



IMPROVING THE EFFICIENCY OF MANAGEMENT OF INNOVATION ACTIVITY OF THE ENTERPRISE

Mamajonova Odinakhon Alisher kizi
Researcher, Andijan Construction-Economic Institute

ABSTRACT

Innovative activity of a company is of fundamental importance for increasing its value. However, not all innovation activities lead to the growth of business value, often you can get a different, negative result, not growth, but destruction of value. Therefore, innovation activity should be effective, in this case it is possible to be sure that the introduction of innovations will lead to sustainable development of the enterprise, growth of its value, increase of its competitive position. The purpose of this article is to analyze the existing methods of assessing the innovation activity of the enterprise to choose a method and prove its advantages. The article reveals the problems faced by managers of enterprises that create systems for assessing the effectiveness of innovation activity. Considering the key principles of effective innovation management, the article emphasizes the principles of measurability and effectiveness of innovation. The main reasons for the creation of a system of indicators (metrics) that assess the effectiveness of innovation activity of the enterprise are revealed. The refusal to use the indicator "patent" and its characteristics in assessing the introduction of innovations is justified. The article recommends the use of the Balanced Scorecard (BSC) method for assessing the effectiveness of innovation activity of the enterprise.

KEY WORDS: *innovation activity, efficiency of innovation activity, innovation metrics, methods of innovation efficiency assessment, Balanced Scorecard.*

Today no one doubts the necessity of introducing innovations into the production process. Innovation activity of any enterprise is the basis of its sustainable development. However, no matter how high investments in innovations are, there is no guarantee that the innovation introduced into production or business processes will lead to an increase in the efficiency of the enterprise's activity and its value. It is necessary to introduce innovation in a calculated manner, assessing its positive and negative impact on the key performance indicators of the enterprise.

One of the authors of this article in 2008, analyzing the innovative activity of banks, formulated the key principles of effective innovation management, namely, the principles of scale of novelty, perspective, customer focus, resource availability, time constraints, as well as the principles of measurability and efficiency [1]. Despite the fact that these principles were proposed for commercial banks, they do not contain a pronounced reflection of the left orientation and can be applied to the enterprises of any sector of the economy.

Let us pay attention to the last two principles. The principle of measurability states that the results of innovation activity should be measurable through both quantitative and qualitative indicators. The principle of efficiency means that any innovation should have a positive impact on the results of the company's activity, increase its efficiency, improve its competitive position in the industry. For this purpose, enterprises develop a system of indicators, which concentrates in itself the assessment of the company's performance from the

position of innovation implementation.

Despite the fact that the principles of measurability and effectiveness are listed last, they come first in terms of importance. The application of the principles of measurability and efficiency in practice is connected with the necessity to create a system of indicators with the help of which it is possible to analyze the organization's ability to successfully implement innovations. Therefore, it is necessary to assess the innovation activity of the enterprise, starting from the moment of its introduction into production, i.e. from the moment of the beginning of investment in the innovation project. The moment of the end of such a project is not the launch of an innovative product or technology in large-scale production, but the end of the life cycle of innovation, i.e. the moment when the innovation ceases to be such.

Unfortunately, a significant part of enterprises do not measure the effectiveness of innovations, despite their great importance in the development of the enterprise. Innovation activity requires enterprises to constantly evaluate current innovation projects not only at the stage of making decisions on their implementation, but also at the stage of commercialization of innovations.

What specific indicators can be used to assess innovation activity? This question is repeatedly asked by both top managers and middle managers, as well as by research scientists [2, 3].



The growing number of publications devoted to innovation indicators and success factors of innovation activity reflects the need for answers to this question [4, 5, 6]. Despite the existing studies, the problem of creating a system of metrics to evaluate the innovation process at an enterprise still needs to be better understood.

There are several reasons for creating systems of metrics that evaluate the effectiveness of innovation activity of an enterprise.

Firstly, the metrics system should be based on objective quantitative data, which allows to digitally assess the result of innovation implementation.

Secondly, the system of innovation performance indicators should reflect the strategic interests of the organization.

Thirdly, the system of indicators of innovation efficiency by comparing expected and actually obtained results should show whether the forecasts regarding the efficiency of innovation implementation were justified.

