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[1]Aidos Mukhatayev, [1]Serik Omirbayev, [2]Saulesh Mukanova, [1.3]Andrii Biloshchytsky, [4]Khanat Kassenov, [5]Alibek Shokparov

[1]Astana IT University
[2]Karaganda Buketov University
[3]Kyiv National University of Construction and Architecture
[4]Academy of Physical Education and Mass Sports
[5]International University of Tourism and Hospitality

STUDY OF THE QUALITY LEVEL OF THE HIGHER EDUCATION SYSTEM BASED ON CLUSTERED INFLUENCE FACTORS

Abstract: The article presents the results of a study aimed at assessing the quality of the higher education system. The emphasis is placed on using clusters – groups of interrelated factors that affect the overall effectiveness of the educational process. Identifying groups of similar influence factors made it possible to assess the impact of various components more accurately on the overall level of education quality. The used methodology (Clustered Influence Factor) was to analyse the influence of various factors as teaching staff and administrative and managerial staff on quality level in HEIs grouped into clusters based on similar characteristics. And the main characteristics of a modern university, the role of subjects in the university's development, the internal quality assurance system, etc., were considered cluster factors. This methodology allowed a structured approach to the analysis of complex systems, highlighting key factors and their interrelationships, which simplifies the decision-making process to enhance quality assurance. The results provide valuable information for higher education quality managerial decisions and strategic planning. They can also serve as a basis for making improvements in the development of the internal quality assurance system. The study identified problems and challenges in higher education, allowing the university's relevant structural units to assess the difficulties they face. Identified positive aspects can be used to increase the attractiveness of educational organizations for students, teachers, and potential partners. The study provides a starting point for the subsequent comparison of quality assurance factors and makes a specific contribution to the development of the methodology for assessing the quality of education, establishing quality assurance systems within the university, and improving the quality of education at the system level.

Keywords: Higher education system, education quality assessment, higher education quality level, clustered influence factors, quality assessment system, quality culture.

Introduction

In the context of the ISO International Standard, the quality of higher education is defined as the set of properties and characteristics of a service that give a system the ability to meet perceived or anticipated needs (International Standard, 2005). At the same time, quality is based on three groups of quality characteristics: the quality of the potential to achieve the goal of education, the quality of the process of forming professionalism and the quality of the education result.

The Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG, 2015), acknowledging the different purposes of the definition, defines quality as "a result of the interaction between teachers, students, and the institutional learning environment. Quality assurance should ensure a learning environment in which the content of programs, learning opportunities, and facilities are fit for purpose".

The modern domestic higher education system faces the challenge of ensuring a high level of education that meets the changing needs of students and the expectations of employers and the labor market. Universities are undergoing another stage of transformation emphasizing the critical elements of the Bologna process that increase their competitive-ness, including the expansion of academic independence and integrity and the internationalization of education (Decree, 2023).

The complex and dynamic environment of modern higher education requires a systematic approach to assessing the quality of the educational process and identifying the potential for its further development, which involves an analysis of the factors affecting the effectiveness of the higher education system and its quality.

We consider clustering of factors to be the most appropriate and promising method of assessing the quality of higher education, since cluster analysis as a multidimensional statistical procedure allows the collection and systematization of information on homogeneous groups of parameters, properties and characteristics of the object studied. In this regard, the purpose of our study is to identify the quality of higher education based on cluster analysis.

Literature review

The review of scientific research indicates the connection between the trends in the development of higher education and the change in its quality. The research team has been examining this issue earlier but in the way of forming the information and educational System for quality education management (Biloshchytskyi et al., 2024).

It demonstrates the dependence of the processes taking place in the system on the socio-economic and scientific-technical directions of the development of society.

From the standpoint of our research, comparative studies of quality assurance policies and practices in higher education in different countries are of interest, based on which common and unique aspects are identified (Schmidt, 2017).

The practical application of the principle of humanization of education, in which higher school teachers organize their pedagogical activity as a process of purposeful active interaction with students, actualizes methods and tools for assessing the quality of teaching in higher education (Greatbatch, 2016), including assessment of students' feedback through questionnaires, surveys and interviews, teacher's self-assessment of the effectiveness of teaching methods; analysis of students' progress based on exam results; evaluation by teachers or the administration of the university based on observation of teaching activities and analysis of teaching materials; analysis of the effectiveness of the use of educational technologies for teaching and mastering the material by students; analysis of teachers' participation in the development of educational programs. Of practical interest are the studies that identify the administrative challenges faced by higher education institutions in the context of quality improvement and how academic leaders can promote and manage quality (Cobbinah & Agyemang, 2020; Hénard & Mitterle, 2021), actualizing the role of administrative personnel in overcoming them, and ensuring effective management in higher education and its quality or even commit re-sources to support quality assurance process (Trivellas et al., 2012). Researchers point to the influence of leadership style on quality assurance in universities (Kumar, 2017) and associate effective leadership in higher education with academic administrators influencing the improvement of the quality of the educational process (Setiawati, 2016; Abdallah & Forawi, 2017; Adu-Oppong, 2014).

