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FEATURES OF APPLICATION OF INVESTMENT POTENTIAL ASSESSMENT METHODS FOR ENTERPRISES

Abstract. *The article describes the main methodical approaches to the evaluation of the innovation potential of enterprises. The classification of the methods of evaluation of the innovation potential is proposed. The advantages and disadvantages of the existing methods are determined. A critical analysis of their application in practice was carried out. A method of assessing the innovative potential of enterprises is proposed.*

The system for evaluating the indicators of the innovative potential of a processing enterprise is considered as an integral set of available and hidden resources, stocks, and opportunities that can be revealed under the conditions of interaction and interdependence of balanced subsystems and elements. It is proven that the method of assessing the innovative potential of the enterprise should be practical, flexible, based on available mathematical apparatus and correspond to the modern development of the innovative activity of domestic enterprises.

It is suggested that innovative potential should be considered as a complex and multifactorial phenomenon in the development of the enterprise, ensuring its competitiveness. In this regard, the further improvement of theoretical and methodological approaches to the evaluation of the innovative potential of processing enterprises is of great importance.

Keywords: *enterprises, innovations, innovation potential, methods of evaluation of innovation potential, efficiency of innovations.*

Formulation of the problem. The choice of directions of innovative development of enterprises can be ensured not only by the presence of an optimal management system and effective management, but also by obtaining innovation in the form of a new product, technology, methods of organization and management, which is the result of the innovation process. It is important not only to obtain an innovation with minimal costs, but also the innovation itself as an innovative potential that can provide additional profit due to innovative developments in the future.

At the same time, the innovative activity of the enterprise depends not only on the availability of resources. When making innovative decisions, one should take into account not only internal, but also external factors. Therefore, the process of making innovative decisions is a system with many connections, where the starting points are a comparison of the planned target guidelines with the achieved ones (for example, a change in the market situation, costs, profit, etc.).

Therefore, today, there is a need to develop a convenient mathematical tool for measuring the innovative potential of an enterprise, the results of which could be used both for evaluation and for comparing the activity or performance of enterprises.

Existing approaches to the assessment of innovation potential mainly reflect a narrow assessment of its individual components, not taking into account the interrelationship of these indicators at different stages of innovation activity.

Analysis of recent research and publications. Among the works devoted to the assessment of innovative potential, the works of domestic scientists V. Verba [1], O. Vlasenko [2] should be noted. E. Ivanova [3], S. Ilyashenko [4], O. Knyaz [5], N. Krasnokutska [6], O. Popovicha [7], V. Chaban [8], N. Chukhrai [9], V. Khobty [10].

Despite the huge number of scientific and practical achievements in the theory and practice of evaluating innovative potential, there are still no single systematized methods of research in this area of economic science. The diversity of views of researchers is due to the many types of innovative activities, different scale, capital intensity and efficiency of innovative projects, differences in the fields of implementation of innovations and specialization of innovatively active enterprises.

Setting objectives. The purpose of the article is to substantiate the scientific and methodological, theoretical provisions and principles of using a system of indicators for evaluating the effectiveness of the innovative potential of a modern enterprise.

Presentation of the main research material. The difficult situation at domestic enterprises during the period of military aggression of the Russian Federation in the century, the lack of necessary development and stability reflects insufficiently considered opportunities or irrationally used resources, and in the end — unused potential. This makes it necessary to research the innovations of enterprises to ensure stable positions on the market, gain competitive advantages, identify opportunities for increasing competitiveness, taking into account the prospects of profitability and growth.

In terms of market relations, one of the priority areas of activity of any enterprise is the formation of innovative potential and provision of conditions for long-term development. These tasks are especially difficult to implement in the conditions of the changing financial, economic, information and legal environment of the functioning of enterprises. Such conditions require the management of the enterprise not only to respond in time to possible changes, but also to predict and form models of the development of events. The formation of the company's development strategy is an effective management tool in the long-term development program.

In conditions of reduced production, there is also a need to evaluate and optimize all available resources. The success of the enterprise's development lies not only in effective management, but in the proper use of available resources to strengthen its position on the market. The investment strategy plays an important role in the strategic development of the company's potential.

In the scientific literature, there is no single definition of the essence, specific features, structure and assessment of the innovative potential of enterprises [11], they consider the innovative potential as a set of different types of resources, including material, financial, intellectual, informational and other resources necessary for the implementation of innovative activities. Kholod [12] understands the innovative potential as «a set of separate types of resources, including material, intellectual, informational and other resources necessary for the implementation of innovative activities.»