Fourth, innovation performance indicators should be designed in such a way that employees are sufficiently motivated to participate in the company's innovation activities

When creating a system of innovation performance indicators, the most acute issue is the implementation of the principle of measurability in practice. In assessing innovation in practice, the importance of measuring innovation is increasingly attracting the attention of managers and consultants. Examples of consulting surveys on innovation indicators are those conducted by The Boston Consulting Group (BCG), McKinsey and PricewaterhouseCooper. The surveys include respondents who hold top management positions in companies. 75% of top managers reported that innovation is one of the triad of company priorities, and every third of them named innovation as the only priority at the moment. And, as it is noted, the survey results do not depend on industry and region. Almost half of the surveyed CEOs make attempts to evaluate innovations with the help of a system of quantitative indicators. They try to evaluate the success of innovation activity of their companies through the impact of innovations on the growth of company's income (78%), customer satisfaction (76%), growth of income from new products (74%), increase in labor productivity (71%). At the same time, as the surveys have shown, few companies have an integral system of indicators for assessing the effectiveness of innovation, which would harmoniously reflect its strategic goals. The analysis of answers regarding the innovation assessment system applied in practice showed that on average companies have approximately the same number of indicators included in the innovation assessment system. However, the more successful in terms of innovations companies tend to evaluate all the aspects of the innovation development process - the number of employees actively engaged in this process, the number of new ideas, the share of innovations that are developed on

schedule. At the same time, they do not forget to track the growth of revenues as a result of innovation and the level of customer satisfaction with new products or services. Attention should be paid to and that respondents whose companies are successfully innovating believe that the systems help manage a wide range of activities, including resource allocation, the design of individual incentive programs and interactions with investors. This satisfaction can be justified by the fact that their companies do use the metrics more effectively than others and can comprehensively assess the entire innovation portfolio. However, the same research also notes the fact that only 43% of companies actually measure innovation, and 59% of companies noted that their system for measuring innovation performance is ineffective [3].

Despite the large number of studies related to the assessment of the efficiency of innovation activity of enterprises, academic research has not provided practitioners with a general methodology for creating a system of indicators to assess the efficiency of innovation. In addition, it remains unclear whether the metrics obtained as a result of academic research are applicable to organizations. For example, Adams and his colleagues [7] argued that the innovation measurement methods recommended in the academic literature seem too theoretical. These theoretical indicators are not directly applicable to businesses, echoed another more recent study [8]. In addition, enterprises disagree on what should be measured and which stages of innovation activity should be assessed by performance indicators.

As a rule, when an innovation project is developed, the feasibility of its implementation is assessed using investment analysis methods. Using projected economic parameters of the project, the net present value of the project (NPV), its internal rate of return (IRR) and the payback period of the project are calculated. Focusing on the forecast values of all or some indicators (for example, NPV should be positive, and IRR should exceed the required return on investment), a decision is made on the realization of the project to implement an innovative product. However, not all innovation projects implemented in production practice contribute to the increase in the efficiency of the enterprise as a whole. Asking the question, how the innovation influenced the efficiency of the enterprise as a whole, it is often impossible to get an answer. The reason is quite simple, namely, how to measure this impact. Here the methods of investment analysis are no longer applicable, it is necessary to assess the impact of already functioning innovative projects on the main indicators of the company's activity. Therefore, the question of creating a system of such indicators arises.

In our opinion, the system of innovation performance indicators should meet the following requirements.

The number of indicators should vary depending on the level of managers. For example, it is optimal for a top manager to have eight to ten indicators in the system, for a middle manager the number of indicators assessing the efficiency of innovation



activity of the direction entrusted to him depends on the specifics of the industry. The clearer are the indicators of innovation activity efficiency,

The easier it will be to develop key performance indicators for employees.

Indicators of innovation performance should characterize it from all sides, therefore, they should not be correlated with each other.

The system of indicators should include quantitative and qualitative indicators. The calculation of quantitative indicators should not be too complicated and costly, while the analysis of qualitative indicators should lead to unambiguous conclusions.

The system of innovation performance indicators should be integrated into the system of corporate performance indicators of the enterprise.

The system of indicators should reveal the reasons not only for the success of innovation activity, but also the reasons for its failure. This will make it possible to avoid mistakes in the future.

We should not forget about the actualization of the system of indicators of innovation activity efficiency.

The articles by A.V. Trachuk and N.V. Linder [2,4] summarize the results of the analysis of scientific publications, from which it follows that the key factors that can be used to evaluate innovations are as follows

Customer Focus;

Focus on technological innovation;

Company size and competitiveness;

CEO's Key Role;

The Amount of total investments in the company's operations (both current and capital);

Qualified personnel and training of employees;

Intercompany and intracompany cooperation.

Each of the key factors is characterized by a system of indicators. For example, customer focus, from the point of view of foreign studies, can be characterized by the indicator "percentage of patents recognized as having value". Focus on technological innovations is characterized by seven indicators, including "percentage of rejected patents", "percentage of patents for sale", "percentage of new patents in the key research area", "average cost of a patent", etc. The factor "Company size and competitiveness" is assessed through the indicator

"number of new patents compared to competitors".