According to R. Barnett, there are two concepts of the quality of higher education. The first is the concept of intellectual values in academia. The second concept of quality is the concept of efficiency, in which higher education is viewed as a product with costs and benefits. From this point of view, the quality of higher education is measured in terms of productivity and is reflected in performance indicators (Barnett, 1992).

Researchers Dill et. al highlight the distribution of responsibility in the quality assurance process, forming a sense of responsibility for quality management (Dill, 2010; Campbell & Rozsnyai, 2002). Stensucker refers to the growing debate about quality management as a management "trend" (Stensaker, 2008). Sluijsmans and Struyven view quality assurance as measures taken to determine the guaranteed quality of education (Sluijsmans & Struyven, 2014). According to Jessop and others, "Quality assurance requires a comprehensive, integrative approach, as it in-volves a comprehensive evaluation of program outcomes that reflect both the 20 philosophy of the educational program and the complexity of the outcomes". Continuous improvement and quality assurance of evaluation requires "a shift from quality control (with an emphasis on accountability) to greater autonomy based on the experience and knowledge of stakeholders" (Jessop et. al, 2012). According to scholars Laura M., Portnoi and S. Bagley, the university's competitive positions are the creation of a world-class university, quality assurance of educational programs, internationalization of the university, expansion of cross-border higher education, and creation of regional alliances (Laura et al., 2016).

The role of the students is important for assessment and enhancement of quality of assurance in HEIs as they are main stakeholders of higher education system. In that case the voice of students should be counted to afford students enhanced capabilities to intervene in their higher education environments (Klemenčič, 2018; Hazelkorn, 2018).

The researchers considered students in their studies on quality assurance in the context of higher education institutions (Prakash, 2018) to foster trust and transparency to improve educational outcomes and institutional credibility (Tinapay, 2024). Students' perception as the essential internal stakeholders is the point for study in different regions of the world (Ta, 2023; Uludağ, 2021; Elassy, 2013). It justifies the necessity to engage students in the survey for determination of quality level of the higher education.

The engagement of all stakeholders into the quality assurance process could establish a system that sustain this to quality culture (Verschueren, 2023) that in turn may be dependent on different factors (Dagiene et al., 2022) and consequently to achieve employer and customer satisfaction (Girmanová et al., 2022).

Thus, the quality of higher education depends on many factors. The analysis of scientific sources made it possible to identify the following parameters in the group of factors influencing the quality of higher education:

1. Academic staff. The teachers' qualifications and experience, their active participation in scientific research activities, and the ability to effectively transfer knowledge to students.
2. Curricula. Relevance, updating, and compliance of curricula with the labour market requirements, the availability of practical components, and the possibility of choosing specializations.
3. Research activity. Participation of teachers in scientific research, publications in scientific journals, and involvement of students in research work.
4. Infrastructure and resources. Availability of modern classrooms, libraries, laboratories, computer equipment and other resources necessary for teaching and research activities.
5. Evaluation system and feedback. An honest and objective evaluation system, teacher feedback, and the opportunity for students to make suggestions and complaints. Availability of an internal quality assessment system.
6. Culture of quality and climate. The environment at the university, including the culture of communication, the support from the administration and the collective atmosphere, the strong culture of quality, and the subjects of education, have the same under-standing of quality and quality assurance issues.

The quality of higher education can be assessed by considering different combinations of these factors, which can have different meanings for participants.

Methods and organization of the study

The research methodology is based on the hypothesis that cluster analysis of the quality of higher education, by which we mean an independent unit combining several homogeneous elements, is the most appropriate and promising method for assessing the quality of higher education. Since we believe that cluster analysis as a multidimensional statistical procedure allows the collection and systematization of information on homogeneous groups of parameters, properties and characteristics of the studied object. In this regard, the purpose of our study is to identify the quality of higher education based on cluster analysis. Our choice of this method is based on the fact that the quality of higher education is a complex, multi-level, multi-functional social structure, for which the clustering method seems to be the most appropriate. In our case, the number of clusters is determined by the purpose of the study. This method involves the identification of clusters of factors affecting the quality of higher education. In the context of this study, the following are selected:

cluster one – internal quality assurance system

cluster two – university infrastructure;

cluster three – content of educational programs;

cluster four – faculty.

The first cluster of factors includes an understanding of the internal quality assurance system, the orientation of this system (to improve the quality of educational pro-grams, to improve the quality culture, to involve stakeholders that include faculty, management staff, students, employers), requirements for this system, academic values, monitoring of professional achievements of teaching staff. The second cluster includes: campus, library, Internet speed, Wi-Fi. The third cluster combines such factors as the relevance and usefulness of educational programs, the possibility of choosing an educational trajectory and teachers, and the format of classes. The fourth cluster includes knowledge of the teaching staff of their subject, their interaction with students, requirements for learning outcomes, knowledge of technologies and teaching methods.