E. Lapin [13] and N. Krasnokutskaya [14] interpret it as the ability to create innovations on one's own or to acquire them from the side, as well as the effectiveness of introducing innovations into the practice of economic activity. In their opinion, the results of the implementation of innovative potential are: development of new and modernization of products already produced; development and introduction into production of new machines, equipment, tools, new construction materials, new technologies and methods of production; improvement and development of new methods, means and rules of production organization and management.

Let's consider one of the methodical approaches to evaluating the economic efficiency of innovations proposed by V. Andriichuk [15], which can be applied when implementing a new flow line for processing agricultural raw materials and manufacturing finished products at a fruit cannery. The author makes an assumption that for its production, it is necessary to carry out design works of the appropriate cost within, say, two years, with the determination of project costs for each year. Also known are the costs of direct production of the flow line and the time required, as well as the time and costs for installation and commissioning.

To evaluate the effectiveness of the implementation of the flow line, it is necessary to take into account the period of its economic life, annual productivity (the number of conventional cans of canned vegetables or tons of canned vegetables produced), determine the cost of production of a unit of food product, make a forecast of the wholesale price and discount rate for alternative investments, based on their actual dynamics and tendency of inflationary processes.

The methodical approach to determining the economic efficiency of the introduction of a new flow line involves the following stages:

1. The monetary revenue from the sale of finished products is determined (the annual productivity of the flow line is multiplied by the wholesale price of the product unit). It is assumed that the company will receive such revenue during the entire economic life of this line.

2. Based on this information, the discounted cash flow (inflow) is calculated according to the formula:

$$\Delta\Pi = \sum_{t=1}^5 \frac{\Gamma B_t}{(1 + D_c)^{t-1}}$$

where ΓB_t — monetary revenue from the sale of finished products in the t th year; D_s — discount rate, coefficient; t — year of flow line operation (from one to five inclusive).

Discounting of the cash outflow of DVT related to the costs of designing the flow line, its manufacture and installation is carried out. For this, the formula of the future value of money is used, taking into account the different timing of investing funds:

$$\Delta B T = B\Pi_P^{(1)} \cdot (1 + D_c)^4 + B\Pi_P^{(2)} \cdot (1 + D_c)^3 + B\Pi \cdot (1 + D_c)^2 + B M \cdot (1 + D_c),$$

where $VP(1)$ and $VP(2)$ are the design costs that must be mastered, respectively during the first and second years; VL — costs for the production of a flow line; VM — costs for installation and commissioning works.

The discounted flow of costs for the production of the DVs product is calculated. To do this, first calculate the annual amount of costs for the production of an annual volume of canned vegetables by multiplying the annual productivity of the flow line by the production cost of a unit of production.

It is also assumed that the costs of producing an annual volume of products will be the same throughout the economic life of the line. The calculation is carried out according to the already known formula:

$$\Delta B C = \sum_{t=1}^5 \frac{B C_t}{(1 + D_c)^{t-1}},$$

where, $B C_t$ is the production cost of finished products in the t -year of operation of the flow line. The economic effect of the development and implementation of the flow line is determined by the formula:

$$E_{ef} = \Delta\Pi - (\Delta B T + \Delta B C)$$

As you can see, the assessment of the economic efficiency of the implementation of the innovation of the flow line is based on the methodology of determining the efficiency of capital investments. The development of new technologies is one of the priority directions of enterprises. It should be taken into account that in the conditions of implementation of not one innovation at the enterprise, but several, an integral effect may arise from the totality of innovations. For its quantitative measurement, economic science offers appropriate methodological approaches, the application of which makes it possible to reveal the economic efficiency of several new technical, technological and organizational solutions. In particular, an algorithm for determining the following indicators has been developed: 1) increase in labor productivity:

$$\Delta\Pi\Pi = Z\Pi\Pi - \left[\frac{T\Pi}{(Ch\Pi_{\Phi} - Ch\Pi_B) : \Pi\Pi_0} \right],$$

where $Z\Pi\Pi$ — general growth of labor productivity in the calculation period; $T\Pi$ — volume of production of commodity products in this period, thousand hryvnias; $Ch\Pi_{\Phi}$ — actual number of employees, persons; $Ch\Pi_B$ — the number of released workers after the introduction of technical and technological and organizational innovations; $\Pi\Pi_0$ — labor productivity in the base period;

