UDC 338.45
JEL L19
DOI: 10.26906/EiR.2025.4(99).4160

ASSESSMENT OF THE EFFECTIVENESS OF THE INNOVATIVE POTENTIAL OF INDUSTRIAL ENTERPRISES

Shirinov Bashar Habib oglu*, PhD in Economics, Associate Professor
Abdullayeva Nur Zahir, Master Student
Azerbaijan University of Architecture and Construction

**ORCID 0000-0003-4872-4035*

Стаття отримана: 28.10.2025
Стаття прийнята: 23.11.2025
Стаття опублікована: 26.12.2025

Introduction. Index methods for assessing the innovative potential of a country, region and economic entity, as well as economic entities of the production and economic system, have found scientific justification and practical application in foreign theory and practice. Index methods are based on the analysis of parameters representing quantitative and qualitative values . Their assessment is carried out using a number of foreign models that have proven to be the most positive for obtaining information and assessing factors at the macro, meso and micro levels:

– Boston Consulting Group model – a model of a leading international company engaged in management consulting;

– European Innovation Scoreboard model, which is the main tool of the European Commission, which constitutes an index for the comparative assessment of the innovative activity of the European Union member states and was formed within the framework of the Lisbon Strategy;

– Economist Intelligence Unit (EIU) innovation index calculation model, developed by the British research company Economist, the essence of which is reflected in the Innovative Development Program approved by the Government Commission on Innovation and High Technologies.

Analysis of recent research and publications. Y. Hui in his work revealed the relationship between innovative potential, type of innovation and the results of the enterprise. They distinguish such types of innovation as product, organizational, technological and market. Each type of innovation has unique consequences for the firm's activities, and some types are more closely related to financial success than others. H. Ali and Y. Hao in their work found that the innovative capabilities of the enterprise affect the activities of small and medium-sized enterprises. To assess these capabilities, the authors propose to use surveys, personal interviews and statistical methods to determine the relationship between innovative capabilities and enterprise performance indicators [1,9].

Diagnostics of the level of accumulated innovative potential of the enterprise includes the following variable diagnostic types:

– strategic diagnostics – determines the degree of implementation of management decisions proposed in the form of strategies for the restoration and structural reorganization of the analyzed enterprise, as well as the implementation of production and commercial activities at a new quality level and the ability to control their implementation;

– economic diagnostics – carries out analytical preparation of all types of decisions, provision of plans and forecasts for the future development of the enterprise, includes methods that are directly or indirectly related to the implementation of audit and management decisions;

– diagnostics of the management system – involves identifying the reasons that affect the quality of management decisions made;

– diagnostics of the organizational system of the enterprise – involves the formation of measures related to the development of production and the organization of the implementation of functions in accordance with the structure of the establishment of new business processes of the enterprise;

– diagnostics of production – involves the formation of a new program of measures related to the development of production functions and the structural reorganization of the enterprise;

– functional diagnostics – provides for the identification of deviations and difficulties that lead to the deformation of the enterprise's activities, as well as the identification of external and internal reasons that worsen the activities of the enterprise with subsequent analysis;

– commercial diagnostics – involves monitoring production volumes, developing existing and new markets for product sales, and controlling the commercialization of innovations;

– social diagnostics – designed to monitor social relations in the collective, to motivate employees to create and implement the innovative potential of the enterprise.

The tasks of diagnostics of the innovative potential of the subject of production and economic systems can be solved in two directions [4,10]:

1) private diagnostics of the readiness of individual components of the innovative potential of the enterprise to implement an innovative project;

2) comprehensive diagnostics of the currently accumulated innovative potential.

At the same time, detailed diagnostics of the innovative potential of the enterprise in the production sector is carried out only at the stage of temporary preparation for the implementation of an innovative project and its justification. The algorithm for assessing the innovative potential of the enterprise proposed by these researchers and leading specialists is as follows:

– description and analysis of the formalized model of the innovative potential of the enterprise (internal environment), determination of requirements for the parameters of the potential for all its components, ensuring the achievement of the innovative goal;

– analysis and assessment of the actually accumulated level of the innovative potential of the industrial enterprise;

– assessment of deviations and inconsistencies between the actual values of indicators and the standard ones, identification of strengths (there is a margin for compliance with standard parameters) and weaknesses (non-compliance with standard parameters) of the innovative potential;

– organization of measures to eliminate the identified deviations – innovative transformation and modernization of the enterprise as a whole.

