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# Monitoring of Educational Processes in Higher Education Institutions

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**ABSTRACT**

The article describes practical and foreign experience in the educational process in higher education, its quality monitoring. Recommendations have been developed for this type of activity.

***KEYWORDS:*** *higher education, quality of education, monitoring, foreign experience, integration of production and science, preparation for pedagogical activities*

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## INTRODUCTION

The main purpose of the world is the integration of production and science, the preparation for professional activity in the universities of the University status is carried out according to the specialties of education. In higher education institutions with university status, the majority of graduates with specializations close to general education subjects (subjects taught in general secondary and vocational education institutions) associate their work with the teaching profession in educational institutions.

Scientific and methodological support of organizational and pedagogical stages of preparation of students for pedagogical activity in higher education institutions directly depends on its monitoring system, these two elements are factors that increase the ability to guarantee the quality of education.

## LITERATURE ANALYSIS AND METHODOLOGY

The pedagogical conditions of monitoring the quality of teaching in the system of continuing education, in particular, in the system of general secondary education, which is an independent category of education management, were studied by domestic scientists R. Djuraev, Sh. Kurbanov, U. Inoyatov, R. Ahlidinov, E. Seytkhalilov, R. Karimov, Special attention is paid to the scientific work of S. Turgunov, as well as CIS scientists A. Bakhmutsky, A. Makarov, S. Khokhlova, S. Bagaeva, I. Belevtseva, I. Galmukova, A. Mayorov, and the quality management of education in general secondary education[1].

The problems of improvement, introduction of a system-based approach to monitoring the quality of teaching are studied.

## RESEARCH METHODOLOGY

The need for monitoring aimed at scientific and methodological support is to ensure that education is in line with international trends, to create an open learning environment, to achieve variability in learning content, to ensure that teaching is practical, and to collaborate with clients, social relationships related to students' personal lives and learning

activities. functions such as creating a positive environment and the variability of the forms of their implementation, the rapid development of applied technologies, the convenience that arises, the multiplicity of the system and the breadth of its impact.

This includes the requirements of the higher education institution, customers, governing bodies of the education system, the circumstances related to the performance of functions, achievements and shortcomings, analysis of problems, bringing together all stakeholders on the basis of conclusions and proposals, mobilization for the overall result.

**DISCUSSION**

In our opinion, it is appropriate to consider the preparation of students for pedagogical activity in higher education as an activity that provides monitoring and advice to subjects on new decisions at the organizational and pedagogical stages and assists in their implementation.

At the same time, the main task of the monitoring service of higher education is to implement actions based on the existing procedures, norms and analysis to address the problems that may arise or may arise in the use of scientific, technical and organizational-social innovations in preparing students for pedagogical activities. . Such an action consists of a set of activities aimed at solving the problem of correcting, modernizing or updating the system.

In the process of correction, the main attention is paid to internal and external factors, the situation and situations, process data are analyzed, errors are corrected. This type of monitoring, which does not have a large workload, serves for the future success of the educational process by increasing the existing convenience and opportunities for the activities of students, strengthening the scope of customers, eliminating shortcomings in the existing educational and regulatory framework, hardware and software. The fact that the monitoring is focused only on the problem of correction, shows that the results of the educational process of the higher education institution to some extent meet the needs and requirements of all participants, including customers, listeners, organizers and other stakeholders.

Monitoring on the problem of modernization is carried out on the basis of relevant data in terms of modernization of the process, as well as the elimination of shortcomings in existing cases. By studying this problem, the higher education institution can improve the organizational and pedagogical conditions of the educational process, its scientific-methodical and organizational-methodological bases, standard curriculum, program, teaching-methodical and normative documents, development of relevant teaching materials on the basis of demand and need. Measures to improve the quality of learning outcomes will be identified and ensured through the improvement of activities in areas such as organization, testing and implementation.