2) the percentage share of savings from the introduction of technical, technological and organizational innovations in the total costs of production of products:

$$E_B = \frac{\Pi\Pi_0 \cdot \overline{Z\Pi\Pi_1}}{T\Pi - O\Pi'} \cdot 100,$$

where, $Z\Pi$ — is the average salary in the accounting period, hryvnias; $O\Pi'$ — the total amount of operating profit in the same calculation period;

3) the increase in production profitability is calculated according to the following formula:

$$\Delta P_P = P_P^{(1)} - \frac{O\Pi' \cdot (100 - \Delta\Pi\Pi)}{OK},$$

where $P(1)$ — the level of profitability of the enterprise's operational activity in the calculation period, %; OK — the value of the fixed capital of the enterprise, thousand UAH.

We propose to define innovation potential as a measure of the organization's readiness to perform tasks that will ensure the achievement of the set innovation goal, i.e. a measure of readiness to implement an innovative project or program of innovative transformations and implement innovation. The author considers the development of the organization as a reaction to changes in the external environment and emphasizes its strategic nature.

S. Ilyashenko[16] under innovative potential considers a certain critical mass of resources of a business entity (intellectual, scientific research, informational, etc.), necessary and sufficient for its development based on the constant search and use of new spheres and methods of implementation market opportunities that open up to him, which is connected with the modification of existing and the formation of new sales markets. The author distinguishes in more detail such components of innovative potential as: market, intellectual, personnel, technological, informational, interface and research.

The innovative activity of the enterprise depends not only on the availability of resources. Therefore, today, there is a need to develop a convenient mathematical tool for measuring the innovative potential of enterprises, the results of which could be used both for evaluation and for comparing the activities or results of the activities of enterprises. Existing approaches to the assessment of innovation potential mainly reflect a narrow assessment of its individual components, not taking into account the interrelationship of these indicators at different stages of innovation activity.

The question arises about a comprehensive assessment of the investment potential of enterprises. A significant drawback of many studies on the assessment of the investment potential of the enterprise is the lack of a systematic approach to the selection of indicators for its assessment as a whole. Research on the problems of formation, modeling and use of the investment potential of enterprises is also very limited — the problem of measuring the elements of the investment potential of enterprises in the new conditions of regional decentralization and its value in Ukraine as a whole was practically not solved.

Enterprises can use various innovations, including technical, technological, organizational and product innovations, when new products are created or existing ones are improved. Let's pay attention to the fact that often the implementation of some innovations simultaneously requires the implementation of others. For example, the creation and release of a new product is accompanied by the need to improve existing or develop new technology, the latter, in turn, may require the introduction of new or improvement of existing equipment. At the same time, enterprises introduce new equipment with the aim of increasing labor productivity, saving energy, and improving the quality of manufactured products.

Currently, in the domestic literature, you can find a sufficient number of methods that allow you to evaluate the innovative potential of the enterprise. All of them are based on the use of the method of expert evaluations, the index method or their combination.

I. Fedulova considers the graphic method of researching the innovative potential [17], which involves the construction of a petal diagram in which the number of rays corresponds to the number of structural components of the innovative potential, and the length of the rays corresponds to their values. If you connect the ends of the rays, you will get a polygon, the area of which corresponds to the integral characteristic of the innovative potential of the enterprise.

On the one hand, this method of evaluating innovation potential is quite easy to use from a mathematical point of view. But on the other hand, its use is associated with some difficulties, namely: the method does not give recommendations on indicators that should be used as components of innovative potential; there are no recommendations regarding the angle at which the rays characterizing the value of each constituent element of the innovative potential should be placed. Among the advantages of this method are:

- 1) ease of use;
- 2) this method demonstrates the influence of each factor on the value of the integral indicator of innovation potential;
- 3) the ability to maneuver the number and list of constituent elements to assess innovation potential.

Among the significant shortcomings of the proposed method of assessing investment potential are the following:

- 1) the specific weight and dimensions of the constituent components are not taken into account for the calculation;

2) to calculate the innovation potential, the use of either only quantitative or only qualitative indicators is assumed — this leads to the fact that not all factors affecting the innovation potential are reflected.

