprise, the higher the innovation potential in the oil and gas industry.

Also, there is a relationship between such indicators as the volume of innovative products and the innovative potential of the market. Namely, the higher the volume of innovative products, the higher the innovative potential in the oil and gas sector.

There is a direct positive relationship between the variables indicated in the study.

However, providing financial and information support is essential to create a successful innovation system (see Table 6).

TABLE 6. Proposals for the successful formation of an innovation system at the enterprises of the oil and gas industry in Kazakhstan

Offer	Expected results
Financial support	Depending on the form of ownership, size and profile of the enterprise, a greater or lesser bias towards obtaining state subsidies, bank loans, venture financing, or creating and using the resources of its innovation fund is possible.
Information Support	It includes the creation of a local network, providing access to information for all responsible executors, as well as automating management processes and developing information channels for cooperation with elements of the innovation infrastructure.
Legal support	It includes the entire set of normative documentation that formalizes and regulates the business processes of the innovation system, as well as the activities of responsible executors.

Organizational and legal support	It represents the organizational structure of the innovation department built following business processes and operations and regulates information flows between departments.
Staffing	It aims to search for personnel within the enterprise and in the external environment, its training and horizontal rotation to increase creative potential.
Note: compiled by authors	

Thus, the level of internal costs and the volume of innovative products in the oil and gas sector influence the innovation potential (see Figure 2).

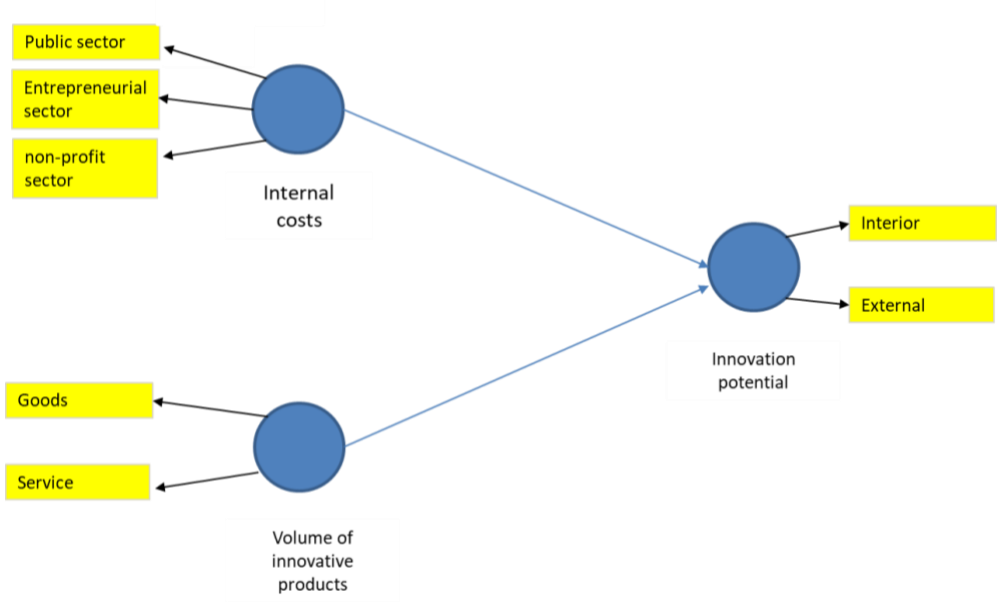

FIGURE 2. Results of PLS analysis in the Smart PLS package

Note: compiled by authors based on Smart Pls

People are the source of innovation in any company. Often, even an ordinary employee comes up with the idea that something in his activity could be improved. It is necessary to stimulate the emergence of innovations; first of all, these concerns work with personnel, which can be carried out in two directions. They were first fixing in the job descriptions of the relevant employees the obligation to study thematic literature and the experience of other companies. Secondly, moral and material incentives for all employees. At the same time, the system of material incentives should be built so that bonuses are explicitly paid for active, innovative activity.

Therefore, paying bonuses at the end of the year or as a percentage of profits is inappropriate. It is much more efficient to regularly hold competitions for the title of the most innovative employee and pay incentives according to the prizes won. In addition, it is advisable to organize a pyramidal incentive scheme, in which the department head receives the bonus, whose employees make the most significant contribution to the company's development in improving its organization. These provisions can be reflected in a separately issued regulation on innovation and in the provision of incentives (Maldynova et al., 2023).

To successfully improve the efficiency of an oil company, transparent and coordinated actions are needed, carried out within the framework of an innovative system that leads to an increase in the competitiveness of petroleum products; to create an innovative base for long-term sustainable

growth of the company; to ensure the economic security of oil enterprises. The innovation system of an oil company should perform the following functions: market forecasting and selection of priority research areas; strategic planning of innovation activities; search, evaluation and selection of innovative ideas and inventions; implementation, monitoring of indicators, and adjustment of innovative projects (Bizhanova, 2019).