One of the approaches to the theoretical understanding of the problem of the quality of the higher education system in Kazakhstan in the context of the above factors (clusters) is the expert opinion of the participants in the educational process. At the same time, the first cluster of factors can be evaluated by teaching staff and administrative, the other three clusters, in our opinion, should be evaluated by the main stakeholder of higher education – a student.

Given this, there was a need to develop a methodology for studying the current level of quality of the higher education system, which in the context of our study is understood as a set of methods of practical activity aimed at identifying a group of factors that affect the educational process and the achievements of students, in general, at ensuring the quality of education at the university. During the study, a design was used, developed in advance and recorded before the start of empirical data collection. The pattern of the study is based on the methodology of the positive paradigm. The positive paradigm aims to explain the relationship between causes and results of research and takes the following positions:

reality exists independently of the social context and can be discovered through objectively designed research;

using statistical analysis of the quantitative observations of the theory, objective truth is tested and discovered.

In this context, a methodological approach was applied using the methods of modern sociological science and interdisciplinary research. During the study, a survey method was used in questionnaires, focus groups and interviews with organizers and experts of educational activities represented by the teaching staff. In future research such surveys can be carried out through Information and educational system for quality education management (Biloshchytskyi et al., 2024).

The methodology of the study determined the following stages of its implementation:

1. Definition of the purpose of the study.
2. Formation of a cohort (group of subjects).
3. Data collection is based on developed tools.
4. An initial measurement of parameters related to the factors being studied will allow you to have a starting point for later comparison.
5. Data analysis: Based on statistical methods and comparison of indicators, various groups or factors are analyzed, and a possible relationship between factors and educational achievements is identified.
6. Interpretation of results: analysis of the results is organized. A conclusion is made about the influence of the factors studied on the educational process. Possible patterns or trends are established.
7. Discussion and dissemination of results. Approbation of the results. Dissemination of experience. Taking corrective action.

Based on the purpose of the study, the following groups of respondents were identified: teaching staff and administrative staff. The teaching staff belongs to the subjects of the educational process at the university; the administrative staff provides the conditions for the organization of the educational process. To develop tools for studying the current level of quality of the higher education system, a diagnosis of the problem was carried out and an expert assessment of the quality of education as a social category, the state and effectiveness of the education process, the degree of compliance with the requirements - the needs and expectations of internal and external consumers in the development and formation of professional competencies of the individual was obtained.

The study identified the methods of questioning and interviewing as data collection tools.

The questionnaire consisted of three stages:

preparatory stage – work on drawing up a plan and schedule for the study, selection of questions that the questionnaire includes, as well as solving organizational issues;

prompt survey of respondents or direct questioning;

calculation of results – processing of the obtained research data; analysis and summarizing.

We have developed a closed-ended questionnaire consisting of 7 questions. Each question was offered a plural number of answer options – five. The respondent chooses an appropriate answer option. This type of questionnaire is aimed at standardizing answers and simplifying data analysis.

As the analysis of theoretical research in the field of higher education has shown, one of the elements of quality assurance of higher education is the internal quality assurance system of the university, organized by universities considering the requirements of the international standard ISO 9001, the guidelines for quality assurance of higher and postgraduate education in the European Higher Education Area (ESG). Internal Quality Assurance System is considered an integral part of strategic management.

This justifies the choice of the teaching and administrative staff's survey content. The questions aimed to understand the essence of the internal quality assurance system, knowledge of its organization's requirements, and university stakeholders' involvement in ensuring the quality of education.

According to the theory of the selective method, which has been repeatedly confirmed by practice, it is not necessary to interview everyone, but only a part of the group can be interviewed, which is usually many times smaller. A methodology or measurement (questionnaire, block of interview questions) is considered valid if it captures exactly the concept or property that is planned to be measured. In our case, the characteristics of educational activities are focused on the quality assurance system. When establishing validity,

the substantiation and subsequent verification of the relevance hypothesis, that is, the correspondence of the measured parameters to the characteristics of the object under study, plays a crucial role.

The sample based on which the respondents were selected is simple, random, and non-repeated. In this case, the sample size was calculated using the formula (Cochran, 2024):

$$\boldsymbol{n} = \frac{z^2 s^2 N}{\Delta N + z^2 s^2}$$

Where is: n - the sample size; z - the confidence coefficient (z=1.96 for the 95% reliability selected in this study); s2 - the sample variance for the binomial distribution s2=pq, where p - the proportion of the trait; q=(1-p).

The product of pq is maximum when p = 0.5 since the formula assumes that there are two or more answer options for a given question, from which only one is chosen. The more equal the two answer options are, the closer the proportion is to 50/50, the larger the sample should be taken. Therefore, if this ratio is not known in advance, as in our case, it is necessary to put 50%, as done in the present study.

