

# The Effectiveness of Educational Services: an Approach to the Assessment of the Quality

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**Abstract**—The level of quality of graduates of higher education institutions is currently considered as one of the factors ensuring economic efficiency. The transition to new state educational and professional standards based on a competent format requires the development of methodological support for assessing the mastery and assimilation of competencies by students. The authors suggest a methodical approach to the development of tools for assessing the quality of educational services on the basis of assessing the quality of vocational training of graduates of universities, including principles, a system of indicators and their criteria, a single and integral indicator of evaluation, an algorithm for conducting. Unlike existing approaches, oriented mainly to knowledge modification, the recommended option is oriented to modern labor market requirements, and allows to take into account economic, social and organizational-technical aspects. The results of the approbation, conducted in the context of the directions of training specialists of the Siberian Federal University for the production and non-manufacturing industries, confirmed the practical orientation of the toolkit, and allowed to determine the directions of improving the activity of the university in improving the quality of educational services.

**Keywords**—*Educational services, quality of educational services, quality assessment methodology.*

## I. INTRODUCTION

In the state program "Development of Education for 2013-2020" one of the goals is to ensure that the quality of Russian education meets the changing needs of the population and the long-term objectives of the development of Russian society and the economy. The urgency of the problem of ensuring the quality of educational services in Russia is determined by a number of aspects, among which it is necessary to highlight: a real decrease in the quality of training of students and graduates; increased competition between educational institutions in the market of educational services, especially at the stage of distribution of the state order for the training of specialists.

The ongoing reform of education involves the organization of an educational process aimed at a concrete end result - the quality of vocational training of graduates, measured in terms of competence. The change in the subject of assessing the quality of vocational training of graduates justifies the need to develop a system for assessing the quality of educational services (QES).

## II. LITERATURE REVIEW

The reference to the sources of the regulatory framework and economic literature testifies to the lack of a common view on the definition and content of the concept of the quality of educational services and their evaluation. In the world practice, the requirements for the quality of educational services are formulated in the ISO / IWA 2: 2007 Quality Management System [1].

Certain aspects of the economic direction, prospects and social role of the sphere of educational services, as well as their quality in the development of modern society were considered by [2,3,4,5,6]. The issues of assessing the quality of higher education are the subject of close attention of a number of contemporary foreign authors [7, 8, 9, 10, 11 et al.]

In the Russian regulatory and legal framework, the quality of the activities of educational institutions is assessed [12, 13]. The available scientific research in the field of the competence approach is mainly aimed at justifying the connection of competences and the content of education [14, 15, 16]. However, in the works mentioned, the issues of assessing the quality of the educational service on the basis of the level of competence development are practically not reflected.

## III. METHODOLOGY OF RESEARCH

In the Russian practice there are many approaches to assessing the quality of educational services - resource [17], qualimetric [18], process [19, 20], system [21], reflexive [22], information-analytical [23] and others.

Within the framework of the competence approach, the authors believe that the quality of the educational service is a complex indicator (the degree of professional competence) that integrates the quality of the delivery process and the quality of the result of the educational service and characterizes it in the multi aspect of the research (social, economic, organizational and technical).

The article proposes a methodology for assessing the quality of educational services, including principles, a system of particular indicators, and a methodology for calculating the integral index. The author's methodology is based on determining the degree of professional competence of the graduate of the university - an integral indicator reflecting the level of quality of his professional readiness to fully exercise labor functions in his professional field, based on the results of assessing the levels of formation of the entire set of competencies according to the federal state educational standard in the relevant training area.

Formation of the evaluation of the quality of educational services is expedient to implement on the basis of the following principles:

– the list of target indicators should be based on the developed official documents of the federal level (FSES HPE-3 and FSES HE-3 + in the areas of training);

– the set of proposed indicators should provide the possibility of a comparative analysis of the objects of evaluation within the selected set of evaluation objects;

– the set of proposed indicators should be grouped in such a way as to reflect the main components of the integrated indicator of the quality of the professional competence of graduates;

– targets should be an instrument for managing the level of quality of vocational training of graduates

When constructing a functional model for assessing quality, indicators should be used that reflect the levels of development of the various groups of competences.

The proposed methodology for determining a complex indicator includes the following system of partial indicators (Table 1).