The diagnostic approach is carried out during the analysis and diagnostics of the study of the parameters of the innovative potential of the enterprise for a limited or only internal circle of people, as well as external analysts or experts – leading specialists in certain parameters.

The author of the study proposes a diagnostic method of the level of accumulated innovative potential of the enterprise based on the adequacy of the main components of the innovative potential, the determination of the parameters of the enterprise's current and future capabilities and opportunities for carrying out innovative activities.

Objectives of the article. The purpose of the work is a quantitative and qualitative assessment of the factors affecting the efficiency of the innovative potential of industrial enterprises using foreign experience.

The main material of the study. Based on the methods considered, we will evaluate the parameters and variables used to assess the level of innovative potential.

The Boston Innovation Index is based on two main blocks [4]:

1) "innovation costs" – defined as a combination of three components: fiscal policy, industrial and social policy and the innovative environment;

2) "innovation efficiency" – the basis of the calculation is entrepreneurial activity, scientific and research work, high-tech exports, labor productivity, the investment component and economic development indicators in general.

The European Innovation Scoreboard index is built on three blocks and is formed as follows:

1) the "capabilities" block – shows the main parameters of innovation formed by scientific and research and development departments, production, infrastructure, human resources, finance, etc.;

2) the "company activity" block – is formed at the expense of such components as investment resources, entrepreneurial activity, intellectual resources, investments, implementation of innovations, etc.;

3) "results" block – shows how innovation activity is transformed into economic income.

The analytical department of the British source "Economist Intelligence Unit" compiles a rating of 41 countries according to the innovation index. "Economist Intelligence Unit" consists of two blocks [6]:

1) "innovation costs" or "inputs" – these are direct costs (level of education of personnel, innovation environment, export of products, currency control, etc.);

2) "innovation results" or "products" – the number of issued patents. Variable parameters of external models for assessing innovation potential are presented (table. 1).

A review of these models for assessing innovation potential shows that they prefer to use the point (or expert) method to assess indicators, indices and parameters of the level of innovation potential. The author of the study notes that currently there are a small number of scientific developments and approaches to assessing the level of accumulated innovation potential of an industrial enterprise.

This author's methodology for diagnosing the level of accumulated innovative potential of an enterprise includes the following sequence of actions (scheme. 1):

– selection of an enterprise or several enterprises for diagnostics;

– identification and creation of an expert group consisting of leading specialists, managers and scientists belonging to the same field;

– analysis and assessment of the current production and economic activity and current state of the selected enterprise in the market;

– determination of criteria, indicators and indicators for diagnosing the components of innovative potential;

– obtaining expert assessments of the level of opportunities and ability of innovative potential to carry out innovative activity in the present and future periods;

– determination of the result indicator of the level of innovative potential of the enterprise (enterprises);

– formation of conclusions about the level and possibilities of implementing the accumulated innovative potential.

– Formation of the necessary level of innovative potential of an industrial enterprise at the current stage of development of the country's industry is an essential need for the successful launch of effective innovative activity in the present and future.

Table 1

Indicative indicators and parameters of external methods for assessing the level of innovation potential of business entities

Indicators and performance indicators	European Innovative Scoreboard model	The Boston Consulting Group model	Economist Intelligence Unit model
1. Innovation spending	+	+	+
1.1. State funding of R&D	–	+	+
1.2. Tax incentives for R&D	–	+	+
1.3. Education level	+	+	+
1.4. Availability of technical skills of personnel	–	–	+
1.5. Quality of personnel	–	+	–
2. Efficiency of innovation activity	+	+	+
2.1. Investments in R&D	–	+	–
2.2. Export of high technologies	+	+	+
2.3. Publishing activity	+	+	–
2.4. Increase in employment	–	+	–
2.5. Increase in labor productivity	–	+	–
2.6. Economic growth of the enterprise	–	+	–

Source: the table was compiled by the authors

The application and use of innovative potential is carried out by the management and leading specialists of the enterprise through the implementation of certain technological operations leading to the creation of innovative products in production and economic activities.

The author proposes to base the expert assessment on the competent opinion of 20 leading specialists of the national industrial sector on the main issues of scientific research:

– heads of the regional sector of the economy, entrepreneurship and local industry development;

– leading specialists and heads of the city municipal administration of the country;

– heads of industrial enterprises of the pulp and paper industry;

– scientists and research workers of the leading higher educational institutions of the country.