A.V. Trachuk and N.V. Linder developed an integrated indicator of innovation activity of an industrial enterprise. In the calculation of the integrated indicator they included five key factors, each of which is determined by only one indicator plus three indicative indicators, which are not included in the calculation of the integrated one, but supplement the idea of the success of innovation activity. It should be noted that the authors use patent-related indicators to a lesser extent. Only to characterize the focus on technological innovations the patent-dependent indicator is used, namely, the number of patents and other intangible assets based on the results of R&D obtained during the calculation period and the previous two years.

It is no coincidence that we focus on the use of patents to assess innovation activity. In the scientific literature, many researchers present patents as a source of innovation measurement [9, 10, 11.]. The majority of scientific works investigate the inter-relationship between the number of patents and innovation activity, considering patents as a result of R&D. In [12], the number of patents per capita is used to evaluate the ranking of countries in terms of technology or innovation intensity. De Rassenfosse and his colleagues [10] presented a methodology they developed to measure innovation by counting priority patent applications submitted by inventors in a country independently of the patent office. Hagedoorn and Cloudt analyze the innovation performance of countries by proposing two coefficients: inventive performance and inventive productivity based on the total number of patents and R&D indicators [13]. A group of scientists from the University of Cattaneo (Italy) proposed an index of innovative patents, which they developed by applying machine learning algorithms, as a metric for assessing the efficiency of innovation activity of an enterprise [14]. They showed how the index of innovation patents can assess the innovation activity not only of a country or a separate region, but, which should be emphasized, of an enterprise. Thus, a patent and its characteristics are considered to be good indicators of innovation not only at the level of a state or regions, but also at the level of an individual enterprise of private companies.

However, let's look at the ranking of the 50 most innovative companies in the world, for example, from BCG in 2021. The first 5 places in the ranking are occupied by Apple, Alphabet, Amazon, Microsoft and Tesla. Table 1 provides information on intangible assets (IA) owned by these companies. It is in intangible assets that a company's patent activity is reflected.



Table 1
Intangible assets of the world's 5 most innovative companies, 2021*

N/a In innovation al reting	Name of the company	Intangible assets, mln USD	Share of NMA in total acsets, %
1	Apple	0	0
2	Alphabet	1417	0,4
3	Amazon	5107	1,2
4	Microsoft	7462	2,2
5	Tesla	257	0,4

As Table 1 shows, patents recorded as intangible assets on the balance sheet (but they are not the only ones) do not correlate with the ranking of the most innovative companies. For several years now, Apple has not had a single product created and patented or a patent purchased on its balance sheet. Amazon also has no intangible assets in 2022, as the interim accounts show. However, there is no doubt in anyone's mind

In our view, it is inappropriate to use the availability of patents and their characteristics to assess the efficiency and level of innovation activity of an enterprise. For this reason, from our point of view, it is inappropriate to use the presence of patents and their characteristics to assess the efficiency and level of innovation activity of an enterprise.

Let us return to the key indicators developed by A.V. Trachuk and N.V. Linder. In [2], they identified seven metrics of innovation activity for Russian industrial enterprises depending on the type of innovation behavior that companies adhere to. Here the authors departed from the use of an integrated indicator of innovativeness within the enterprise, analyzing each of the metrics separately. This approach seems to us to be the most promising for the enterprises, the purpose of which is not so much to compare themselves with their competitors, as to assess the effectiveness of their innovative activity and make managerial decisions. Among the approaches to measuring the efficiency of innovation activity of enterprises the Balanced Scorecard (BSC) is mentioned [2, p.287]. We believe that the SCB method is one of the most promising in the practice of application for assessing the effectiveness of innovation activity.

Already at the end of the last century, it was realized that it was wrong to evaluate the company's activity by traditional financial indicators; these indicators gave an incomplete picture of the company's performance, which prevented it from working effectively to achieve its strategic goals. To assess the activity of a modern company it is important to evaluate the effectiveness of relationships with customers; to determine the level of innovative development of the company; to understand how qualified and motivated employees are, etc. In the early 90s of the 20th century, Harvard Business School professor Robert Kaplan and American management consultant David Norton proposed an approach to efficiency assessment through a system of indicators, where a balance of indicators describing

the financial and marketing components of the company's activity, as well as the company's business processes and personnel training was observed. They called their method "Balanced Scorecard" (BSC) [15].

The Balanced Scorecard is not so much a measurement system as a management system that allows a company to formulate strategic goals and track their realization in practice.

Kaplan and Norton proposed a scheme for assessing the effectiveness of a company's activities, including four projections: finance, customers, internal business processes, training and growth.