While correctional monitoring can be carried out internally through existing divisions of the higher education institution, monitoring activities reflecting the problem of modernization are ordered by specially authorized state bodies in charge of education, ie the problem of modernization is the training and professional development of education system staff. as a result of the finding that the efficiency of the use of available resources within the system is insufficient by such public authorities responsible for the organization.

If the problem involves the purpose of updating, the possibility of rebuilding the system based on imagination and creative thinking based on an analysis of existing internal and external information will be considered. Achieving this goal is based on in-depth scientific approaches, international experience in the educational process of the higher education institution and the requirements of the national model of education. As a result of the monitoring, the proposal of the specially authorized state bodies on education management on the solution of the existing problem will be considered at the Government level and measures will be taken to update certain components (or the whole system).

All factors in achieving the goal of modernization and renewal are based on the experience and results gained at the local (other higher education institution in the system), corporate (higher education institution in other education systems) and global (international higher education institution) scale.

It can be seen that the monitoring of a higher education institution reflects the determination (causality) of the goals, from the definition of current and future requirements to the development of models that develop it. This suggests that higher education institution monitoring is a driving force that is rapidly adapting to changing conditions, dynamic in nature, and constantly evolving.

It is desirable that the monitoring of higher education institutions be carried out in the form of a large-scale project, which allows a high level of organization, accurate analysis, substantiated conclusions and proposals. The monitoring process is a complex set of activities, including the search for unused resources in the system, the collection and processing of large

amounts of data, the ability to gain a clear picture of the situation and assess it. Relevant information is formed through the study of existing reports and normative documents, observations, interviews, tests, various surveys.

The concept and content of monitoring is sufficiently reflected in the scientific conclusions of scientists such as R.Ahlidinov[2]., Sh. Gurbanov, E. Seytkhalilov[3]., who conducted research on the organization and conduct of monitoring and generalization of the monitoring of the educational process and quality.

Although the application of the findings of these studies in the educational process of higher education institutions in general does not negate their content and scientific nature, our research has shown that there are a number of features of monitoring of higher education and these features are directly related to monitoring quality.

Monitoring in the context of our study, as in all monitoring, focuses on identifying factors that are effective and, conversely, negative in ensuring the quality of the object of education - the ultimate goal, the level of qualification of the listener to the requirements of the state and society.

Our research has shown that in the process of monitoring a higher education institution, such factors have their own criteria in the relevant curriculum, program, teaching, regulatory and technical support, technology, structure and staffing, argumentative, procedural and performance-related parameters. and can be determined on the basis of indicator indicators.

- argumentative (Ar) indicators are formed on the basis of the principles, norms of action in the educational process of the higher education institution, the state of the established system of procedures and the data representing the existing quantities. Its composition can consist of the following parameters and indicators:
- plans for preparation for pedagogical activities (Ar-1) - planning is formed on the basis of bottom-up vertical orders, the quality of preparation of orders, completeness of data, confirmation, analysis of periodic plans, the presence of prospective plans;
- relevance of curricula (Ar-2) - compliance with state requirements, approval, customer proposals, internal proposals, proposals of various organizations, public proposals, grouping of proposals, study of the content of existing curricula and programs, the availability of variability;
- teaching materials (Ar-3) - compliance with the curriculum, compliance of teaching materials with the general principles, content, methodological and technological support;
- human resources (Ar-4) - specialization, academic level and qualifications;
- normative documents (Ar-5) - the order and requirements for the organization and conduct of training for pedagogical activities, the norm of student competence and competence of teachers, the technology of monitoring the system, the order of support of postgraduate students;
- information environment capacity systems (R-6) - requirements for the information environment, systems that provide various conveniences, virtual pedagogical communication, educational and organizational information system, computer and its devices, Internet, laboratory equipment, etc.
- based on the data representing the state of implementation of certain processes at the organizational and pedagogical stages of the educational process of the higher education institution, the indicators in the procedural direction (Pr) can be classified according to the following parameters and indicators:
- the process of determining the contingent (Pr-1) - the concentration of needs and requirements, the study of customer complaints, collaborative dialogue, promotion of pedagogical activities, the organization of group discussions, the adoption of optimal decisions;
- the process of content formation (Pr-2) - the process of identifying and systematizing professional needs in the process of pedagogical activity, the activities of authors and specialists for the development and updating of teaching materials, design processes, curricula and programs of major customers, various organizations and community grouping, generalization of internal proposals, analysis of the current curriculum, identification of some outdated, irrelevant topics.
- the process of selection and training of personnel (Pr-3) - the organization of the selection of personnel, contractual relations; identification of relevant competencies of professors and teachers, the process of continuous professional development and self-development, conducting training seminars.
- ensuring the necessary conditions and mobilization (Pr-4) - registration of students, registration, determination of the level of