TABLE I. SYSTEM OF PARTIAL INDICATORS OF THE ASSESSMENT OF THE DEGREE OF PROFESSIONAL COMPETENCE OF GRADUATES OF UNIVERSITIES

Index	Method of calculation	Information base
U(GCC) – level of general cultural competence	$U(GCC) = U(x_i) / L * n$ or $U(GCC) = \sum_{i=1}^n Q_i \div L \times n$	The results of the values of indicators of the level of formation of general cultural competences
U(PPC) – level of professional and practical competence	$U(PPC) = U(y_j) / L * m$ or $U(PPC) = \sum_{j=1}^m Q_j \div L \times m$	Results of the values of indicators of the level of the formation of professional and practical competences
U(x <sub>i</sub> )– level of general cultural competence formation	$U(x_i) = \sum_{i=1}^n Q(x_i) \div L$	Test results
U(y <sub>j</sub> )– level of professional competence formation	$U(y_j) = \sum_{j=1}^m Q(y_j) \div L$	Test results

Then, the model for assessing the quality of educational services based on competencies will look like this:

$$SIK = (InQi + j = ImQj) \div L \times (n + m), \tag{1}$$

Or

$$SIK = (U(GCC) + U(PPC)) / L * (n + m), \tag{2}$$

where: Qi - points scored by the student during testing in assessing specific general cultural competence;

i - an index reflecting the number of general cultural competence, according to their list stated in FSES HPE-3 or FSES HE-3 + i - from 1 to n;

Qj - points scored by the student during the testing in assessing the specific professional and practical competence;

j - the index reflecting the number of professionally competent competence, according to their list, declared in GEF HVE -3 or 3+, j - from 1 to m;

L - the maximum possible number of points in testing;

n - the number of general cultural competences;

m is the number of professional and practical competencies.

Single quality indicators are determined and calculated on the basis of the results of special tests based on measurement materials developed jointly with employers (see Fig. 1).

Comparison of the degrees of professional competence of graduates is possible and necessary on the basis of the rating.

#### IV. DISCUSSION

The developed toolkit should logically complement the system of indicators with the help of which interested subjects of the labor market could assess the level of mastering the competences of the graduate.

The study of the quality properties of the educational service made it possible to identify and offer a system of indicators of

economic, social, organizational and technical groups with the help of which it is possible for employers, universities and consumers to evaluate it (Table 2, 3, 4).

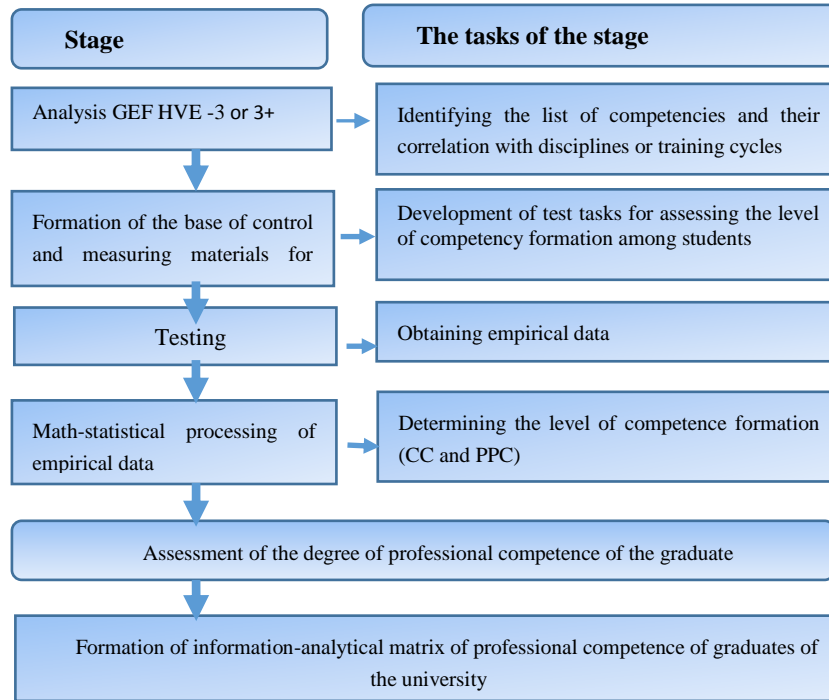


Fig. 1. Algorithm for assessing the degree of professional competence of university graduates.