The study also used the focus group interview method. This is the most common qualitative method of gathering information. Implementing this method makes it possible to involve several respondents in an interview at once (focus group) gathered in one place. At the same time, the interaction of participants is ensured. The method promotes the free expression of opinions without hindering discussion between interviewees. The discussion was guided by a moderator who ensured the group discussion was developed under the study's objectives. When conducting interviews with a focus group, a pre-designed script was used, which defined the range of central issues and took the form of a general guide. The primary purpose of such tools is to focus on the problem, tune in to a particular topic, allow spontaneous statements of participants, and provide group dynamics.

Thus, this method is focused on identifying the range of opinions on the problem under consideration. The focus group method's effectiveness is because most respondents feel comfortable participating in the discussion as part of the group. With the implementation of this method, better conditions for obtaining in-depth information are formed than with individual interviews. At the same time, group dynamics makes it possible to deter-mine the significance of such a phenomenon as group influence.

A unique interview guide was developed to improve the study's effectiveness. The interview covered four topics with four questions to discuss with the focus group. The duration of the in-depth interview ranged from one to three hours, depending on the depth of the questions studied. The interview was recorded to facilitate subsequent transcription and analysis of the data and to ensure that critical information was recovered. At the end of the interview, all video and audio recordings were subjected to high-quality processing, resulting in the full text of all interviews. An analytical report was compiled based on the texts' data and the interviewer's impressions.

The developed interviewing methodology made it possible to organize field (on-site) studies of respondents' understanding of the main characteristics of a modern university and its mission. The interview was conducted using guides (Appendix 1), which allowed us to obtain information/opinions from respondents about the quality assurance system of education. Persons who were professionally familiar with the subject of discussion – the internal quality assurance system - were not allowed to participate in the interview. In this case, we are talking about the supervising vice-rector, heads of departments and specialists of the university's quality assurance departments.

When developing tools for studying the quality of the higher education system, we re-lied on scientific publications of domestic and foreign researchers in studying the problem of

the quality of higher education. The experience available in the sociology of education in developing tools for such surveys was also considered.

Results

The sample population of respondents for each category of respondents was as follows:

- Teaching staff – 830.
- Administrative and managerial staff – 107.
- Students – 7595.

The selection of respondents considered the peculiarities of academic and non-academic staff of universities, considering their functional tasks. The administrative and managerial staff of universities plays an important role in the system of ensuring the quality of educational services. On the one hand, it is a subject of management and management actions in the personnel management system of universities are directed at it. On the other hand, management personnel are the object of recruitment, use, development, dismissal, and management functions for planning, organization, motivation, and control are applied to them.

The composition of the administrative and managerial staff turns out to be significantly wider than is usually believed. The administrative and managerial staff of universi-ties, which is directly involved in the management of other groups of personnel, includes the top management of the university, departments of universities for personnel management and human resource development, administrative and managerial links of scientific, pedagogical and non-academic departments of universities. This staff plays an important role in shaping the chains of ensuring high-quality learning outcomes. The quality of decisions and actions directly affect the educational process of the university.

The academic staff, that is, directly, the teaching staff carries out the actual teaching activities.

Interviewers: students, teachers and employees of the administrative staff of S. Toraighyrov Pavlodar University, E.A. Buketov Karaganda University, Karaganda University of Kazpotrebsoyuz. Work experience at the university is from 7 to 28 years.

The analysis of the survey showed that the majority of respondents, teaching staff and administrative staff, understand the internal quality assurance system as a set of the organizational structure of the university, internal documentation, indicators, processes, and resources (83.49% and 85.98%, respectively). At the same time, there is no big gap in the answers of the teaching and administrative staff in understanding the internal quality assurance system, i.e. the absolute majority of respondents believe that the internal quality assurance system of the university should be aimed at maintaining high quality standards of educational services of the university, which are qualitatively implemented through the formation of an effective resource base, high-quality content and proper administration of processes (Figure 1).

At the same time, the response of more than 15% of respondents who perceive the structural unit of the university as an internal quality assurance system, and 7.86% of respondents who find it difficult to answer this question, indicates an insufficiently formed quality culture, which assumes the same understanding of quality issues and quality assurance by all subjects of education. Most of them are teaching staff (5.06%).