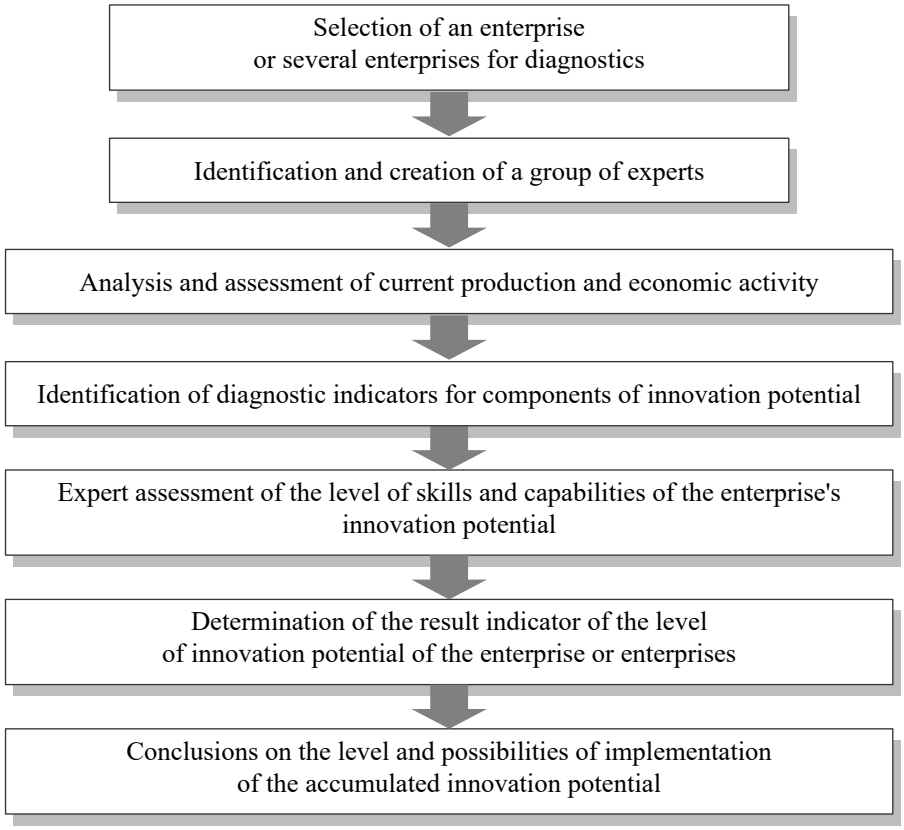

Figure 1. Analysis of innovative potential in the effectiveness of the formation of innovative activity of industrial enterprises

The effectiveness of innovative activity depends on the presence of the required level of innovative potential accumulated in the enterprise and is characterized by [2]:

– the level of compliance of the organization of innovative activity with its results;

– the efficiency of the innovative and institutional structures of the enterprise;

– the resource intensity of innovative processes, reflecting the use of resources (material, labor, financial, information, etc.) in the production of innovative products;

– the efficiency of innovative activity and production, characterizing the time required to achieve the relevant and adequate modern goals of innovative production.

Taken together, these characteristics, when analyzed, express the characteristics of the innovative potential, which determine the level of compliance of the innovative potential with the innovative activity of the enterprise.

The sequence of stages of formation, development and implementation of innovative potential in the implementation of an innovation project is presented:

I – the initial stage of ideas and assessment of potential opportunities;

II – the stage of implementation of the initiative and the start of investment;

III – the stage of the start of innovation activity;

IV – the stage of growth and development of innovation activity;

V – the stage of sustainable development of the innovation project;

VI – the stage of achieving the maximum possible indicators of the development of the innovation project;

VII – the stage of completion of the project due to the obsolescence of innovations. When the innovations become obsolete and the demand for innovative products decreases or disappears, the project is discontinued.

The stages of formation, development and implementation of innovative potential by the enterprise at the start of the project and in the implementation of innovative activity are directly related to the financial flow of investment in the project, which is necessary for the implementation of scientific research and R&D work, accompanied by subsequent current expenses. After the project has passed the "critical point" and achieved self-sufficiency, the process of obtaining profit for the enterprise from the successful implementation

of innovative activity begins. At this stage of the project, it is necessary to ensure the process of production of innovative products.