TABLE II. GROUP OF ECONOMIC INDICATORS FOR THE EVALUATION OF THE QUALITY OF EDUCATIONAL SERVICES

	Index	Economic aspects					
		Years					
		2013		2014		2015	
		ECI	IET	ECI	IET	ECI	IET
Educational institution of SFU	subsidies from budgets of various levels	no data	no data	no data	no data	no data	no data
	tuition fee for 1 student baccalaureate	67060	37500	70000	37500	70000	40000
	share of financial resources per teacher	no data	no data	no data	no data	no data	no data
	share of financial resources from business partners of the university	no data	no data	no data	no data	no data	no data
	ratio of paid and budgetary education, (B/P),%	95/5	55/45	92/8	52/48	74/26	55/45
Employer	costs of retraining	-	-	-	-	-	-
	costs to improve qualifications, (thousand rubles)	72	64	83	93	94	122
	loss due to unqualified performance by the employee prof. Responsibilities	no data	no data	no data	no data	2-3%	0,3-0,65% of turnover
Consumer (Statistical data for the region)	cost of education baccalaureate	67060	37500	70000	37500	70000	40000
	level of wages after higher education	25900	19206	26700	21031	29300	22000

**TABLE III. GROUP OF SOCIAL INDICATORS OF THE EVALUATION OF THE QUALITY OF EDUCATIONAL SERVICES**

	Social aspects						
	Index	Years					
		2013		2014		2015	
		ECI	IET	ECI	IET	ECI	IET
Educational institution of SFU	the number of students who were expelled after the first year because of underachievement	14	1	8	2	0	2
	number of students who were expelled after the I-IV year due to underachievement	14	2	17	1	12	4
	number of students who have left the course for other reasons, incl. academic holiday	5	11	9	29	3	26
	number of unemployed	no data	no data	no data	no data	no data	no data
	number of employed	no data	no data	no data	no data	no data	no data
Employer	number of hired graduates	2	2	6	6	1	1
	number of students practicing at the enterprise	4	7	3	4	4	1
	number of students employed after the production practice	1	2	1	3	-	1
Consumer (Statistical data for the region)	presence of job vacancies in the specialty	no data	no data	no data	no data	no data	no data
	average nominal wage	25900	19206	26700	221031	29300	22000

## V. RESULTS

Approbation of the proposed toolkit was carried out on the example of training students in the field of "Commodity research" and the direction "Construction" of the Siberian Federal University.

At the first stage, the goal was defined - an objective assessment of the actual degree of professional competence of SFU graduates and its impact on the formation of additional costs of the enterprise.

At the second stage, the system of indicators and the corresponding calculation methods were presented: the methodology for calculating single indicators - the level of formation of each professional competence and the complex indicator-the degree of the professional competence of the employee.

At the third stage, a comparison was made between the competencies established in GEF HE in the area of "Commodity research" - GEF-38.03.07, the direction "Construction" - GEF HE-08.03.01 and the assessment of their compliance with labor market requirements. To this end, from the educational standards presented above, competence was selected according to the types of professional activity corresponding to the positions of the staff selected to assess the degree of their professional competence.

At the fourth stage, a database of control and measurement materials (DCMM) was developed. When forming the DCMM, 10 test tasks were developed for each competency declared for each direction. In the development of test tasks participated members of the Commission on the formation of the list of competencies.

TABLE IV. GROUP OF ORGANIZATIONAL AND TECHNICAL INDICATORS FOR THE EVALUATION OF THE QUALITY OF EDUCATIONAL SERVICES

	Index	Organizational and technical aspects					
		Years					
		2013		2014		2015	
		ECI	IET	ECI	IET	ECI	IET
Educational institution of SFU	availability of MEP, %	100	100	100	100	100	100
	the provision of an auditorium and study-lab areas, %	100	100	100	100	100	100
	availability of social infrastructure, %	100	100	100	100	100	100
	availability of educational and methodological developments	MEP 12%	no data	MEP 11%	no data	MEP 6%	no data
	availability of staff personal	85%	no data	90%	no data	95%	no data
	qualitative structure of the teaching staff (doctor / candidate / non-degree),%	10,5 / 56 / 33,5	no data	11 / 57 / 32	no data	9,5 / 57 / 33,5	17 / 57 / 26
	publication activity of the staff	no data	no data	no data	no data	no data	no data
	availability of organizational structures for employment of graduates	+	+	+	+	+	+
Employer	number of agreements with the university for the practice	<div style="border: 1px dashed black; padding: 5px; display: inline-block;">                     Integrated indicator of the ES quality  <math>S_{p.c.}(\text{commodity})=0,78</math> (research)  <math>S_{p.c.}(\text{construction})=0,75</math> </div>					
		4		3		4	
Consumer (Statistical data for the region)	duration of employment for work in the specialty after graduation	no data	no data	no data	no data	During the year	During the year

At the fifth stage, the sample of employees in the respective positions was tested against the assessment of the level of formation of the declared competencies and the degree of professional competence.