That is, it is possible to propose to apply the method of evaluating the innovative potential based on the analysis of its financial indicators, which allows to assess the sufficiency of own sources of funds to cover stocks and costs, on the basis of which the enterprise can be classified as one or another type of financial sustainability — an absolutely sustainable enterprise, a normally sustainable enterprise, financially unstable enterprise, crisis state of the enterprise. Each type of financial stability corresponds to a type of innovation potential: high, medium, low and zero.

Determining the type of innovation potential in accordance with this methodology allows you to answer the question of how effectively an enterprise can implement long-term innovations while simultaneously ensuring the financial needs of current financial and economic activities. This method is quite easy to use, but its results indicate not so much the amount of innovation potential as the amount of financial resources sufficient (or insufficient) for the implementation of innovations.

Another significant advantage of this method is that it indicates the connection and financial stability of the enterprise — its own sources of financing expenses; in this way, their sufficiency for financing innovative activities is reflected and is based on real financial reporting data. Among the shortcomings, it should be noted that the connection between the innovative potential and the sources of resource formation and their sufficiency is indicated, leaving out the connection with other indicators of the financial condition, as well as the fact that this method reflects the result of innovative activity and has no connection with the cost of the enterprise.

The method of percentage ratios consists in the fact that when comparing the innovative potential of different enterprises, the simplest mathematical techniques are used, which show how many times the value of one differs from the other. However, this method can only be used as a supplement to any basic methods of evaluating innovation potential, since it does not contain recommendations on how exactly the innovation potential of an enterprise should be calculated before comparing it with a similar indicator of other enterprises.

It should also be noted that this method is characterized by simplicity, as it involves a simple comparison of the amount of innovative potential of different enterprises and is very simple for the purposes of ranking enterprises from the point of view of a potential buyer, investor, or shareholder.

On the other hand, this method does not contain recommendations on how to calculate the innovation potential of an enterprise before comparing it with the potential of other enterprises, does not provide an opportunity to assess the sufficiency and connection of the innovation potential with the financial condition and financial results of the enterprise, and does not allow to assess the effectiveness of the use of resources involved in the innovation process.

It can be suggested to use the method of point assessment of innovative potential, which involves the study of factors, each of which is evaluated by an expert on a 10-point scale. If the sum of points is 65 or higher, then the innovative capabilities of the enterprise are considered satisfactory, if less, then the analyst concludes that the innovative potential of the enterprise is low and it is not ready to implement innovations. This method allows you to determine the level of satisfaction of the enterprise with innovations and determines the sensitivity of the enterprise to innovations, that is, the ability to quickly and effectively master innovations.

A limitation to the application of this method may be the lack of a sufficient number of qualified experts in the field of innovation activity, as well as the fact that its results do not show a connection with the results of the financial and economic activity of the enterprise, the impact of innovation potential on the value of the enterprise and is based on the opinion of experts, therefore, has a subjective nature. The method of integral assessment of innovative potential is the most acceptable for practical application in analytical activities, as it combines the indicators selected for assessment into one comprehensive indicator.

Each of the selected indicators (component elements of the integral indicator of innovative potential) can also be calculated as an integral indicator. This approach provides accounting of the maximum number of factors that determine the value of the innovative potential of the enterprise.

The advantages of the proposed method are that it:

- 1) combines the influence of a fairly large number of factors — both qualitative and quantitative;
- 2) allows to rank enterprises according to the level of innovation potential or to evaluate the dynamics of the enterprise's development according to the dynamics of this indicator;

3) involves the use of modeling elements, which ensures fairly high accuracy and reliability of the obtained results.

The main disadvantages of the proposal can be called that:

1) the use of the method is associated with difficulties in establishing the specific weight of various constituent elements that are included in the calculation of the integral indicator;

2) involves the calculation of the value of each constituent element of the innovation potential.

The method of assessing competitiveness, developed under the auspices of the US National Science Foundation [18], evaluates innovation potential indirectly based on the calculation and analysis of such indicators as: national orientation, socio-cultural infrastructure, technological infrastructure, production productivity.

Each of these indicators is calculated both according to official statistics and using the opinion of experts. The main disadvantages of using this method are that it is more focused on assessing the innovation potential of the state, in the best case — the innovation potential of large multinational companies, as well as the fact that due to the need to average the obtained results and use the method of expert evaluations, the result will be inaccurate. not all data for calculation can be obtained statistically, which makes it necessary to use an expert method.