Since the project is financed at its own expense and production is being prepared for the release of innovative products, the innovative potential of the enterprise is also spent to a certain extent at the initial stages of the project launch. From the moment it starts to generate profit, the innovative potential of the enterprise increases, since financial resources increase. In order to analyze the innovative potential in assessing the efficiency of the innovative activity of an industrial enterprise, it is necessary to select several key indicators that objectively represent the intensity of use of the existing resources of the enterprise for a specific innovative project, quantitatively characterizing the innovative potential [1,7].

The economic efficiency of innovative production, which characterizes the expediency of using the resource base of the enterprise, is determined by the formula (1):

$$E = Q / TC \quad (1)$$

where Q is the cost of manufactured innovative products;

TC – costs in revenue.

Thus, by increasing the turnover rate of production resources due to the reduction of the production cycle time and timely implementation of management decisions on optimizing production activities, it is possible to reduce the volume of required resources and increase the efficiency of the enterprise, the self-justification of innovations.

When implementing innovative projects of an enterprise, the level of innovative potential, as a complex and result indicator of the resource, personnel, production-technological and scientific-technical capabilities of the enterprise, largely determines the economic effect of innovative activity from the amount of funds invested in the innovative project [6].

These indicators express the accuracy and completeness of the reflection of the characteristics of business processes and can be used by managers and leading specialists of industrial enterprises:

– for diagnostics and analysis of the level of innovative potential of the enterprise, which depends on the efficiency of the result of the innovative activity of the enterprise;

– creation of a reasonable algorithm for the sequence and sequence of implementation of innovative activity;

– monitoring the efficiency of the use of innovative potential in the further development of the production system.

Conclusions. The author believes that when determining the level of the accumulated innovative potential of an enterprise, it is necessary to use diagnostics as a method of analyzing the existing incomplete characteristics and indicators of the activity of the subjects of the economic-production system. They are used when using system analysis methods in cases where there is no complete information and the necessary time to assess the innovative potential. In order to generate adequate results, it is necessary to take into account the parameters selected for diagnostics, taking into account other characteristics. This approach provides an assessment of all components of the innovative potential and allows them to be assessed together as a whole. From our point of view, innovative potential is an opportunity for innovative activity, and it is impossible to accurately determine all its parameters, especially since these parameters are presented in its assessment with different degrees of use. When using diagnostic methods, a distinction is made between diagnosed elements, that is, problematic elements of the structure that require the elimination of shortcomings and defects; diagnosed indicators characterizing this problem; characteristics of the internal state of the enterprise, including resource (degree of equipment obsolescence, level of available resources, suitability of the organizational structure for the enterprise's activities, etc.) and functional (level of operational efficiency) parameters.

REFERENCES:

1. Eyniyev T., Geibullayev G., Mammadov M. (2001) Economy and management of construction. Textbook, Baku.
2. Mammadova K. M. (2022) Strategic management and leadership. Teaching materials Baku.
3. Mammadova F., Mammadov M., Kariuk A., Mammadov E. (2022). Economic Reforms and Development Strategies as Providing Sustainable Development. *Lecture Notes in Civil Engineering,* no. 181, pp. 669–676. DOI: https://doi.org/10.1007/978-3-030-85043-2_63
4. Mammadov M. A., Aliyev A. M. (2022) Management textbook, Baku.

5. Mammadov M. A., Mammadova F. A., Alizade S. I. (2021) Strategic Management, Baku "Tahsil" ELM.
6. Mammadov M.A., Yadigarov T.A., Mammadova F.A., Alizade Sh.I., Nagdiyev O.A., Safarova G.N., Aliyev A.M. (2024). An economic and mathematical modeling for risk assessment of innovative activities an enterprise in oil and gas industry. *SOCAR Proceedings,* no. (4), pp. 139–146. DOI: https://doi.org/10.5510/OGP20240401029
7. Mammadova F., Fatakhova N., Mammadov Sh., Gasimov R., Aliev Sh.(2024). State management of social housing as an element of state social policy: bibliometric analysis. *Problems and Prospects in Management,* Vol. 22, Issue 2. DOI: https://doi.org/10.21511/ppm.22(2).2024.39
8. Samadzade Sh. A., Aliyeva E. A., N Aliyev. S. (2003) Investment planning, Teaching materials Baku.
9. Shirinov B. (2021) The role of logistics analysis methods in the Enterprise Resource Management System. *Economy and the state,* pp. 83–86.
10. Shirinov Bashar Habib oglu (2024) Mammadzade Ilkin Farid oglu Application possibilities of marketing strategy in construction companies. *Economics and Region,* № 2 (93).

