

# QUALITY IMPROVEMENT OF HIGHER EDUCATION AS A FACTOR OF INTELLECTUAL CAPITAL DEVELOPMENT

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## ABSTRACT

*The proposed science approach of higher education quality allows to perform permanent persevering influence on increasing the knowledge based capital. The system of assessment of internal provision of higher education quality at university is built on the ground of competency approach. The analytical formula of calculation of integrated quality measure of higher education quality at university is proposed on the basis of qualimetric approach. Proposed method of assessment allows to observe and control the quality of education at university as complex system comprehensive characteristic which reflects its activity having many aspects as a whole of interrelated processes.*

**Keywords:** Higher Education Quality, Integrated Measure, Potential, Educational Process.

**JEL Classification:** I25, O34.

## INTRODUCTION

Education sector as one of the most significant State public institutes is a source which produces innovative high-tech products and is a basis of formation of education and intellectual potential of society. The last provides a basis for stable economical growth of country, principally oriented toward academic personnel, technologies and knowledge. With that in mind, accelerated innovative growth according to the needs of information-oriented society, formation of attractiveness and its competitiveness on the global market of educational services is determined as the main vector of national politics in educational sector. Such transformational processes require a targeted multivariate policy to improve the quality of higher education, using radically new scientific approaches.

The market for educational services as a factor in human development has a certain quality, the main trends and ways of modernization. Competition in the market of educational services is present both between educational institutions for attracting consumers, and between consumers for the educational service of a certain institution. At this, it takes into account both the specialization, the image and prestige of the educational direction, and the institution as a whole.

## LITERATURE SURVEY

The quality of higher education as any quality of an object is subject to certain laws of nature, in particular, the unity and struggle of opposites, the transfer of quantity in quality, etc. The development of a complex object is partly characterized by unpredictability, a constructive role of chaos (confusion), and the emergence of a new one by chance. However, in the absence of purposefulness, changes can not accumulate, which does not ensure the transition from one qualitative state of the object to another. In addition, the "*butterfly effect*" may occur due to non-linearity of development, when a slight deviation in the initial conditions of development leads to significant changes in its trajectory (Breus & Khaustova, 2016). In order to influence the improvement of the quality of higher education, it is necessary to create a mechanism for providing a mechanism for the development of education, based on an appropriate system for assessing the quality of education at the university.

The program document of the World Bank (Higher Education Development Policy Program-First Operation (2009)) defines three criteria for the quality of educational activities:

the quality of staff, which is determined by the degree of academic qualifications of the faculty and academic staff of the university. The quality of staff and the quality of educational programs combined with the teaching process and scientific research, provided that they are in line with public demand, determine the academic quality of teaching content;

the quality of student training-subject to diversification of educational programs, overcoming the multifaceted gap existing between secondary and higher education, and increasing the role of the mechanisms of educational and professional orientation and motivation of youth;

the quality of infrastructure and the "*Physical learning environment*" of higher education institutions, covering the "*Whole set of conditions*" of their functioning, including computer networks and modern libraries, which can be provided at the expense of adequate funding.

Despite the differences in research approaches, they are also combined by the fact that the authors distinguish between the resulting and procedural quality criteria (Ruben, 2018) which is explained by the fact that the quality of the process naturally leads to a high quality of the result, and the change in the requirements for the quality of the result, in turn, necessitates adequate changes in requirements for the quality of the process.

Zakota et al. (2017) having consider problems of quality of higher education also take into account the criteria that cover the unity of both the quality of the result and the quality of the process. This allowed them to build a comprehensive system of criteria for the quality of education in a higher education institution. They singled out two blocks of criteria for the quality of education:

criteria of quality of the result (success, personal qualities of students).

criteria of quality of functioning of the educational process (target, content, technological, resource, organizational support).

