

## **Analyse von ansätzen zur bewertung der innovativen tätigkeit hochschuleinrichtungen**

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**Anmerkung:** Dieser Beitrag widmet sich der Analyse von Ansätzen zur Bewertung der Innovationstätigkeit von Hochschulen, in der ein wissenschaftlich fundierter Vorschlag und Empfehlungen für den Einsatz von Hochschulen in der Praxis entwickelt wurden, basierend auf den Ansätzen von Forschenden und Wissenschaftler zur Bewertung der Innovationstätigkeit von Organisationen, ihrer Gruppierung, der Analyse von Vor- und Nachteilen.

**Schlüsselwörter:** innovative Aktivität, formaler Ansatz, Ressourcenkostenansatz, Ergebnisansatz, Aktualisierungsindex, funktionaler Ansatz, faktorbasierter Ansatz

## **Analysis of approaches to assessment of innovative activity of higher educational institutions**

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**Abstract:** This article is devoted to the analysis of approaches to assessing the innovative activity of higher educational institutions, in which a scientifically grounded proposal and recommendations for the use of higher educational institutions in practice were developed based on the study of the approaches of researchers and scientists to assessing the innovative activity of organizations, their grouping, analysis of advantages and disadvantages.

**Keywords:** innovative activity, formal approach, resource-cost approach, result approach, update index, functional approach, factor-based approach

Modern socio-economic development of our country requires higher education institutions to significantly improve their creative potential and increase the competitiveness of future graduates. This issue will be addressed through the development of innovative activities and activism of higher education institutions. The competitiveness of higher education institutions, in turn, is determined by innovative activities.

It should be noted that HEIs contain a large amount of ideas, research and development that can be used by other participants in the innovative market during their activities.

Therefore, a set of measures to ensure the development (formation) of innovative activity and activism will not only increase the capacity of higher education institutions (HEIs), improve the educational process of HEIs, improve the quality of training highly qualified, competitive personnel, but also address many issues related to economic development. can be one of the main sources of solutions.

It is advisable to evaluate the innovative activity of the university, as well as any other system of activities, using a set of indicators that affect it. However, at present, despite the high importance of innovation activity, the organization of innovative activity, in the theory and practice of innovation management there is no universal methodology for assessing the innovative activity of higher education institutions and its leadership.

It should be noted that the statistical monitoring of innovation activity and innovations in the Republic of Uzbekistan since 2013 was carried out by organizations ("Questionnaire for monitoring the innovation activity of organizations" and "Questionnaire for monitoring the impact of innovation on business development") completeness ensured the quality of the results obtained). The process of radical reform of all spheres and aspects of society and state life has revealed a number of shortcomings in the field of innovation, as well as in other areas.

In particular, the interaction between the ministries and agencies responsible for the development of scientific and innovative activities is not at the required level and the activities of research institutions and laboratories are not sufficiently coordinated; lack of highly qualified specialists capable of actively promoting and implementing technology transfer in the field of innovation management; inefficient and transparent state funding of scientific and innovative activities, lack of incentives to attract extra-budgetary and private funds, underdeveloped internal sources of debt financing; lack of improvement of corporate relations and corporate governance principles in the country, especially in state-owned companies, which does not take into account the best practices abroad; low share of information and communication technologies sector in the country's GDP, etc.

These problems have necessitated the development of new regulatory mechanisms in this area. In this regard, in order to overcome the problems, the regulatory framework for the development and promotion of innovative activities in the country has been created.

Law of the Republic of Uzbekistan "On Innovative Activity" (July 24, 2020, No. ZRU-630), Law of the Republic of Uzbekistan "On Science and Scientific Activity" (October 29, 2019, No. ZRU-576), Republic of Uzbekistan The Decree of the President of the Republic of Uzbekistan "On approval of the Strategy of innovative development of the Republic of Uzbekistan in 2019-2021" (September 21, 2018, No. PF-5544) is one of them [1, 3]. Also, based on the above regulations, the decision of the State Statistics Committee of the Republic of Uzbekistan "On the organization and conduct of observations of innovation activity of organizations and the impact of the results of innovations" (No. 13 of April 29, 2021) [4]. According to this decision, 10.5281/zenodo.5576428

Resolution No. 5 of the State Statistics Committee of May 28, 2013 "On approval of the Methodological Regulations on the organization and conduct of monitoring the innovative activity of organizations and the impact of innovations on business development" was considered invalid.

According to the Resolution of the State Statistics Committee of the Republic of Uzbekistan dated April 29, 2021, the manual on the organization and conduct of monitoring of innovation activity of organizations and the impact of innovation results in order to study the barriers to innovation, as well as to determine the economic impact of innovation It was reported that the organization determines the mechanisms for organizing and conducting monitoring of the innovative activity of organizations and the impact of the results of innovations introduced [4].