An analysis of Table 7 shows that innovation activity in the industrial oil enterprises of the country is still needs to improve, despite the process of introducing new technologies.

TABLE 7. Analysis of measures to introduce innovation in the oil and gas industry of Kazakhstan

Activities for the implementation of innovation	**Results from the introduction of innovation**	**Problems**
Construction of looping sections and Construction of the Opornaya compressor station.	are necessary to increase the capacity of the system, restore the balance of work, reduce the workload and improve the economic characteristics of gas transportation in general	Regions are insufficiently supplied with gas (with gas heating)
Construction of the main gas pipeline "Beineu - Bozoi - Shalkar - Akbulak (Samsonovka)".	The construction of the BBA will reduce the dependence of the southern regions of the republic on gas supplies from Uzbekistan, stabilize prices and volumes of blue fuel supplies to consumers in the region	Regions are not sufficiently supplied with gas (with gas heating)
Hydraulic fracturing	The hydraulic fracturing method increases oil recovery by 3 or more times.	Oil production has not increased
Re-injection of sour gas into an oil reservoir	This method allows increasing the oil recovery factor from 10 to 15 percent, depending on the geological characteristics of a particular field, by maintaining reservoir pressure	Oil production has not reached the world level
Reconstruction of the Atyrau Oil Refinery	The construction of new units will allow: to process light grades of oil in the amount of up to a million tons of oil per year; receive world-class oil products that meet EURO standards.	The share of imports of petroleum products increased
A special economic zone "National industrial petrochemical technopark" has been created.	Upon completion of the construction of these petrochemical complexes in Kazakhstan, three grades of polyethylene, polypropylene, benzene, paraxylene, ethylene glycol, terephthalic acid, polyethylene terephthalate, ethylbenzene, polystyrene, polyvinyl chloride, road bitumen will be produced.	High cost of petroleum products
Visualization Center JSC Exploration Production KazMunayGas	The KMG visualization center allows you to observe the entire process of oil production without leaving the central office in the capital of the republic. In a three-dimensional image, you can see a picture of any field located thousands of kilometers from the city of Astana.	Visualization center not used by private oil companies

Note: compiled by authors

However, such problems still need to be addressed: a shortage of petroleum products (gasoline, diesel fuel) in the domestic market and growth in the share of imports of petroleum products from Russia and abroad. For the system's effective functioning, close cooperation of enterprises with research institutes, universities, and technology transfer centres is necessary for

the search and acquisition of technologies, the search and hiring of qualified personnel, and orders for development. One of the areas of legal support for innovation activity is the protection of intellectual property, which is understood as a set of copyright and other rights to the results of this activity protected by state legislative acts (Ospanov, 2021). The tangible basis of intellectual property is an intellectual product as a result of the creative efforts of its creators (an individual or a scientific team), acting in various forms:

– scientific discoveries and inventions;

– results of research, design, technological and design work;

– samples of new products, new equipment and materials obtained in the process of R&D, as well as original scientific and production services;

– original consulting services of a scientific, technical, economic, managerial nature, including the field of marketing;

– new technologies, patents, etc.

5. CONCLUSIONS

The article presents scientifically substantiated results on identifying the innovative potential of Kazakhstan's oil and gas industry.

The study of topical issues of identifying innovative potential led to the following conclusions:

1. The indicator of the innovative potential of Kazakhstan in the calculation of the global competitiveness index has a negative development trend.

2. There is a relationship between the internal innovation costs and innovation potential.

3. There is a relationship between the volume of innovative products and innovative potential.

4. To develop the innovative potential in the oil and gas industry, it is necessary to ensure close interaction between science and business.

The critical element in reforming the management system of the innovation sphere is the improvement of financing mechanisms, the organization of scientific research and tax policy, namely:

- Allocation of funds from the budget to finance research and development work for civil purposes in the amount of 3% of its expenditure part with an annual increase in this amount as the economy stabilizes to the level characteristic of highly developed countries;
- ensuring sustainable public funding of the Kazakhstan Academy of Sciences, state universities and other higher educational institutions, scientific libraries and information centers;
- working in priority areas of science and technology, ensuring multiple sources of funding for research and development work through the active support of targeted state funds;
- creation of favorable conditions for investment in science by industrial enterprises, banks, international organizations and individuals;
- development of competitive principles in the distribution of funds for scientific programs and projects with the openness of decisions made and the involvement of the scientific community in control over the use of funds;
- stage-by-stage introduction of the contract system in the field of scientific and technical and experimental design developments;
- introduction of tax and customs benefits to stimulate and support scientific activity;
- creating conditions and providing the necessary resources for the participation of Russian scientists in international projects;
- creation of favorable conditions for the work of public scientific associations.