Content analysis of scientific studies allowed to find that the results of education are divided into three groups. The first group is the results of education that can be quantified, in absolute or relative terms, or in any other but necessarily measurable parameters (Hamshire et al., 2017). The second group is the results of education, which can be measured only qualimetrically, in other words qualitatively, descriptively or in the form of a ball scale, where any score corresponds to a certain level of expression of quality (Dattey et al., 2017). The third group is the results of education that can not be easily and clearly identified, because they are often invisible, because they relate to the inner, profound feelings of the student's personality.

(Goos & Salomons, 2017). One can conclude that where it is impossible to accurately record the results of education, their analysis and management can not be clear: they have a guesswork, an approximate and indicative character

During the study, it was found that the criteria for assessing the quality of education of scholars representatives of the competence approach are figuratively divided into four groups (Ashour, 2017).

criteria of fact -quantitative indicators.

quality criteria-give an idea of the depth and strength of processes occurring in humans.

criteria of attitude-give an opportunity to determine the motives of behavior and actions of the person's choice.

time criteria-show the stability in the time dimension of knowledge, skills and abilities of students, their habits, character traits, etc.

## METHODS

In the course of research, the method of qualimetry was used in calculating the integrated quality measure of higher education quality. Qualimetry is a science of methods for quantitative evaluation of the quality of objects by converting qualitative indicators into quantitative ones. Converting information on the quality of higher education to another scale, if the obtained values are not values of the order scale of the type, was carried out on the basis of the operational theory of measurements. The choice of indicators of the proposed system for assessing the quality of higher education was carried out on the basis of a competent approach.

## RESULTS AND DISCUSSIONS

Purpose of the article is to assess the quality of higher education in order to increase intellectual capital as a necessary condition for the development of society.

As the educational process is one of the main processes of the university's activity, it is also advisable to assess the quality of education at the university in three directions: assessment of conditions for the implementation of the educational process, assessment of the current indicators of the implementation of the educational process and assessment of the results of the educational process.

The criteria of the quality of the result of the educational process can determine the level of preparedness of future specialists, and criteria for the quality of the conditions and the process itself to coordinate the activities of all subjects of the educational process in the implementation of targeted effects on the process. Since the professional competence of the future specialist is the main purpose of his training, then, let's submit the quality of results taking into account the semantic interpretation of this definitions: as an integral characteristic of the professional and personal qualities of the future specialist.

Consequently, a group of criteria for the quality of the results will be designed to track the professional and personal qualities of future professionals. Given the multifaceted nature of monitoring, we considered it necessary to identify the main criteria, to develop a set of optimal indicators for each of them in order to ensure the integrity and comprehensiveness of the assessment of the quality of education.

Based on the process approach, the results of the author's research allowed to determine the integrated quality measure of higher education quality at the university as a criterion complex containing three groups, specified in the most important indicators (Table 1).

<b>Table 1</b>		
<b>INDICATORS OF ASSESSMENT OF THE SYSTEM OF INTERNAL QUALITY ASSURANCE IN HIGHER EDUCATION AT THE UNIVERSITY</b>		
<b>No s/n</b>	<b>Name of indicator</b>	<b>Conventional name</b>
<b>Criteria for quality of conditions for the implementation of the educational process <math>Q_{k_1}</math></b>		
1	potential of entrants	Q1
2	personnel potential of employees	Q2
3	educational, methodical and didactic provision of educational programs	Q3
4	information and library resources	Q4
5	satisfaction of students and employees with social conditions	Q5
6	logistics	Q6
7	teaching quality	Q7
8	scientific and innovative potential	Q8
<b>Criteria for the quality of the implementation of the educational process <math>Q_{k_2}</math></b>		
9	ensuring the leadership role of management in quality issues and continuous improvement of all aspects of activity;	Q9
10	realization of educational programs	Q10
11	realization of academic mobility	Q11
12	implementation of educational work	Q12
13	implementation of different types of student practices	Q13
14	implementation of general management, including personnel management, infrastructure, material and information resources, technologies, etc.	Q14
15	implementation of internal quality assurance	Q15
<b>Criteria for the quality of the results of the educational process <math>Q_{k_3}</math></b>		
16	student recruitment efficiency	Q16
17	student successfulness, degree of their experience	Q17
18	readiness of students to continue education	Q18
19	the level of formedness of professional competencies	Q19
20	the level of formedness of professional abilities	Q20
21	satisfaction of employers	Q21
22	the results achieved by the university in relation to the planned purposes of improving the quality of the training of specialists	Q22