pedagogical orientation, grouping, development of working curricula, scheduling, work with educational journals and relevant documents; computer and its devices, internet, laboratory equipment.

- the process of adaptation and training (Pr-5) - the organization of training that introduces students to the organizational and pedagogical stages of the educational process; monitoring and analysis of students' learning activities; provision of independent educational materials, organization of virtual forums, assistance in information retrieval processes.
- control tests (Pr-6) - entrance tests, current and intermediate, organization of final controls, generalization, assessment of student performance; calculation of training loads; support of students' postgraduate activities, provision of information.

Performance indicators (Na) indicators represent the specific results of the higher educational institution after the relevant organizational and pedagogical stages of the educational process and consist of the following parameters and indicators:

- targeted results (Na-1) - test results on the level of readiness of students for pedagogical work, the level of competence of teachers;
- level of orientation (Na-2) - level of interest in pedagogical work and its implementation (based on pedagogical practice);
- satisfaction level (Na-3) - the level of attitude of students to the educational process;
- level of recognition (Na-4) - the attitude of customers and system institutions, participants to the level of trained teachers;
- results of postgraduate activities (Na-5) - the activity of the teacher, the introduction of innovative technologies in the educational process, the problems encountered and their solutions, the quality of teaching and student learning, the dynamics of participation in various competitions, master classes and seminars.

A separate monitoring process is organized for each direction (argumentative, procedural and performance), indicators are determined on the basis of qualimetric scales and the results are compared and analyzed against the established indicators. Argumentative direction indicators allow assessing the state of systematization of organizational and pedagogical stages, procedural direction indicator allows to assess the processes of implementation of these stages, and performance direction indicator allows to assess the final level of goal achievement. On the basis of indicators whose objectivity is ensured, it is possible to draw individual conclusions about each direction. In such a conclusion, the indicators of the indicators are given and it is determined that the subject should pay attention to the indicators with low and high indicators.

Typically, such findings list some low-performing indicators, compare them with previous results, and record the factors influencing the result in general. For example, it is concluded that “the conditions created had a positive effect on the effectiveness of the learning process” or that “the reason for the non-implementation of the plan was not formed on the basis of vertical orders from the bottom up”.

Such conclusions do not fully satisfy the multi-subjectivity of the higher education institution in the educational process.The multi-subjective conclusion must meet the following requirements:

objectivity - the relevance of indicators to the real situation, minimal errors and reliability;

completeness and sufficiency - comprehensiveness of data;

systematic - generalization of conclusions from various indicators;

value - ensuring that the conclusion is prepared in a timely manner, before or during the reform period;

orientation - the orientation of the conclusion to the participants of education.

A conclusion that meets such requirements makes it possible to identify factors that effectively (or negatively) affect the quality of education in the higher education institution system.

The importance of forecasting indicators for indicators is high in ensuring the value and structure of the conclusion. Forecasting of indicators related to indicators is the early determination of the expected result from another direction using the indicators obtained at some monitoring stage.

As a result of forecasting it is possible to identify shortcomings in the unfinished processes, to quickly analyze the factors that cause them, to eliminate errors, to recognize the effective factors, to accelerate work in this area, to make changes and additions to decisions, forms, methods is coming.

The complexity of the system of higher education institutions and the fact that the results of their activities are known only after a certain period of

time - the relevant processes - increase the importance of forecasting.