At the sixth stage, the data obtained during the testing of the selected group of employees passed the stage of mathematical and statistical processing.

The results of empirical studies are given in Table 1. They testify to the need for making managerial decisions to improve the quality of educational services.

The solution of this task involves the creation of new mechanisms for a quality assessment system, including the development of new assessment tools and evaluation procedures.

The toolkit proposed by the authors can be integrated into the existing mechanism in the following form (Figure 2).

The mechanism provides the existence and interaction of regulators at the federal and regional levels. Federal authorities exert influence through specialized structures (Ministry of Education and Science, Federal Service for Supervision in Education and Science). At the regional level, the issues of providing educational services are regulated by the regional administration, the Legislative Assembly of the region. The application of the methodology was recommended within the framework of the expansion of the functional of the Training Department in the structure of the university and does not require additional funding.

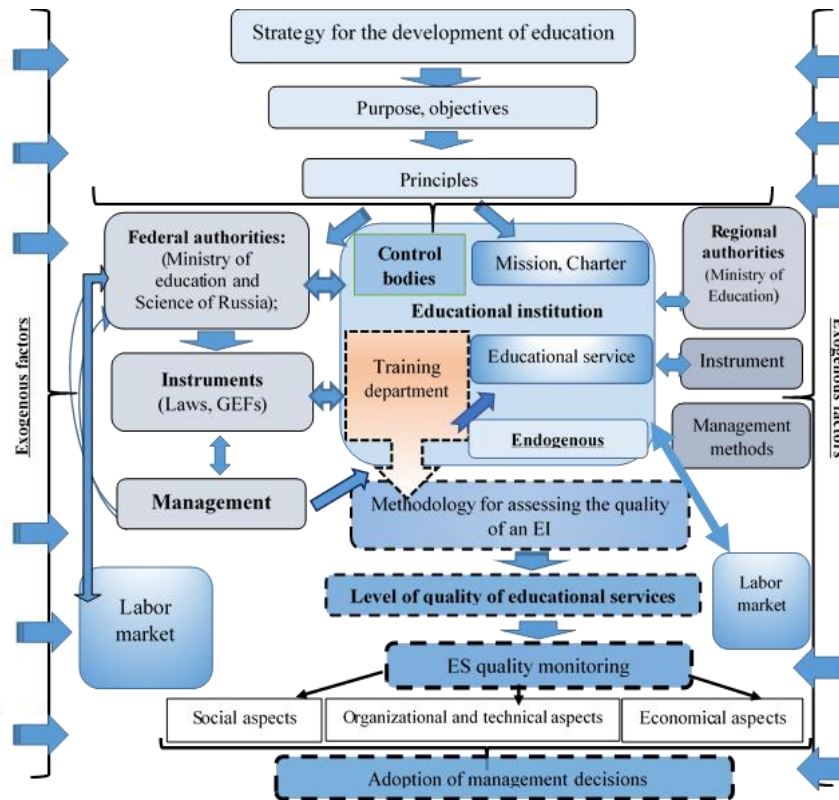


Fig. 2. The mechanism of quality management of educational services in the higher education system.

## VI. CONCLUSIONS

The introduction and implementation of the competence approach in the system of higher professional education is aimed at improving the interaction of the university with the labor market, increasing the competitiveness of specialists, updating the content, methodology and the relevant learning environment, which should contribute to improving the quality of educational services.

The developed methodology showed its practical importance. As a result of the conducted research the dependence between an indicator of a degree of professional competence of workers and volume of additional financial expenses of the enterprise was revealed.

The use of the proposed methodology ensures the end-to-end participation of the employer in the educational process, from the formation of competencies to the control of their assimilation, thus influencing the quality of the educational service.

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