In order to increase the innovative potential of the oil and gas sector, it is necessary to increase the spending level on innovation and the volume of innovative products in the sector.

References

1. Adilet (2019). The unity of the people and systemic reforms are a solid foundation for the prosperity of the country. [Cited March 10, 2023]. Available: https://adilet.zan.kz/rus/docs/K2100002021 (in Russ.)
2. Afonin, Yu. (2022). Innovative development of oil and gas enterprises of the Republic of Kazakhstan. *Sustainable innovative development: design and management, 3*(56), 33-53. Available: http://www.rypravlenie.ru/wp-content/uploads/2022/10/05-Afonin_Dobrenkov.pdf (in Russ.)
3. Ansoff, H. I., & McDonnell, E. J. (1988). The new corporate strategy. New York: J. Wiley.
4. Arslanbekova, Z. R. (2019). Innovative potential of the oil and gas sector. *Young scientist*, 7, 11-13. (in Russ.)
5. Asanov, M. (2021). Oil refining in Kazakhstan. Oil and Gas of Kazakhstan, 4, 11-14. (in Russ.)
6. Bizhanova, D. (2019). Macroeconomic analysis of the innovative development of Kazakhstan. *Sayasat-Policy*, *3*, 27-34. (in Russ.)
7. Bureau of National Statistics (2022). [cited March 30, 2023]. Available: http://www.stat.gov.kz
8. Global Competitiveness Index (2023). World Economic Forum. [Cited March 10, 2023]. Available: https://www.weforum.org/
9. Hair, J. F., Hult, G. T. M., & Ringle, C. M. (2014). A primer on partial least squares structural equation modeling (PLS-SEM). London. SAGE Publications, Inc. Available: file:///C:/Users/User/Downloads/3b.HairBook2017PLS2ndEd..pdf
10. Karenov, R. (2015). The current state and priority tasks of development in the future of the oil industry in the world and Kazakhstan. *Bulletin of the Karaganda University, 3* (79), 5-19. (in Russ.)
11. Kuandykov, T. S. (2008). Oil and gas service enterprises as the basis for the development of the national innovation economy: international experience and Kazakhstan realities. *Bulletin of the University of International Business*, *3*(9), 58-62. (in Russ.)
12. Kusainov, N. (2005). Competitive advantages of Kazakhstan in terms of integration into the global economy. In Kazakhstan in global economic processes: Materials of International Conference. Almaty: Dayk-Press.
13. Maldynova, A.V., Osmanov, Zh., Smagulova, N., Baigelova, A., & Orazgaliyeva, E. (2023). Enterprise strategic plan: Service business model. *Business strategy and Development*, *6*(1), 101-116. http://dx.doi.org/10.1002/bsd2.226
14. Maldynova, A., & Davletova, M. (2022). Analysis of Innovation Activity in the Industrial Market of Kazakhstan. *Eurasian Journal of economic & business studies*, *2*(64), 66-84. http://dx.doi.org/10.47703/ejebs.v2i64.87
15. Maldynova, A., Davletova, M, Ilyas, A., & Butin, E. (2022). Improving Marketing Approaches to the Energy Sector of Kazakhstan for Decarbonization. *International Journal of Energy Economics and Policy*, *12*(3), 410–417. https://doi.org/10.32479/ijeep.12997
16. Ospanov, B. (2021). Innovation as a direction of the state development strategy in the Republic of Kazakhstan. *Sayasat-Policy*, 2, 17-23. (in Russ.)
17. Panagiotis, T. (2019). Margin Management in the Oil and Gas Industry. Pacific Rim Property Research Journal, 15 (1), 67-82. Available: https://www.infosys.com/industries/oil-and-gas/insights/documents/margin-management.pdf
18. Schumpeter, J. A. (1980). Theory of Economic Development. New York. Routledge.
1. Slepov, V. A., & Gromova, E. I. (2000). On the relationship of financial policy, strategy and tactics. *Finance*, 8, 50-52. (in Russ.)
19. Timofeeva, T.V. (2014). Workshop on financial statistics: textbook. Moscow. Infra-M press.
20. Zhumagulov, R. B. (2009). Diversification of the oil policy of the Republic of Kazakhstan. *Region: economics and sociology*, *4*, 284-291. Available: https://www.sibran.ru/upload/iblock/2ec/2ec17034912cd0af1861050d4ea26207.pdf (in Russ.)
21. Zwikael, O., & Globerson, S. (2006). Benchmarking of project planning and success in selected industries. Benchmarking: *An International Journal*, *13*(6), 688–700. https://doi.org/10.1108/14635770610709059

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