Such a forecasting model is built on the interrelationship of each indicator (Figure 1).

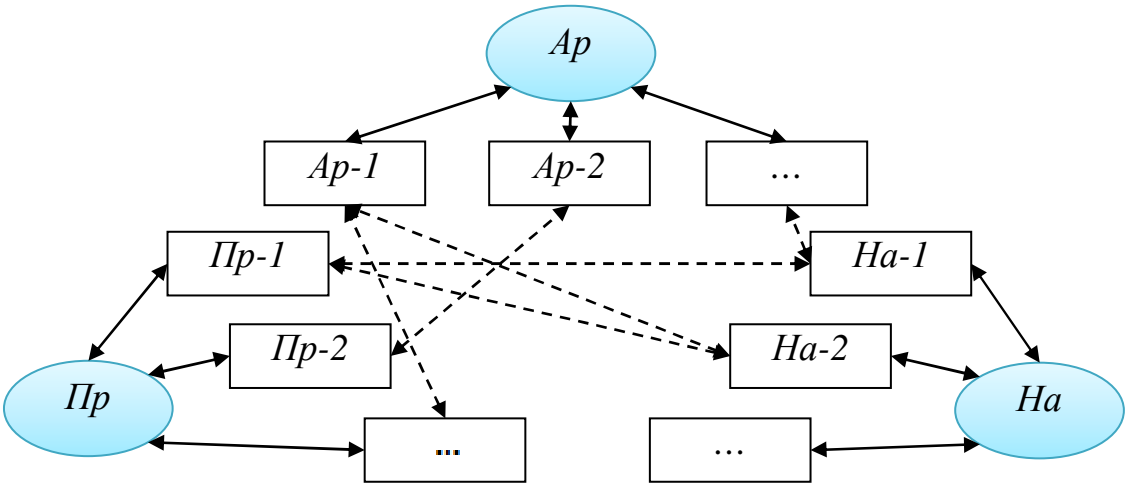


**Figure 1. Scheme of interaction of monitoring indicators.**

Our study focused on the relationship between indicators, the impact of one indicator on another, their occurrence, the scale of interaction, and found that this relationship plays an important role in optimizing the monitoring process of higher education institutions, increasing the reliability of results.

Analysis of indicators in the areas of argumentative, procedural and performance shows that the performance of one indicator in one direction leads to a change in the indicator of another direction. For example, the indicator of "plans for preparation for pedagogical activity" in the argumentative direction directly affects the performance of indicators such as "goal-oriented results", "satisfaction", "recognition" and so on. If the position of two indicators that do not belong to the same direction causes interchangeability, such indicators can be called interrelated indicators.

In the process of studying the properties of interrelated indicators, the following axiomatic conclusion was reached:

- any indicator in one direction has at least one interrelated indicator in the other direction (Ar-n <=>Pr-k);
- several indicators can be connected to one indicator (Pr-n <=> Na-k, Pr-n <=> Na-s);
- an indicator in one of the interrelated indicators affects the forecast of the other;

Indicators that are not directly related to each other, ie indicators that are related to other (third) direction indicators, are not sufficient to determine the forecast indicators.

From this it can be concluded that it is possible to make a general forecast in advance of the indicators of the third direction by setting up a continuous monitoring and analysis process and identifying the indicators of all indicators related to one of the two directions. Such a prediction is made in the form of the following diagram (Figure 2):