Conclusions. Summarizing what has been said about the evaluation of the economic efficiency of the introduction of innovations in production, it is not difficult to make sure of the existence of both certain general scientific approaches and various applied methodological developments for such an evaluation. This is determined by the specifics of innovations and features and the degree of their impact on production results.

Currently, a wide range of indicators is used to evaluate the innovative potential, reflecting mainly the material and technical condition of the enterprise (indicators of wear and tear of fixed assets, capital intensity and capital equipment, material intensity and material yield of products), assessment of the scientific potential of the enterprise (the number of patents and licenses, the amount of costs for innovative activities and their specific weight in the total amount of production costs), as well as the efficiency of the implementation of innovative activities (indicators of net reduced income, profitability index, payback period) and the quality of personnel potential.

However, the disadvantage of using only these indicators to assess innovation potential is that they are borrowed from methods that characterize not innovation activity itself, but the types of activity related to it — scientific-technical, production-technological, marketing, as well as personnel and material and technical potential. This led to the fact that the innovative potential was largely formed spontaneously, its structure had inherent shortcomings. Therefore, innovation potential should be considered as a complex and multifactorial phenomenon in the development of the enterprise, ensuring its competitiveness.

In this regard, further improvement of theoretical and methodological approaches to the assessment of innovative potential of enterprises is of great importance. Thus, the system for evaluating the indicators of the innovative potential of a processing enterprise is an integrated set of available and hidden resources, reserves, and opportunities that can be revealed under the conditions of interaction and interdependence of balanced subsystems and elements. The methodology for evaluating the innovative potential of a processing enterprise should be practical, flexible, based on available mathematical apparatus and correspond to the modern development of innovative activities of domestic enterprises.

REFERENCES

1. Verba V. A. (2013). Methodological recommendations for evaluating the innovative potential of the enterprise. *Problems of science*. No. 3. P. 22–31.
2. Vlasenko O. A. (2017). Evaluation of the market potential of innovative technology. *Economist*. No. 9. P. 70–74.
3. Ivanova E. S. (2015). Methodological principles of strategic assessment of innovative potential of enterprises. *Economist*. No. 12. P. 68–71.
4. Ilyashenko S. M. (2004). *Innovation management and marketing: monograph*. Amounts: University book. 615 p.
5. Prince O. V. (2019). Evaluation of the innovative potential of the enterprise. *Regional economy*. No. 3. P. 219, 227.

6. Krasnokutska N. V. (2013). Innovative management K.: KNEU. — 504 p.
7. Popovych O. S. (2016). Problem-oriented assessment of the innovative potential of scientific and technical developments and technologies in predictive and analytical research. Science and science. No. 3. P. 28–32.
8. Chaban V. G. (2016). Innovative potential of enterprises and its evaluation. Finances of Ukraine. No. 5. P. 142–148.
9. Chukhrai N. (2019) Product innovation policy: innovation management at the enterprise. K.: Kondor, 400 p.
10. Khobta V. M. (2019). Evaluation of the innovative potential of the enterprise. Economy of industry. No. 44.
11. Geets V. M. (2002). Innovative strategy of Ukrainian reforms K.: Knowledge of Ukraine, 336 p. Bibliogr.: pp. 322–336.
12. Balabanov L.V. (2006). Strategic management of the competitiveness of enterprises. K.: VD Professional. 448 p.
13. Lapin E. V. (2002). Economic potential of the enterprise: monograph Sumy: ITD “University Book”. 335 p.
14. Krasnokutska P. (2008). Definition of the concept of “enterprise potential” in the context of the development of microeconomic theory. Bulletin of KNTEU. No. 5. P. 54–64.
15. Andriychuk V.G. (2015). Efficiency of agricultural enterprises: theory, methodology, analysis V.H. Andriychuk K.: KNEU 292 p.
16. Ilyashenko S. M. (2013). Management of innovative development: problems, concepts, methods: training. manual. Amounts: University book. — 278 p.
17. Fedulova I. V. (2018). A study of methods for evaluating the innovative potential of industrial enterprises. State and regions. Series: Economy and entrepreneurship. No. 4. P. 235–240.
18. Hussey D. E. (1978). Portfolio Analysis: Political Experience with directional Policy Matrix. Long Range Planning. Vol. 11. Aug. P. 2–8.