



EXPERIMENTAL EVALUATION OF THE EFFECTIVENESS OF APPLYING EDUCATIONAL QUALITY MANAGEMENT PRINCIPLES IN HIGHER EDUCATION INSTITUTIONS

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Abstract: This thesis examines the effectiveness of applying educational quality management principles in higher education institutions (HEIs) through an experimental study. The research proposes a methodology for developing a management model based on the principles of systematic management, student-centredness, data-driven decision-making, stakeholder engagement, transparency, and continuous improvement, as well as for evaluating its effectiveness. The organization of the experimental study is discussed through three stages: diagnostic, formative, and control. Particular attention is given to the development of assessment criteria and indicators and to the statistical analysis of experimental results. Cognitive, organizational-activity, and outcome-based criteria are proposed for assessing the effectiveness of educational quality management. The proposed approach provides an opportunity to determine the practical effectiveness of quality management principles and identify mechanisms for their further improvement in higher education institutions.

Key words: higher education, educational quality, quality management, management principles, experimental study, assessment criteria, indicators, monitoring, quality assurance, management effectiveness.

Introduction

At the present stage of higher education development, ensuring and continuously improving educational quality has become one of the key strategic priorities. In international practice, quality assurance is not limited to maintaining established educational standards; it is also regarded as a mechanism for continuous improvement of teaching and research activities, strengthening stakeholder confidence, and ensuring the responsiveness of higher education to societal needs. Accordingly, the effective application of quality management principles in higher education institutions should be considered not only from a theoretical perspective but also in terms of its practical outcomes. It is therefore important to determine, through experimental research, how the implementation of these principles influences the effectiveness of institutional governance and educational processes.

Research Objective

The primary objective of this study is to determine the effectiveness of applying educational quality management principles in higher education institutions through an experimental study and to develop a criterion-based diagnostic mechanism for evaluating such effectiveness.

Research Objectives

- To achieve the stated objective, the following tasks were identified:
- to identify the fundamental principles of educational quality management in higher education;





- to develop mechanisms for implementing these principles in institutional management practices;
- to determine the organizational and pedagogical conditions for conducting the experimental study;
- to develop criteria and indicators for assessing the effectiveness of educational quality management;
- to conduct a comparative analysis of the results obtained from experimental and control groups;
- to statistically evaluate the effectiveness of the proposed management mechanisms.

Research Methodology

The study is based on systemic, competency-based, process-oriented, and outcome-oriented approaches.

The experimental study can be organized into three main stages.

1. Diagnostic Stage

At this stage, the existing state of educational quality management within the higher education institution is examined. Surveys are conducted among institutional administrators, academic staff, and students to identify the current level of implementation of quality management principles and existing management practices.

2. Formative Stage

During this stage, quality management mechanisms based on established educational quality management principles are introduced in the experimental group. These mechanisms include systematic monitoring of quality indicators, collection and analysis of student feedback, assessment of academic staff activities, internal quality audits, and data-driven decision-making.

3. Control Stage

At the final stage of the experiment, the results obtained in the experimental and control groups are reassessed. The differences between the initial and final indicators are determined, and the effectiveness of the proposed management mechanisms is evaluated using appropriate statistical methods.

Criteria for Assessing the Effectiveness of Educational Quality Management

Three principal criteria are proposed for evaluating the effectiveness of the experimental intervention.

1. Cognitive Criterion





This criterion is intended to determine the level of knowledge and understanding among administrators and academic staff regarding educational quality management principles.

The main indicators include:

- knowledge of quality management principles;
- understanding of quality indicators;
- knowledge of monitoring and assessment methods;
- competence in data-driven decision-making;
- understanding of internal quality assurance mechanisms.

2. Organizational-Activity Criterion

This criterion reflects the extent to which educational quality management principles are applied in institutional management practices.

The indicators include:

- regularity of quality monitoring;
- use of data in management decision-making;
- consideration of student feedback;
- involvement of academic staff in quality assurance processes;
- implementation of internal audits and self-assessment;
- development of improvement measures based on identified problems.

3. Outcome-Based Criterion

This criterion focuses on changes occurring in educational processes as a result of applying quality management principles.

The main indicators include:

- changes in student satisfaction;
- organizational effectiveness of the educational process;
- dynamics of academic performance;
- effectiveness of academic staff activities;
- degree of improvement of academic programmes;
- timeliness and evidence-based nature of management decisions.

Experimental Study Model

The experimental study can be organized according to the following sequence:



Initial diagnosis → determination of assessment criteria → implementation of the management mechanism → monitoring → interim analysis → corrective measures → final diagnosis → statistical comparison.

An improved educational quality management mechanism is implemented in the experimental group, while the existing management practices are maintained in the control group.

Such an approach makes it possible to comparatively determine the effects of the experimental intervention on educational quality management outcomes.