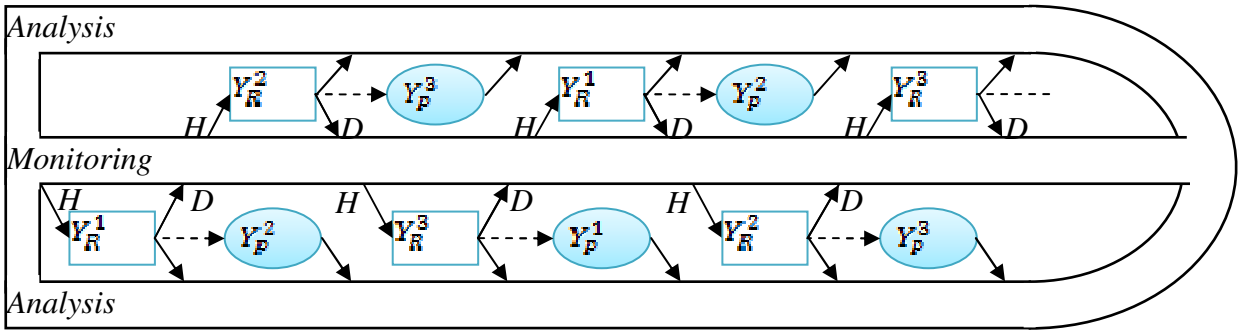


**Figure 2. Route monitoring scheme based on the results.**

Here, Y_R ^ y - y (y = ¯ (1,3,) i.e. Ar, Pr, Na) are generalized real indicators according to the results of monitoring in the direction, Y_P ^ y - y are generalized forecast indicators. H is the current (current) phase of monitoring, D is the previous phase of monitoring. R is the real indicator, P is the forecast indicator.

Based on the real indicators that emerged at the end of the previous phase of monitoring, we can algorithmically model the process of forecasting.

The real indicator of each direction (Y_R ^ y) is formed on the basis of indicators of the corresponding indicators ({R_i ^ y (H)}, i = ¯ (1, N,) N-indicator number) at the stage of monitoring (H).

The ratio of the set value of the indicator i in the forecast direction (Y_P ^ x) (⟦BK⟧ _i ^ x) to the sum of the set values of the indicators in other related directions (⟦BK⟧ _a ^ y) is the correlation coefficient of this indicator forms:

$$AK_i^x = \frac{BK_i^x}{\sum_{a=1}^{n} BK_a^y} \quad (1)$$

Here, x is the predicted direction x ≠ y (x = ¯ (1,3)), i is the sequence number of the x-direction indicator (i = ¯ (1, N,) N-indicator number), n is the number of interrelated indicators .

The forecast value of the indicator i (P_i ^ x) is equal to the product of the sum of R_a ^ y (D) of the real indicators of the indicators associated with the corresponding coefficient:

$$P_i^x = AK_i^x \cdot \sum_{a=1}^{n} R_a^y(D) \quad (2)$$

This formula is suitable for forecasting indicators for the third direction, after monitoring in two areas and determining the indicators of the relevant indicators.

However, based on the results of the monitoring, the closeness of the forecast determined using this formula is checked, because all the time the relevant indicators are not effective in obtaining a forecast close to the real situation. First, the actual performance of some interrelated indicators is lower than the real performance of the forecasted indicator, which may lead to a decrease in the forecast performance and a smaller value than the real performance in the next monitoring. This shows that it is expedient to increase the real indicators of these interrelated indicators to a certain extent.

Second, it is observed that the real performance of certain indicators is smaller than the real performance of some related indicators. In this case, the forecast indicator they are affected may increase, leading to a larger value than the real indicator. Therefore, it is important to reduce the real indicators adopted by such indicators by a certain coefficient during the forecast period.

The above situation makes it necessary to achieve a periodic reduction of the difference between P_i ^ x (D) and R_i ^ x (H). At the end of the monitoring conducted for this purpose, the coefficient of impact (TC) is determined on the basis of the forecast and real indicators. The impact coefficient represents the level of compliance of the actual indicators determined by the monitoring results with the forecast indicators:

$$TK_i^x = \frac{R_i^x(H)}{P_i^x(D)} \quad (3)$$

From the above analysis, it can be seen that the impact coefficient is not always the same for all interrelated indicators. However, the coefficient of impact should be reduced or increased to bring the forecast closer to the real figure (Figures 3 and 4).