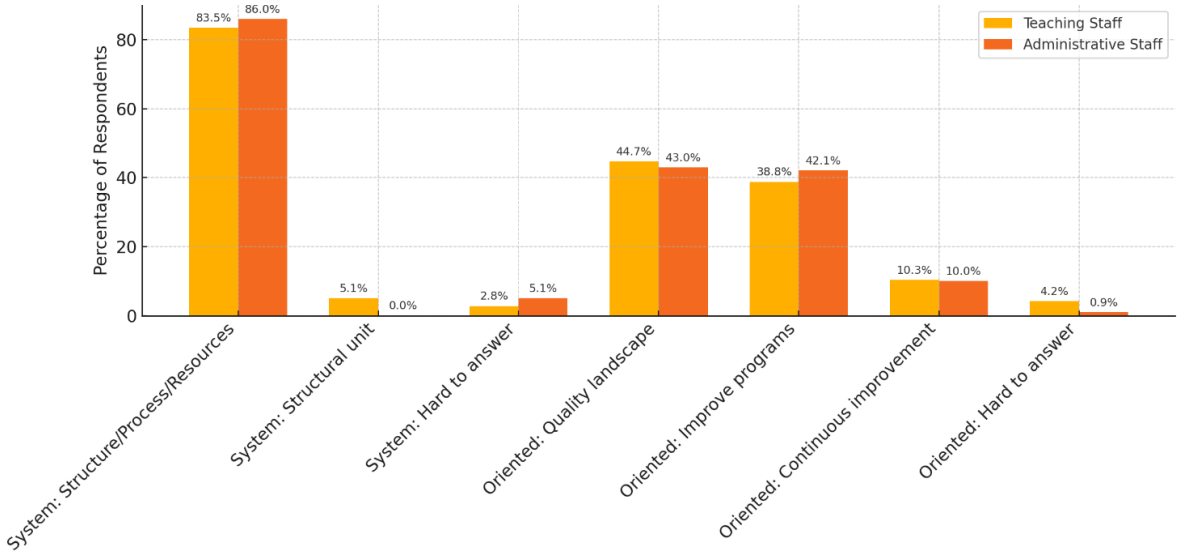
Most of the respondents from among the teaching and administrative staff determine the orientation of the internal quality assurance system to create a quality landscape of the education system by the efforts and actions of all stakeholders to meet their expectations and goals (44.70% and 42.99%, respectively).

The proportion of respondents who note that the internal quality assurance system should be aimed at improving the quality of educational programs is also significant: teaching staff – 38.80%, administrative staff – 42.06%. More than 10% of respondents as-sociate the internal quality assurance system with the development of a culture of continuous improvement of the

university's activities. At the same time, 5.15% of respondents found it difficult to answer this question. At the same time, most of them are teaching staff (4.22%), which allows us to see a correlation with the first question, where the percentage of those who found it difficult to answer the question of understanding the internal quality system is also high among teaching staff.

Figure 1

Understanding and orientation of Internal Quality Assurance System



Respondents' understanding of the degree of involvement of university stakeholders in ensuring the quality of education correlates with global trends and the use of quality assurance standards. Thus, the survey shows that the majority of both teaching staff and administrative staff believe that the involvement of university stakeholders in ensuring the quality of education is manifested through internal monitoring of the university's activities (40.24% and 42.06%, respectively). In addition, 40.5% of respondents see the involvement of university stakeholders in ensuring the quality of education through the development of quality standards .

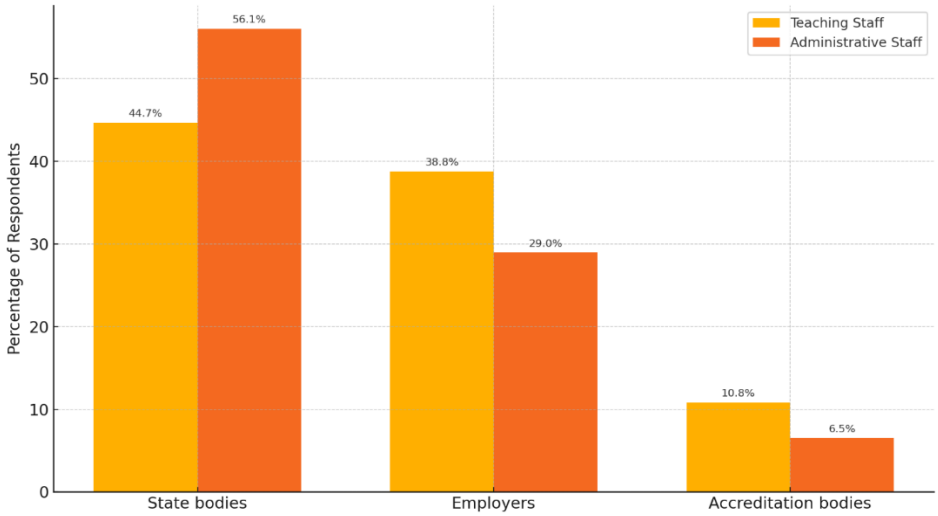
The next question in the questionnaire was related to the requirements for the organization of education.

According to the assessment of 50% of respondents, it was understood that the requirements for the organization of the internal quality system of education are set by state bodies authorized in the field of higher education (44.70% and 56.07%, respectively). This understanding can be explained by the fact that the Standard Rules of Higher and Post-graduate Education organizations regulate the processes of internal quality assurance based on international standards and guidelines for ensuring the quality of higher and postgraduate education in the European higher education area.