It should be noted that all indicators of the system of internal quality assurance of higher education at the university can be measured only qualitatively.

Therefore, one of the goal of research is to add the assessments of the ordinal scale or the scale of intervals to higher quality education assessments, that is to move to more advanced scales relative to measuring the quality of higher education, which adds more meaning to the notion of quality (Tetiana et al., 2018a:2018b). This is possible with the help of the operational theory of measurements, according to which under any concept (that is, a concept) is meant nothing but a set of operations. Scales of evaluation can be characterized by their differentiated (resolving) ability (or power)-the ability to distinguish objects as distinct from each other (Table 2).

<b>Table 2</b>	
<b>CONVERTING INFORMATION TO ANOTHER SCALE IF THE VALUES OBTAINED ARE NOT</b>	

VALUES OF THE ORDER SCALE OF THE TYPE [1, ..., 5]	
Components of higher education quality	Scales of evaluation
Criteria for quality of conditions for the implementation of the educational process $Q_{k_1}$	if $0 \leq Q_{k_1} \leq \frac{k}{5}$ , then $Q_{k_1}=1$ ; if $\frac{k}{5} < Q_{k_1} \leq \frac{2 \times k}{5}$ , then $Q_{k_1}=2$ ; if $\frac{2 \times k}{5} < Q_{k_1} \leq \frac{3 \times k}{5}$ , then $Q_{k_1}=3$ ; if $\frac{3 \times k}{5} < Q_{k_1} \leq \frac{4 \times k}{5}$ , then $Q_{k_1}=4$ ; if $\frac{4 \times k}{5} < Q_{k_1} \leq k$ , then $Q_{k_1}=5$ .
Criteria for the quality of the implementation of the educational process $Q_{k_2}$	If $0 \leq Q_{k_2} \leq \frac{k}{5}$ , then $Q_{k_2}=1$ ; if $\frac{k}{5} < Q_{k_2} \leq \frac{2 \times k}{5}$ , then $Q_{k_2}=2$ ; if $\frac{2 \times k}{5} < Q_{k_2} \leq \frac{3 \times k}{5}$ , then $Q_{k_2}=3$ ; if $\frac{3 \times k}{5} < Q_{k_2} \leq \frac{4 \times k}{5}$ , then $Q_{k_2}=4$ ; if $\frac{4 \times k}{5} < Q_{k_2} \leq k$ , then $Q_{k_2}=5$ .
Criteria for the quality of the results of the educational process $Q_{k_3}$	If $0 \leq Q_{k_3} \leq \frac{k}{5}$ , then $Q_{k_3}=1$ ; if $\frac{k}{5} < Q_{k_3} \leq \frac{2 \times k}{5}$ , then $Q_{k_3}=2$ ; if $\frac{2 \times k}{5} < Q_{k_3} \leq \frac{3 \times k}{5}$ , then $Q_{k_3}=3$ ; if $\frac{3 \times k}{5} < Q_{k_3} \leq \frac{4 \times k}{5}$ , then $Q_{k_3}=4$ ; if $\frac{4 \times k}{5} < Q_{k_3} \leq k$ , then $Q_{k_3}=5$ .