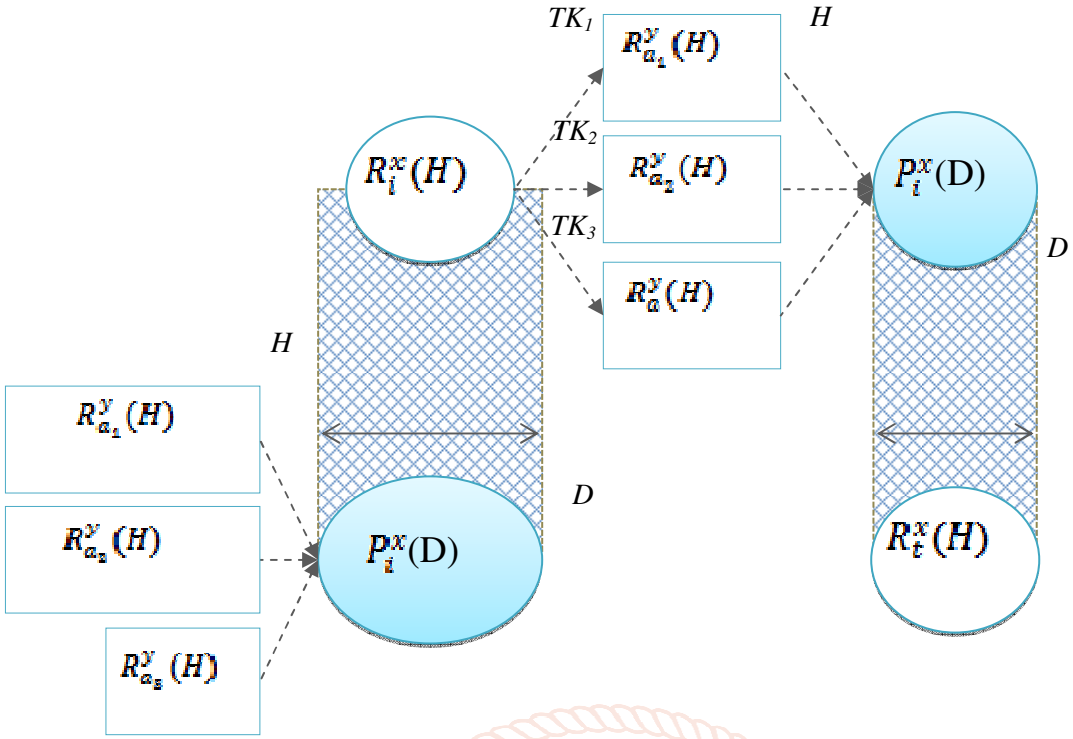


**Figure 3. Scheme of application of the coefficient of impact reducing the forecast indicator.**

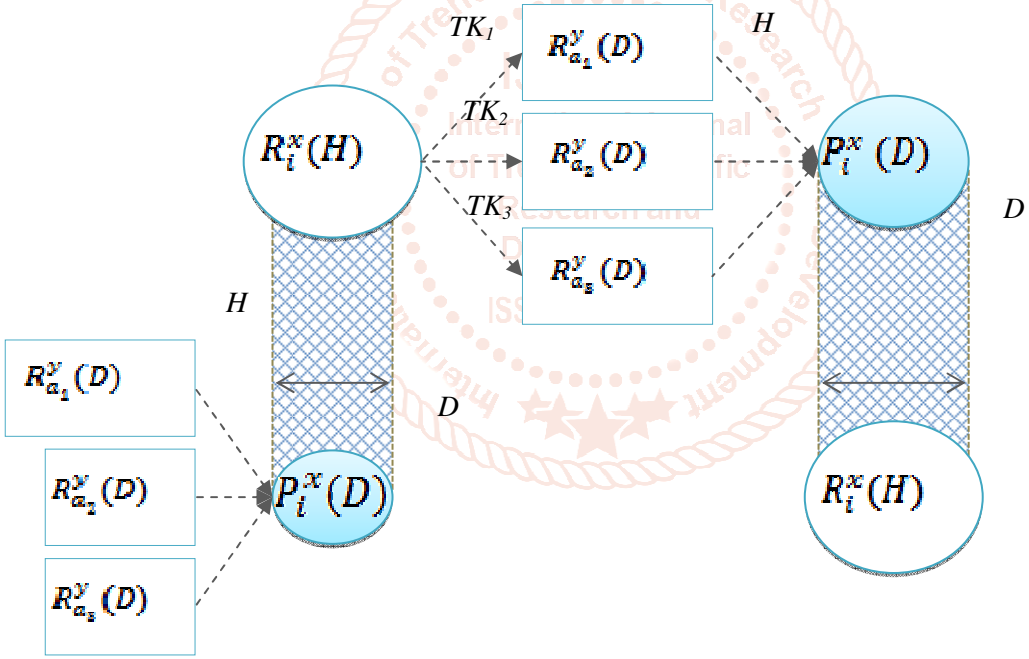


**Figure 4. Scheme of application of the coefficient of impact, which increases the forecast indicator.**

**As a result, formula 3 above looks like this**:

$$P_i^x = TK_i^x \cdot AK_i^x \cdot \sum_{a=1}^{n} R_a^y(D) \quad (4)$$

The impact coefficient is required to be continuously studied and analyzed throughout the monitoring project. If the impact factor of the indicator is ⟦TK⟧ _i ^ x <1, then the indicator received by this indicator indicates that the correlated indicator increases the forecast value and causes it to exceed the actual situation. Therefore, it is advisable to add additional conditions to the indicator criterion in it or to add an additional direction to the direction by dividing this indicator into two. For example, the indicator with a maximum value of 3 (depending on the conditions included) is estimated at 2.5 (83.3%) in the monitoring process, and the interrelated indicator of the other direction causes the forecast (80%) to exceed the real indicator (50%). If so, it is possible to set the criterion of this indicator to 4 before the next monitoring process, to further strengthen the content of requirements (conditions) or to divide this indicator into two (for example, values of 2 and 3).

Conversely, the correlation status of indicators with the coefficient of influence ⟦TK⟧ _i ^ x> 1 is re-examined, ie the correlation between the condition of

the indicator with the amount of its criterion is determined or the correlation between this indicator and the indicator of another direction is determined. In the above example, the maximum value of the indicator is evaluated by 1.6 (53.3%) during the monitoring process, and if the forecast indicator (60%) of the correlated indicator in the other direction decreases from the real indicator (70%), its relevance is studied. , the structure of the conditions is simplified. However, other indicators that affect the forecast value are sought.