At present, the main form of monitoring innovation activity is the 1st form of innovation [4]. The analysis of this document allows us to conclude that the innovative activity of the organization is determined by the amount of innovations (new or significantly improved products introduced into production (supply) practice or market) over the past three years. The structure of the indicators recommended in the form of innovation 1 applies to industrial enterprises that serially (product) the product to the market and lead the renewal of production assets and technology. However, the application of innovative products to scientific organizations with a different typology is almost unrealistic.

One of the most common methods of assessing the innovative activity of the organization is the method proposed by a specialist in innovation management and risk management V.N. Gunin (followed by foreign scientists V.A. Ustinov, R.A. Fatkhutdinov). However, seven indicators of activity ( $A_i$ ) are analyzed:

$A_1$  - quality of innovation strategy;

$A_2$  - level of mobilization of innovative potential;

$A_3$  - level of attracted capital investments;

$A_4$  - methods, culture, guidelines used in making changes;

$A_5$  - the adequacy of the firm's reaction to the nature of the competitive strategic situation;

$A_6$  - the pace of strategic innovation;

$A_7$  - the validity of the level of implementation of innovative activity [8, 12].

The above indicators are given a certain value on a 5-point scale, and all the data are summarized in the formula:

$$K_{IA} = \frac{1}{7} \times \sum A_i$$

where  $i=1, 2, \dots, 7$ .

In our opinion, this method is somewhat difficult to apply to higher education institutions due to the complexity of the assessment and the weak reliability of the indicators provided.

It should be noted that the category of "innovative activity" as an object of measurement has the property of a quantitative indicator - a sign. In this context,

innovative activity can be viewed as an integral indicator with a specific set of specific properties.

A number of researchers try to formulate a small number of specific indicators to determine the level of innovative activity. Therefore, they often cannot give a complex assessment, only focus on a specific aspect of this category.

So, for example, the method proposed by V.P. Barancheev, N.P. Maslennikova and V.M. Mishin assesses only the resource component of innovative activity. They suggest evaluating the four components of an organization [6]:

1. Provision of quantitative resources;
2. Innovative literacy;
3. Organization and quality of communication;
4. Innovative competence.

The general characteristic of innovative activity will be the result of summing the values of the components under study, taken on a 10-point scale. This method is also difficult for use in a university due to the blurredness of the indicators used and the difficulty of assessing the qualitative parameters.

I.V. Ryabov, O.N. Melnikovs propose to imagine the organization as a sum of three elements (staff, management and management structures, internal environment). These elements have a different effects on the coefficient of innovation activity:

- the time it takes for the internal environment to adopt innovation;
- staff - the amount of novelty;
- management - affects both parameters.

Thus, the final coefficient can be expressed as follows [10]:

$$K_{activ} = \frac{\Delta N_{manag} + \Delta N_{pers}}{\Delta t_{compet} - \Delta t_{manag} - \Delta t_{inter.inver}},$$

where ( $\Delta N_{manag}$ ) is the amount of novelty received from the management component,

( $\Delta N_{pers}$ ) – is the amount of novelty received from the personnel,

( $\Delta t_{compet}$ ) - time of competition,

( $\Delta t_{manag}$ ) - to make a profit in the time obtained using the management component,

( $\Delta t_{inter.inver}$ ) - to make a profit in the time obtained using the internal environment.

It can be seen from the formula that a change in the management component affects the amount and timing of innovation at the same time, while a change in staff or internal environment affects only one of the elements of innovation.

Unlike competent management, the internal environment or employees cannot be the basis of a high and effective innovation activity of the organization on its own. Therefore, practice confirms this connection.

I.V. Ryabov, O.N. Melnikov note that the innovative activity of an organization can be considered active if this indicator exceeds the market average. However, in order to control the situation, which can lead to a significant excess of the organization's indicator over the market one (i.e., the market is not ready for the proposed innovations), researchers introduce a limit to innovative activity, i.e., the

maximum possible value of the object's activity. When the ratio approaches the limit value, the organization should reconsider the nature of the products.

In our view, the advantage of this approach is the interpretation of the indicators obtained, which allows management decisions to be made in relation to the subsequent actions of the organization. However, the disadvantage is the proposed methodology itself - the consideration of innovative activity only in the context of human-management factors, is narrow enough.

M.N. Nechepurenko describes innovation activity by the rate of implementation of innovations and proposes to quantify it as a product of relative private indices, which in turn represent the ratio of specific indicators of the current period to the base period [9].