A fairly large number of both teaching staff and administrative staff (38.8%, 28.97%, respectively) believe that employers set the requirements for the organization of an internal education quality system. However, there are also many who believe that the requirements for the organization of an internal education quality system are set by independent accreditation bodies (17.38% of respondents). This point indicates that not all teaching staff (10.84%) and administrative staff (6.54%) understand the role of accreditation bodies, even though the accreditation process is a regular procedure for external assessment of the quality of education for Kazakhstani universities (Figure 2).

Figure 2

Perceived Sources of Internal Quality System Requirements



In our opinion, it is important for respondents to understand the methodology of the internal quality assurance system, which, according to many respondents (61.08% of teaching staff and 54.21% of administrative staff), is based on academic values and fundamental principles.

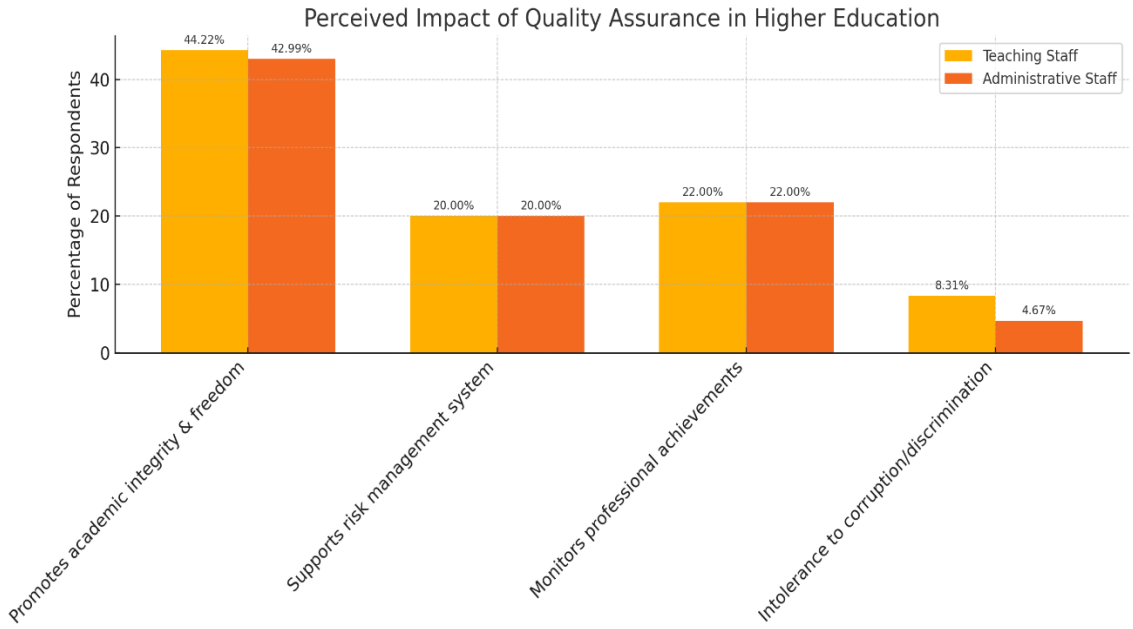
In the same context, the opinion of 53.71% of respondents (teaching staff - 21.93%, administrative staff - 31.78%) that the methodology of the internal quality assurance system is based on the commitment of the university management to quality assurance should be considered.

Generally, the teaching and administrative staff highly appreciate the importance of quality assurance in promoting academic integrity and academic freedom at the university (44.22% and 42.99%, respectively). In addition, almost 20% of respondents have an understanding that quality assurance contributes to the construction of an effective risk management system at the university. At the same time, 22% of teaching staff and administrative staff associate quality assurance with monitoring the professional achievements of university teachers and staff (Figure 3).

At the same time, it was found that the respondents, to a small extent, associate the building of a quality assurance system with the promotion of the principle of intolerance to any forms of corruption and discrimination at the university: teaching staff – 8.31%, administrative staff – 4.67%.

Figure 3

Perceived Impact of Quality Assurance in Higher Education



Thus, the study of the results of the questionnaire survey allowed us to formulate trends and initial problems inherent in the Kazakh higher education system in terms of quality assurance:

1. An internal quality assurance system is considered as a set of integrated and regularly interacting or interdependent elements created to achieve certain goals;

2. The internal quality assurance system is aimed at creating a high-quality landscape of the education system through the efforts and actions of all stakeholders to meet their expectations and goals;

3. Creating a high-quality education landscape requires sustained and long-term efforts, creating a system capable of developing effectively in the future;

4. The involvement of university stakeholders in ensuring the quality of education is manifested through internal monitoring of the university's activities, through the development of quality standards

5. The methodology of the internal quality assurance system is based on academic values and fundamental principles, as well as on the commitment of the university management to quality assurance;

6. Quality assurance contributes to the promotion of academic integrity and academic freedom at the university, building an effective risk management system at the university.