The calculation of the general quality measure of higher education at the university (Q) should be performed taking into account the specific gravity (reflecting the degree of influence of these properties on the overall indicator) of each of the components and their indicators by the formula of the weighted average, consisting of: criteria for quality of conditions for implementation of educational process  $Q_{k_1}$ ; quality criteria for implementation of educational process  $Q_{k_2}$ ; quality criteria for results of educational process  $Q_{k_3}$  (formulas 1–3).

$$Q_{k_1} = \sum_{Q_{k_1}}^8 (\sum_{i=1}^n Q_{k_1} \times d_i) \times d_{Q_{k_1}} \dots \tag{1}$$

$$Q_{k_2} = \sum_{Q_{k_2}}^7 (\sum_{j=1}^m Q_{k_2} \times d_j) \times d_{Q_{k_2}} \dots \tag{2}$$

$$Q_{k_3} = \sum_{Q_{k_3}}^6 (\sum_{o=1}^r Q_{k_3} \times d_o) \times d_{Q_{k_3}} \dots \tag{3}$$

where  $Q_{k_1}$ –indicators of quality evaluation of conditions for implementation of educational process;  $Q_{k_2}$ –indicators of quality evaluation for implementation of educational process;  $Q_{k_3}$ –indicators of quality evaluation of the results of the educational process; i–the

number of indicators with the assessment of quality of the conditions of educational process,  $i=[1, \dots, n]$ ;  $j$ —the number of indicators with the assessment of quality of the results of educational process,  $j=[1, \dots, m]$ ;  $o$ —the number of indicators with the assessment of quality of the results of educational process,  $o=[1, \dots, r]$ ;  $d_i$ —proportion of indicator of evaluation of the  $i^{\text{th}}$  component in indicators of implementation of educational process;  $d_j$ —proportion of indicator of evaluation of the  $j$ -th component in the quality indicators of the implementation of the educational process;  $d_o$ —proportion of indicator of evaluation of the component in the quality indicators of the educational process results;  $d_{Q_{k1}}$ —proportion of value of quality of implementation of the educational process in the complex three-dimensional evaluation;  $d_{Q_{k2}}$ —proportion of value of quality of the results of the educational process in the complex three-dimensional evaluation;  $d_{Q_{k3}}$ —proportion of value of quality of the results of the educational process in the complex three-dimensional evaluation.

Accordingly, the calculation of the integrated quality measure of higher education at the university as a criterion complex  $Q$  on the quantitative indicators in general, by summing obtained values of three components by the formula (2).

$$Q = Q_{k1} + Q_{k2} + Q_{k3} \quad (2)$$

Consequently, the integrated quality measure of higher education at the university is proposed to be determined by the levels of indicators of evaluation of its properties and their proportion, which characterize significance which they took when assessing the level of this indicator. According to the conditions of synergetic effect, the growth of quality of higher education of universities as a part of the educational sphere leads to an increase in intellectual capital as a separate person, as well as the country as a whole. Scilicet the assessment of quality of higher education allows to determine "*bottlenecks*" in the relevant criteria of assessment and build strategies for making managerial decisions on raising intellectual capital for both university staff and students.

## CONCLUSION

The proposed system for assessing the quality of higher education at the university is based on existing models that underlie standard procedures for the integrated assessment of the quality of education in educational institution. However, the fundamental feature of the evaluation system we have developed is a process approach that allows us to consider and control the quality of education at the university as a complex system integral characteristic that reflects all multifaceted activities as a set of interrelated processes.

The system of internal quality assurance of higher education at the university is created with the aim of: definition of the structure of the quality assurance system for educational activities and the quality of higher education; specification of the content of quality control procedures; distribution of areas of responsibility for the functioning of the system of internal quality assurance in higher education. The system of internal quality assurance of higher education involves the coordinated functioning of educational and managerial units in the educational activities of university.

The task of further research is to improve and formalize the criteria for assessing the quality of higher education. In doing so, let's give an opinion that complete formalization of quality criteria is hardly possible without building their integral system, because in the assessment of intellectual activity there are aspects that are difficult to be formalized.

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