M.N. Nechepurenko suggests including the following in private indexes:

1. Innovation cost-volume index (ratio of innovation costs to sales);
2. Renewal index (share of new products in total production);
3. New products novelty index (average novelty level of all new products).

The disadvantage of the above method in terms of application to higher education institutions is that it does not take into account personnel, scientific, performance indicators.

In their research, some groups of authors summarize the approaches that can be used to assess innovation activity and specify the most appropriate set for application to organizations [5, 11, 13].

For example, economist S.V. Savanovich states that there are two approaches. The first is to assess the development of innovative infrastructure and determine the ability of enterprises to commercialize innovations. This approach is mainly used in the formation of reports and statistics on the status and prospects of development of innovative activities in the country and at the regional level.

The second approach is to use the assessment of innovation activity as a first step in the process of developing an innovation strategy of a particular enterprise.

The main task is to analyze the economic development of a particular business entity and its components.

S.V. Savanovich assumes that the next innovation, investment, strategic, marketing policy of the enterprise will be formed depending on the state of the innovation environment [11]. However, the expert evaluation method is indicated as the main method that allows to take into account the set of parameters being evaluated.

I.V. Baranova, M.V. Cherepanova suggests considering three methodological approaches to assess the innovative activity of any organization: formal, resource-cost, and outcome [5].

The formal approach allows organizations to be divided into two groups: innovation-active and non-innovation-active. Belonging to the category of innovative activists is determined by the evidence of performance of work related to innovative activities, ie the main task of the organization is to identify the types of activities that can be classified as innovative.

The resource-cost approach is based on determining the amount of various resources used by an organization at all stages of the innovation process. In addition to the types of innovative activities, the implementation of this approach requires the identification of resources and costs to be taken into account in the evaluation. Thus, in this case, the activity is evaluated from the innovative activity until any results are obtained.

The outcome approach is based on the identification of the potential benefits that the organization will or will receive from the implementation of innovative activities and their value assessment. To implement this approach, it is necessary to identify a number of effects (economic, scientific, technical, social, environmental) that are taken into account in the assessment of innovation activity.

In our opinion, the proposed methodological rules can be applied to higher education institutions only if they are considered in a comprehensive manner.

A comprehensive study of the methodology of innovative activity of organizations is conducted by another close foreign economist A.E. Vlasova. The set of approaches proposed by the author is summarized in Figure – 1.

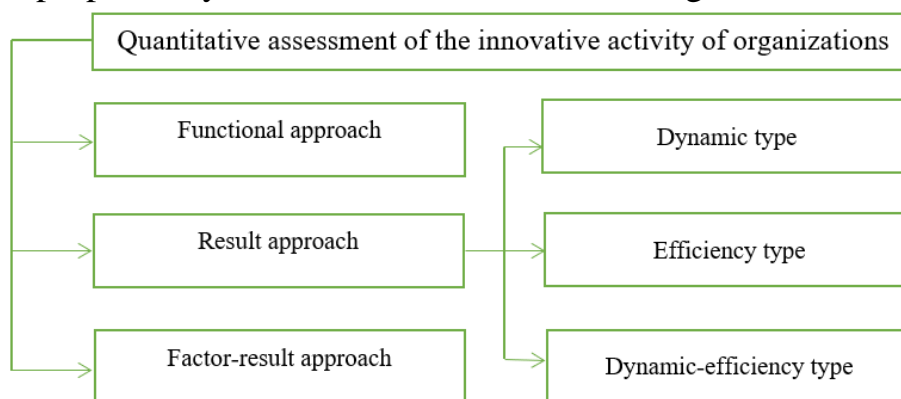


Figure - 1. A set of approaches to the assessment of innovative activity, proposed by A.E. Vlasova.

In the framework of a functional approach to assess the innovative activity of the enterprise, instead of a description of the final results of its innovative activity, indicators of the intensity of implementation of one or another type of activity are used, in particular:

- a) realization of the organization of separate types of scientific-research and experimental-constructive work;
- b) acquisition of advanced new technologies (various types of new technological equipment and equipment);
- c) acquisition of new technologies (different types of objects of intellectual property);
- d) training and retraining of personnel;
- e) osushchestvlenie elements of complex marketing for new types of products.

It is worth mentioning that research and development work is a set of works aimed at obtaining new knowledge and practical application when creating a new product or technology.

Evaluation of each of the listed activities within the framework of the functional approach is carried out using natural and cost indicators. The main advantages of the functional approach are its simplicity, versatility, and applicability with a minimum amount of initial data.