7. A comparison of the teaching staff cohort and the administrative staff allows us to conclude that these cohorts do not have a large gap in understanding the internal quality assurance system. At the same time, the issue of the formation of a quality culture at the university is still relevant.

Field (on-site) research in the form of interviews with the teaching and administrative staff was aimed at identifying the faculty's understanding of the main characteristics of a modern university, its mission, the internal quality assurance system, as well as the understanding of teaching staff of their role as a subject of the educational process.

Interviewing administrative and managerial personnel, along with identifying the idea of main characteristics of a modern university and its mission, was also aimed at determining the vision of administrative and managerial personnel of their role in providing conditions for the

educational process, as well as a well-grounded idea of the internal quality assurance system: principles, division of responsibility, tools.

According to the respondents, the main parameters of the university include the interaction of educational and research processes, modern infrastructure, highly qualified teaching staff, formed scientific schools, innovative programs, graduates who implement their competencies in the labour market, and high-rating positions, including international ones.

Respondents see the university's primary mission in integrating education, science, and business and note the university's role in the region's development. Respondents determine their role in ensuring the conditions of the educational process at the university as the implementation of the processes of internationalization of the university, ensuring the availability of education, the development of professional competencies following the in-crease in requirements for the level of education, strengthening the scientific or practical component of programs.

All respondents agreed with the thesis that the university's quality assurance is based on the values of the quality culture among the entire university community: aca-demic staff, students, administrative and managerial staff.

Among the academic values underlying the quality assurance methodology, respondents include academic freedom, honesty, quality of education, transparency, open-ness, mutual respect, and equal student opportunities.

All respondents answered positively to the question of whether the methods and tools of the internal quality assurance system should correspond to the mission and development strategy of the university.

The combined opinion of the representative staff of teaching staff and administrative staff made it possible to assess the impact of various components more accurately on the overall level of education quality.

The survey among students focused on three blocks: assessment of the quality of content and implementation of educational programs; assessment of the quality of university infrastructure; assessment of the quality of teaching staff.

The main factors of the quality of higher education include the level of development of the material and technical base (infrastructure), which affects the effectiveness of educational and scientific processes, taking into account the interests and needs of various intra-university groups, stimulates students to actively acquire knowledge, and scientists and teachers to generate and broadcast it.

According to the survey results, students show great satisfaction with the existing infrastructure in their universities. So, 44.8% are completely satisfied, 31% of respondents are rather satisfied. At the same time, the greatest satisfaction is noted in relation to the library and the university grounds, while respondents are less satisfied with the restrooms (46.1%), Wi-Fi operation, Internet speed (45.8%).

The quality of the educational program content and its implementation is a very important factor in the training of modern personnel. In this regard, it was valuable to learn from students the degree of their satisfaction with the knowledge they received, their relevance and the quality of teaching this knowledge. Thus, in the aggregate of the answers "Yes" and "Rather yes than no", 72.5% of respondents believe that the disciplines they study can be useful in the future and assess the relevance of knowledge mainly highly.

According to the survey, students are less satisfied with the possibility of choosing a teacher (39.2%), the desired course or subject (35.3%), as well as considering and pro-cessing student complaints (37.7%).

With regard to the quality of classes, students have the greatest dissatisfaction with the audience (29.7%) and the format of classes (27.9%).

When assessing the qualification level of the teaching staff, students note a good command of the subject (66.8%), interaction with students (65.1%) and demanding knowledge (66.7%) of students, which indicates a high level of qualification. On the other hand, respondents are less satisfied with their knowledge of modern technologies and teaching methods (24.9%), objectivity of assessment (22.7%) and benevolence (21.7%).

The results obtained provide valuable information for management decisions and strategic planning in the field of higher education quality and can also serve as a basis for making improvements to the development of the internal quality assurance system. The study identified problems and challenges in the field of higher education, which allows the relevant structural units of the university to assess the difficulties they face.

Discussion

This article presents the results of a study of the quality level of the higher education system based on cluster factors of influence using questionnaires and interviewing the following groups of respondents: faculty, administrative staff and students.

We assume that clustering of factors to be the most appropriate and promising method of assessing the quality of higher education, since cluster analysis as a multidimensional statistical procedure allows the collection and systematization of information on homogeneous groups of parameters, properties and characteristics of the studied object. In this regard, the purpose of our study is to identify the quality of higher education based on cluster analysis.

During the study, the main parameters of the quality of education were identified as factors influencing the formation of quality, interacting with each other and grouped for ease of analysis as follows: a modern university (characteristics; main mission; main customers of services; the role of the university in the development of the region); the subject of the educational process (role in ensuring the conditions of the educational process; opportunities at the university to improve the quality of the staff; forms of interaction with colleagues to improve the quality of the educational process); the system of internal quality assurance (its purpose; its structure; requirements for its organization; methodology of its organization; possible composition of its experts; its significance).