Hus, ensuring the accuracy and completeness of the interrelated indicators, the above approaches, which provide for the optimization of the impact factor, increase the objectivity and value of the forecast, strengthen the contribution and impact of the monitoring process on subsequent system improvement.

Using a model based on the above technology, the factors that led to the efficiency, high results, as well as the observed shortcomings and low results are identified and summarized. Two features of this model can be enumerated: 1) the highlighting feature - to provide complete information about the situation on each indicator, to explain the state of the factors affecting the indicator; 2) warning feature - predicting the occurrence or recurrence of future positive or negative outcomes, recording dynamic changes in the future.

Based on the relevant conclusions, proposals to further strengthen the positive situation in the higher educational institution and to eliminate the negative situation are prepared on the following conditions:

alternative (the offer has several options, the choice is made);

advantage (the proposal is justified and proved to be better than the previous decision);

risk-free (taking into account the risk aspects of the proposal related to costs, labor resources and tools, time constraints, etc.).

## CONCLUSION

From the above, it is clear that the implementation of large-scale tasks aimed at improving the system of higher education institutions on a multi-subject basis is not provided for in the functions of existing structures (within the subjects). Therefore, it is expedient to achieve this by creating new structures that can objectively and simultaneously generalize the activities of the subjects, or by optimizing the existing functional tasks. The implementation of the activities of such structures as a consulting service will improve the system of higher education institutions. This indicates the need to focus on the development of the field of monitoring services of higher education institutions, the creation of a new system to support its activities.

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