At the same time, this approach is very simplified and has two main disadvantages [7]:

- does not take into account the final results of the organization's innovative activities and, therefore, does not allow evaluating its effectiveness;
- does not take into account the possibility that certain activities taken into account (for example, personnel training) in reality may not be related to innovative developments, but may represent one of the types of routine business processes.

The result approach is based on obtaining an assessment of the organization's innovative activity using indicators that characterize various aspects of the final results of its innovative activity.

Depending on the nature of such aspects, the author divides this approach into three more particular approaches: dynamic, efficiency and mixed dynamic-efficiency.

The dynamic approach involves assessing innovative activity using indicators that characterize the intensity of ongoing innovative developments. The most common of these indicators is the indicator of the average speed of development and implementation of various innovations by the organization, as well as the indicator of the number of innovative developments carried out over a certain period of time.

The efficiency approach is based on the assessment of innovative activity using indicators that express the degree to which the organization has achieved those final goals of functioning, on which its innovative activity is mainly focused. Depending on the nature of these goals, this approach uses different valuation characteristics.

The mixed dynamic-efficiency approach is the most developed approach of the result group, since it makes it possible to assess innovative activity using complex indicators that integrate both assessments of the dynamics of innovative developments implemented by the organization and the assessment of the effectiveness of such developments. Due to this, within the framework of this approach, the main disadvantages of the two previous approaches are eliminated, which are:

- 1) for a dynamic approach - the lack of accounting for the economic results of innovation;
- 2) for the efficiency approach - the lack of taking into account the parameters of the speed of implementation of innovative developments.

The advantage of the result-based approach as a whole is that it allows you to evaluate innovative activities by their end results. The main disadvantage of this approach is that it allows only to record one or another level of innovative activity of

the organization, but it does not make it possible to identify the cause-and-effect relationships that determine the dynamics of this level.

The factor-effectiveness approach to the assessment of innovative activity differs in that within its framework, the assessment is carried out on the basis of combining the factor and result characteristics of innovative activity. To assess the factor parameters of innovative activity within the framework of this approach, the author emphasizes the use of a set of criteria such as the amount of enterprise costs for research and development work (R&D), the acquisition of intellectual property and financing of inter-firm research projects, indicators of the composition and number of employees, temporary groups, subdivisions and inter-firm associations engaged in implementation (R&D), the volume of new technologies acquired by the organization, the scale and quality level of the material base of the research activities of the enterprise, etc.

The main advantage of the factor-effectiveness approach is the ability to identify, with its help, cause-and-effect relationships that determine the effectiveness of innovation. In this regard, according to A.E. Vlasova, this approach is most widespread in the systems of in-house management and is used to develop and substantiate management decisions aimed at optimizing the innovation policy of organizations [7].

In conclusion, only the positive aspects of the above approaches (taking into account the complex relationship between the resource part of the organization and the criteria that characterize the effectiveness of the results achieved) can be used in developing a methodology for assessing the innovative activity of higher education institutions.

In our opinion, it is expedient to separate the existing methodologies as follows:

- 1) application of expert methods;
  - 2) application of calculation methods:
- procedural approaches;
  - result-oriented approaches;
  - mixed approaches.

The following table summarizes the analyzed methodologies for evaluating innovation activity according to the classification we have highlighted.

The analysis of the methods of assessment of innovative activity presented by the authors confirms that in the practice of the Republic of Uzbekistan there is no single approach to the assessment and analysis of this category.

Therefore, in developing a methodology for assessing the innovative activity of higher education institutions (HEIs), the specifics of its performance, ie the successful operation of HEIs are associated with the interaction of three blocks of its innovative potential: human resources, scientific, financial, as well as it is necessary to take into account the efficiency (effectiveness) of available resources.

**Systematization of methods for evaluating innovative activity proposed by scientists from near abroad**



<b>Authors</b>	<b>The essence (content)</b>	<b>Possibility of application in higher education institutions</b>
<i>Application of expert methods</i>		
V.N. Gunin, V.A. Ustinov, R.A. Fatkhutdinov	The average value of the seven indicator scores: strategy quality; potential level; capital investments; research methods; attitude to the situation; rate of change; validity of activity level.	The complexity of the assessment, the poor reliability of the results
V.P. Baranchev, N.P. Maslennikova, V.M. Mishin	Evaluation of four components (components) on a point scale: availability of quantitative resources; innovative learning; quality of organization and communication; innovative competence.	Uncertainty of applied indicators and complexity of assessment of qualitative parameters
S.V. Savanovich	Assessment of the development of innovation infrastructure and determination of the ability of enterprises to commercialize innovations	Evaluation criteria are not sufficiently clear
<i>Process-specific approach</i>		
I.V. Ryabov, O.N. Melnikov	Calculation of the indicator, including the staff, management and management structure, the internal environment. The limit of innovative activity will be introduced.	From a practical point of view, the interpretation of the obtained indicators. Consideration of innovative activity only in the context of human-management factors is presented in a sufficiently narrow range.
M.N. Nechepurenko	The ratio of current indicators to key indicators: innovative cost-volume index; update index; product novelty index.	Personnel, scientific, efficiency indicators are not taken into account
<i>An effective result-oriented approach</i>		
A.E. Vlasova	Use of factor-result approach: using it to identify the cause-and-effect relationships that	Taking into account the complex relationship between