Assessment Levels

The results of the study can be assessed at three levels:

1	Level	Description
2	High	Educational quality management principles are applied systematically and consistently; management decisions are evidence-based; monitoring results are integrated into institutional decision-making.
3	Medium	Certain quality management principles are applied in practice, but their implementation is not yet systematic.
4	Low	Quality management activities are implemented sporadically, while monitoring and analytical results are insufficiently integrated into management decision-making.

The assessment of these levels should be based on a combination of questionnaires, expert evaluation, document analysis, observation, interviews, and monitoring of educational outcomes.

Statistical Evaluation of Experimental Results

To objectively evaluate the results of the experimental study, the initial and final indicators of the experimental and control groups should be compared.

The dynamics of change can be determined using the following formula:

$$D = X_1 - X_0$$

where:

- **D** — change dynamics;
- **X₀** — mean indicator at the beginning of the experiment;
- **X₁** — mean indicator at the end of the experiment.

The relative increase can be calculated as follows:

$$G = ((X_1 - X_0) / X_0) \times 100\%$$



The resulting indicators should be calculated separately for the experimental and control groups.

Where a more comprehensive statistical analysis is required, the **Student's t-test** may be used to determine the statistical significance of differences between groups. If the assumptions for parametric testing are not satisfied, appropriate non-parametric statistical tests may be applied.

It should be emphasized that statistical significance alone does not fully demonstrate the educational or institutional significance of an intervention. Therefore, statistical findings should be complemented by an analysis of the practical significance and substantive nature of the observed changes.

Example of Presenting Experimental Results

If, for example, experimental and control groups consisting of 100 respondents each are established in the empirical study, the results may be presented in the following form:

Indicator	Experi mental Group (Initial)	Experi mental Group (Final)	Co ntrol Group (Initial)	Co ntrol Group (Final)
Cognitive criterion	56.4%	82.7%	55. 9%	64. 8%
Organiza tional- activity criterion	51.8%	79.6%	52. 3%	61. 7%
Outcome- based criterion	48.7%	76.9%	49. 5%	59. 2%
Overall indicator	52.3%	79.7%	52. 6%	61. 9%

Table. Comparative Results of the Experimental Study (%)

Comparative dynamics

Group	Initial overall indicator	Final overall indicator	Growth
Experimental Group	52.3%	79.7%	+27.4 percentage points
Control Group	52.6%	61.9%	+9.3 percentage points



Scientific interpretation

The results presented in the table indicate a positive dynamic in both groups; however, the increase in the experimental group is substantially higher. The overall indicator in the experimental group increased from 52.3% to 79.7%, representing an increase of 27.4 percentage points. In the control group, the corresponding indicator increased from 52.6% to 61.9%, representing an increase of 9.3 percentage points.

The most pronounced improvement in the experimental group was observed in the cognitive criterion, which increased from 56.4% to 82.7%. This was followed by the organizational-activity criterion, which increased from 51.8% to 79.6%, and the outcome-based criterion, which increased from 48.7% to 76.9%.

These results, if confirmed by actual empirical data and appropriate statistical testing, would indicate that the systematic application of educational quality management principles may be associated with improvements in knowledge, organizational practices, and educational outcomes.

The empty cells in the table should be completed only with actual empirical data obtained during the experimental study. This ensures that the conclusions of the research are supported by authentic empirical evidence.

Scientific and Practical Outcomes

The study makes it possible to identify the following organizational and pedagogical conditions that may contribute to improving the effectiveness of educational quality management:

- development of clear criteria and indicators for quality management in higher education institutions;
- adoption of management decisions based on reliable and systematically collected data;
- integration of student and academic staff feedback into quality management processes;
- establishment of regular internal monitoring and self-assessment systems;
- systematic organization of educational quality data through digital platforms;
- development of corrective management measures based on monitoring and evaluation results;
- establishment of quality assurance as a shared institutional responsibility rather than solely the responsibility of specialized quality assurance units.

These approaches are consistent with international quality assurance practices, particularly with the principles of internal quality assurance, stakeholder participation, transparency, and continuous improvement.

Conclusion





The experimental evaluation of the effectiveness of applying educational quality management principles in higher education institutions contributes to strengthening the scientific basis of educational governance. Organizing the experimental study through diagnostic, formative, and control stages makes it possible to systematically examine the practical effectiveness of the proposed management principles and mechanisms.

The application of cognitive, organizational-activity, and outcome-based criteria provides a comprehensive framework for assessing the effectiveness of educational quality management. Such an approach makes it possible to evaluate not only final educational outcomes but also the quality of management processes themselves, including monitoring, analysis, decision-making, stakeholder engagement, and continuous improvement.

Thus, experimental evaluation of the application of educational quality management principles can serve as an effective methodological tool for identifying existing challenges within institutional governance, developing evidence-based corrective measures, and establishing sustainable mechanisms for continuous improvement of educational quality.

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