The results obtained during the survey show that the teaching staff and administrative staff understand the role of universities in shaping the "charge" of human potential development at a high level. It should also be noted the high demands of students on the quality of the educational process, its provision and support. There is a clear understanding of the requirements for learning outcomes on the part of customers, primarily on the part of students.

The organized interviews also showed the respondents' acceptance of the social importance of universities and the position of universities as one of the system-forming factors of regional development. The conducted research revealed the dependence of the quality of education on the level of organization of the internal quality assurance system, the involvement of all subjects of the educational process.

During the study, the participants expressed the essential elements contributing to the improvement of the quality assurance system at the university, such as the quality of personnel and continuous professional development; motivation of the teaching staff; the state of the material base of the university; innovative activities of the university.

Also, according to the participants, the developed information environment and the further transformation of the university into a digital format of both scientific and educational processes and support for all types of activities will allow the organizers of the educational process to ensure its effectiveness.

An important role in the activities of universities belongs to the existence of a well-established internal quality assurance system, the formation of a corporate culture and a policy of academic integrity through the values of a culture of quality and the availability of effective

administrative management, developing the values and principles of the quality assurance model in accordance with the mission and vision of the university.

The results obtained from the respondents' responses reflected their point of view on the importance of ensuring the quality of higher education in general, the problems of quality assurance and the corresponding impact, as well as factors contributing to the creation of a good quality assurance system.

The limitations of the conducted research are the incomplete consideration of state policy in the field of higher education, since despite the provision of academic and managerial independence to universities at some level, the regulatory role of the state in Kazakhstan is still high. Also, the opinion of employers as one of the main stakeholders in the field was not considered. But they are the objects of our next research.

Conclusion

The central problem of the development of education is to improve its quality. Approaches to solving this problem may vary. The organized study revealed the potential for the development of higher education and its quality in the context of diversification, digitalization, and academic freedom of the university through the organization of cohorts of " teaching staff" and "administrative staff".

The study of the understanding and relationship between the teaching staff and the administrative staff based on structured factors that affect the quality of education (clusters) made it possible to give a detailed description of the resources for the development of the higher education system, including the development of the value and motivational component of the activities of teachers and staff, building communications within the teams of employees of the organization, ensuring systemic improvement qualification of personnel.

The study showed the need to build an internal quality assurance system at the university based on the principles, including ensuring the unity of strategy, policies and procedures at the university; involving all employees and students' external stakeholders in quality assurance activities; maintaining academic integrity and freedom, intolerance to any form of corruption and discrimination; creation of conditions for continuous improvement of the quality assurance system and development of quality culture, etc.

Thus, the quality of education as a social category reflects the state and effectiveness of the educational process and is characterized by the degree of compliance with the requirements – needs and expectations of internal and external consumers in the development and formation of professional competencies of the individual.

Quality assurance focuses on the organization's quality and is based on the participation of all stakeholders to meet their expectations and goals as much as possible. Only a stable quality culture can ensure a high quality of work at every level. This means that all education actors have the same understanding of quality and quality assurance.

Further consideration of the development of internal quality assurance systems of universities seems relevant. Further research on the development of the competencies of university management in the organization of internal quality assurance systems and the formation of management's commitment to the culture of quality is a promising direction.

Conflict of Interest Statement

The authors declare no potential conflicts of interest regarding the research, authorship, or publication of this article.

Author Contributions

Aidos Mukhatayev: Conceptualization, Methodology; Serik Omirbayev: Data curation, Writing- Original draft preparation; Andrii Biloshchytskyi: Visualization, Investigation; Khanat Kassenov: Supervision; Saulesh Mukanova: Validation; Alibek Shokparov: Writing-Reviewing and Editing.

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Information about authors

Aidos Mukhatayev – Candidate of pedagogical sciences, Professor, Department of general education disciplines, Astana IT University, aidos.mukhatayev@astanait.edu.kz, ORCID: 0000-0002-8667-3200

Serik Omirbayev – Doctor of Economic sciences, Professor, the First vice-rector, Astana IT University, serik.omirbayev@astanait.edu.kz, ORCID: 0000-0001-7643-3513

Andrii Biloshchytskyi – Doctor of Technical sciences, Professor, Kyiv National University of Construction and Architecture and Astana IT University, a.b@astanait.edu.kz, ORCID: 0000-0001-9548-1959

Khanat Kassenov – PhD in Education, Vice-rector, Academy of Physical Education and Mass Sports, kh_kassenov@apems.edu.kz, ORCID: 0000-0002-7555-4919 ***(corresponding author)***

Saulesh Mukanova – Doctor of pedagogical sciences, Associate professor, Dean, Faculty of additional training, Buketov Karaganda University, fdo@buketov.edu.kz, ORCID: 0000-0002-9734-7574.

Alibek Shokparov - Candidate of Pedagogical Sciences, Rector, International University of Tourism and Hospitality (Kazakhstan, Turkistan), shokparov.alibek@iuth.edu.kz, ScopusID: 59724523800.