	determine the effectiveness of innovative activities of the enterprise (based on a set of features)	the criteria that characterize the resource part of the organization and the effectiveness of the results achieved
<i>Mixed approaches</i>		
I.V. Baranova, M.V. Cherepanova	A set of formal, resource-cost and performance indicators of innovation activity	It can be applied to higher education institutions provided that the calculation indicators are specified.

This will allow the university leadership to identify a comprehensive indicator of innovation activity, to include it in the competitiveness ranking of universities and to make more effective decisions in the future in relation to innovative development.

#### **References:**

1. Law (2020). Law of the Republic of Uzbekistan dated July 24, 2020 No. ZRU-630 "On innovative activities". <https://lex.uz/ru/docs/4910391>.
2. Law (2019). Law of the Republic of Uzbekistan dated October 29, 2019 No. ZRU-576 "On science and scientific activity". <https://lex.uz/docs/4571490>
3. Farmon (2018). Decree of the President of the Republic of Uzbekistan dated September 21, 2018 No PF-5544 "On approval of the Strategy of innovative development of the Republic of Uzbekistan for 2019-2021". <https://lex.uz/docs/3913188>.
4. Resolution (2021). Resolution of the State Statistics Committee of the Republic of Uzbekistan dated April 29, 2021 No. 13 "On approval of the" Guidelines for the organization and conduct of monitoring of innovation activity of organizations and the impact of the results of innovations. "
5. Baranova I.V. (2006). Methodical approaches to the assessment of innovative activity and innovation potential *vuza* / I.V. Baranova, M.V. Cherepanova // *Sibirskaya finansovaya shkola*. - 2006. - № 4 (61). - S. 163-167.
6. Baranchev V.P. (2015). *Upravlenie innovatsiyami: uchebnik dlya bakalavrov* / B. P. Baranchev, N. P. Maslennikova, V. M. Mishin. - 2-e izd., Pererab. and dop. - Series: Bachelor. Deepened course. ISBN 978-5-9916-3011-5., - M.: Izdatelstvo Yurayt, 2015. - 711 p.
7. Vlasova A.E. (2011). Problems otsenki innovatsionnoy aktivnosti torgovyx predpriyatiy // *Povoljskiy tor-govo-ekonomicheskij zhurnal*. - 2011. - № 4 (20). - S. 13-19.

8. Gunin V.I. (1999). Modular program for managers. Module 7. Upravlenie innovatsiyami / V.I. Gunin, V.P. Barancheev, V.A. Ustinov, S.Yu. Lyapina / Series: 17 - modular program for managers "Management of the development of organizations" ISBN: 5-16-000058-5, 5-16-000068-2., - M.: INFRA-M, 1999. - 328 p.

9. Nechepurenko M.N. (2006). Organizational-ekonomicheskiiy mekhanizm upravleniya ustoychivym razvitiem predpriyatiya na osnove innovatsionnoy aktivnosti // Avtoreferat diss. ... Kand. econ. science. - Moscow, 2006. - 24 p.

10. Ryabov I.V. (2011). Model innovatsionnoy aktivnosti predpriyatiya / I.V. Ryabov, O.N. Melnikov // Economics, entrepreneurship and law. - 2011. -№1. - S. 8-16.

11. Savanovich S.V. (2009). Problem povыsheniya innovatsionnoy aktivnosti rossiyskix predpriyatiy / Moskovskiy aviatsionnyy institut - Access mode: URL: [www.mai.ru/events/sfiro/articles/sec7/savanovich.doc](http://www.mai.ru/events/sfiro/articles/sec7/savanovich.doc).

12. Fatkhutdinov R.A. (2011). Innovation management: Uchebnik dlya vuzov. 6-e izd. - SPb.: Peter, 2011. - 448 p.

13. Zaripova, M.D. (2019). Assessment of the quality of education in the higher education system // ISJ Theoretical & Applied Science, 11 (79), - P. 390-392. Doi: <https://dx.doi.org/10.15863/TAS.2019.11.79.81>