UDC 338.45
JEL L19

Shirinov Bashar Habib oglu, PhD in Economics, Associate Professor, Azerbaijan University of Architecture and Construction. **Abdullayeva Nur Zahir,** Master Student, Azerbaijan University of Architecture and Construction. **Assessment of the effectiveness of the innovative potential of industrial enterprises.**

In modern conditions, the successful operation and sustainable development of an industrial enterprise requires comprehensive improvement of key performance indicators, the formation and application of innovative management methods, the organization of innovative production processes and technologies, and the intensification of the use of the accumulated innovative potential and methods of its development for the production of high-quality and high-tech products in demand in the national and world markets. Modeling of production processes and resources is currently one of the main tools of enterprise management in organizing the management of complex production and economic systems. To implement innovative activities, industrial enterprises need the innovative potential formed and accumulated, as well as the conditions for its successful implementation. Innovative potential is a parameter that allows assessing the capabilities and skills of the enterprise management to implement real innovative activities and form a strategy for the innovative development of an industrial enterprise. Currently, the issue of economic assessment of the level of innovative potential and its resources in industrial enterprises as a whole is very relevant. According to the authors, when determining the level of the accumulated innovative potential of an enterprise, it is necessary to use diagnostics as a method of analyzing the existing incomplete characteristics and indicators of the activity of the subjects of the economic-production system. Taking all this into account, the article presents the sequence of stages of formation, development and implementation of innovative potential in the implementation of an innovation project, analyzes the level of the accumulated innovative potential of the enterprise by diagnostic types, and proposes a diagnostic method for the level of the accumulated innovative potential of the enterprise based on the adequacy of the main components of the innovative potential, the ability of the enterprise to carry out innovative activities in the present and future, and the parameters of its capabilities, and expert assessment.

Key words: industrial enterprises, modeling, innovative potential, assessment, index, efficiency, diagnostics, innovation project.

УДК 338.45
JEL L19

Ширінов Башар Хабіб огли, кандидат економічних наук, доцент, Азербайджанський університет архітектури та будівництва. **Абдуллаєва Нур Захір, магістрантка,** Азербайджанський університет архітектури та будівництва. **Оцінка ефективності інноваційного потенціалу промислових підприємств.**

У сучасних умовах успішне функціонування та сталий розвиток промислового підприємства вимагає комплексного вдосконалення ключових показників ефективності, формування та застосування інноваційних методів управління, організації інноваційних виробничих процесів і технологій, а також активізації використання накопиченого інноваційного потенціалу та методів його розвитку для виробництва високоякісної та високотехнологічної продукції, що користується попитом на національному та світовому ринках. Моделювання виробничих процесів та ресурсів наразі є одним з основних інструментів управління підприємством в організації управління складними виробничо-економічними системами. Для реалізації інноваційної діяльності промисловим підприємствам необхідний сформований та накопичений інноваційний потенціал, а також умови для його успішної реалізації. Інноваційний потенціал – це параметр, який дозволяє оцінити можливості та навички керівництва підприємства щодо реалізації реальної інноваційної діяльності та формування стратегії інноваційного розвитку промислового підприємства. Наразі питання економічної оцінки рівня інноваційного потенціалу та його ресурсів у промислових підприємствах в цілому є дуже актуальним.

На думку авторів, під час визначення рівня накопиченого інноваційного потенціалу підприємства необхідно використовувати діагностику як метод аналізу існуючих неповних характеристик та показників діяльності суб'єктів економіко-виробничої системи. Враховуючи все це, у статті представлено послідовність етапів формування, розвитку та реалізації інноваційного потенціалу при реалізації інноваційного проекту, проаналізовано рівень накопиченого інноваційного потенціалу підприємства за видами діагностики, а також запропоновано метод діагностики рівня накопиченого інноваційного потенціалу підприємства на основі адекватності основних складових інноваційного потенціалу, здатності підприємства здійснювати інноваційну діяльність у сьогоденні та майбутньому, параметрів його можливостей та експертної оцінки.

Ключові слова: промислові підприємства, моделювання, інноваційний потенціал, оцінка, індекс, ефективність, діагностика, інноваційний проект