For each projection, key strategic goals based on the overall strategy of the company are defined, in accordance with which key performance indicators (KPIs) are developed to assess the performance of each employee and division of the enterprise, not only in the context of the positive results achieved, but also from critical positions.

Finance, or more precisely financial results, are the key criteria for assessing the company's performance.

The marketing projection offers indicators that adequately assess relationships with customers, entry into new market segments, etc.

The projection of internal business processes identifies the key processes to be improved and developed in order to strengthen the competitive advantage. The choice of key processes should be made not only from the point of view of current efficiency, but also from the point of view of opportunities for its improvement. Therefore, the influence of innovation processes is most noticeable in this projection.

In the projection of training and growth, the main indicators should reflect investments in the company's personnel, staff turnover rates, qualification of employees, and their innovative potential.

The Balanced Scorecard assesses the efficiency of the company's performance as a whole. It helps to assess the degree of achievement of the set strategic goals. The development strategy of a modern enterprise is based on the introduction of innovative products and technologies. The MTP allows to

* Compiled by the authors on the basis of the financial statements of companies from the website ru.investing.com



modify the performance evaluation indicators, namely, to add new ones, to change some indicators to others, to those that reflect the effect of innovation implementation to a greater extent. From our point of view, the balanced system of indicators is the most acceptable method of assessing the effectiveness of innovations, as it allows us to assess the effect of implementation of a particular innovation project.

15. Kaplan R., Norton D. *Balanced Scorecard. From strategy to action.* M.: Olimp-Business, 2006. 304 p.

REFERENCES

1. Kokh L.V. (2008) *Methodological approaches to assessing the economic efficiency of innovations in the banking business.* Scientific and technical statements of St. Petersburg State Polytechnical University. Economic sciences. No.5. P. 190-196
2. Trachuk A.V., Linder N.V. (2021). *Key indicators of innovation performance: A review of significance and practical application.* *Strategic Decisions and Risk Management*, 12(4): 284-298. DOI: 10.17747/2618-947X-2021-4-284-298.
3. Dewangan V., Godse M., 2014. *Towards a holistic enterprise innovative performance measurement system.* *Technovation* 34(9), 536-545
4. Trachuk A. V., Linder N. V. *Innovative Activity of Industrial Enterprises: Measurement and Effectiveness Evaluation.* *Strategic Decisions and Risk Management*. 2019;10(2): 108-121 doi: 10.17747/2618-947X-. 2019-2-108-121
5. Evanshitzky H., Eisend M., Roger J. Calantone, Jiang Y., 2012. *Success Factors of Product Innovation: An Updated Meta-Analysis.* *Journal of Product Innovation Management* 29(S1), 21-37
6. Freeman C., Soete L. *Developing science, technology and innovation indicators: What we can learn from the past.* *Research Policy*, 2009, Vol. 38(4), 583-589. <https://doi.org/10.1016/j.respol.2009.01.018>
7. Adams R., Bessant J., Phelps R. *Innovation management measurement: A review.* 2006. *International Journal of Management Reviews*. Vol. 8(1), 21-47. doi.org/10.1111/j.1468-2370.2006.00119.x
8. Cruz-Cázares C., Bayona-Sáez C., García-Marco T. *You can't manage right what you can't measure well: Technological innovation efficiency.* 2013. *Research Policy*. Vol. 42 (6-7), 1239-1250.
9. Jaffe, A.B. and Palmer, K. (1997), "Environmental regulation and innovation: a panel data study", *The Review of Economics and Statistics*, Vol. 79. No. 4, pp. 610-619.
10. De Rassenfosse, G., Dernis, H., Guellec, D., Picci, L. and de la Potterie, B.V.P. (2013), "The worldwide count of priority patents: a new indicator of inventive activity", *Research Policy*, Vol. 42. No. 3, pp. 720-737.
11. Nagaoka, S., Motohashi, K. and Goto, A. (2010), "Patent statistics as an innovation indicator", in *Handbook of the Economics of Innovation*, Vol. 2, pp. 1083-1127
12. Svansson, R. (2015), "Measuring innovation using patent data", *Technical report, IFN Working Paper, Stockholm.*
13. Hagedoorn, J. and Cloudt, M. (2003), "Measuring innovative performance: is there an advantage in using multiple indicators?", *Research Policy*, Vol. 32 No. 8, pp. 1365-1379.
14. Ponta L., Puliga G., Manzini R. *A measure of innovation performance: the Innovation Patent Index.* *Management Decision*, 2021, Vol.59 No.13, pp. 73-98. <https://doi.org/10.1108/MD-05-2020-0545>