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## THE IMPACT OF SERVICE QUALITY ON STUDENT SATISFACTION IN INSTITUTIONS OF HIGHER EDUCATION IN SERBIA

**Abstract:** The aim of the following research was to investigate perceptions regarding the level of quality of services introduced at faculties in the Republic of Serbia, using a quantitative approach within exploratory research framework and applying statistical analysis methods. The research problem refers to the examination of students' opinions, which contributes to shaping their attitudes about satisfaction and the overall quality of services provided by higher education institutions. The primary objective is to determine the students' interest in the educational process and identify improvements that would affect their decision to continue their studies. It is important to emphasize that the evaluation of service quality should not be based solely on students' opinions about study programs, transfers between faculties or programs, or their satisfaction with specific curricula and course offerings. The questionnaire of the research included 34 statements covering hypothetical factors. In order to conduct the research, a scale for evaluating the quality of services at faculties was created, and the study was carried out on a sample of 1,212 respondents. The research encompassed 13 higher education institutions at the Universities in the cities of Belgrade, Nis and Kragujevac. Factor analysis was performed, along with appropriate modeling based on structural equations. The structural equation modeling was carried out using the AMOS software add-on within the SPSS statistical program. The achieved results confirmed that the studied model has good characteristics—more precisely, that the questionnaire used, with certain changes in the item structure itself, could be used as an adequate instrument for analyzing the quality of services offered by a higher education institution. Based on the analyzed results from the surveys, the most important factor is the differentiation of the chosen faculty in relation to others, followed by the influence of non-teaching staff who perform their work professionally, and in third place comes the efficiency and effects of professors' lectures. The research methodology is based on the collection and analysis of data from the survey, in which the Cronbach-Alpha test, the KMO indicator, and the Pearson correlation coefficient were applied. The research problem refers to the examination of the dimensions from the questionnaire that contribute to the formation of the attitudes of the student population regarding the satisfaction and quality of services at universities in Serbia. The aim of this work was to investigate the satisfaction of students with the quality of services at universities, where it should be emphasized that new research is expected to focus on adopted competencies and standards, enabling critical thinking and logical reasoning among students, and thus assessing the quality of education by study programs and study levels.

**Keywords:** Institutional image, service quality, academic reputation, student satisfaction, higher education institutions.

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## 1. Introduction

Most studies aimed at creating an appropriate measurement instrument for assessing the quality of educational institutions have relied on adapting standardized instruments borrowed from the profit sector to the specific conditions in which higher education institutions exist (Casanova, King, & Fischer, 2023; Pawar&Dasgupta, 2024; Sehgal, 2023). These studies have observed a significant interest from the professional community in this phenomenon, particularly in recent decades. They indicate a consensus among a large number of researchers, mostly economists, that students are viewed as service clients, reflecting students' desire to be treated like any other user (Kanduri&Radha, 2023; Krishnaswamy, Nyepit, & Leow, 2023; Latif, Bunce, & Ahmad, 2021).

Many countries, professional associations, and international organizations have educational documents with a list of standardized competences for teachers (European Commission, 2005; OECD, 2010), where cooperation, technology and information, and competences to act more broadly in society are mentioned. Serbia adopted the Standards of Competences for the Teaching Profession and Their Professional Development (2011), where the teacher must have competences in the subject area and methodology, in studying and learning, in supporting the development of the student's personality, and competences for communication and cooperation. Competences represent the integration of declarative, procedural, and conditional knowledge (Rajovic & Radulovic, 2007). The teacher-student relationship itself is crucial, and student satisfaction may be due to a good grade, current status, expectations, or appreciation and acceptance in the primary environment or beyond. The desire to establish institutional mechanisms for the foundation of a quality control system at the EU level was a mistake. Also, there is a mistake in the formulation of the goals of higher education, which deviate from the key characteristics of the quality of higher education and the goals represented in the sociocultural and critical stream in pedagogy. It seems that attention should have been directed towards nurturing these goals through emancipatory didactic approaches to learning and teaching, in order to self-regulate students as a basic direction towards a culture of learning and the full development of personal potential (Gojkov, 2022).

Extensive research has been conducted to study factors that may influence student satisfaction and retention until graduation. Sahin, Imamoglu, Murat, & Ayyildiz (2024) point out that, according to students' perspectives, quality education provides better learning opportunities, and they suggest that levels of satisfaction, as well as dissatisfaction, significantly affect students' success or failure in learning. DeShields, Kara, & Kaynak (2005) note that higher education institutions focus on identifying and meeting the needs and expectations of their students. Students easily and quickly obtain information due to advancements in technology and globalization. Over the past decade, the quality of higher education services has been an extremely significant element in every society (Lo & Li, 2023). Sahin et al. (2024) emphasize that students are referred to as the "primary users" of higher education institutions, making them the most critical segment in assessing the quality of these institutions. This author places higher education at the center of tertiary service activities, aiming to provide quality services and enable positive experiences for students, which will impact their satisfaction.

Building a quality system within a higher education institution affects student satisfaction, reflected in their positive experiences from the enrollment process to lectures, exams, and eventually employment and lifelong learning. "Quality in education is determined by the extent to which the needs and expectations of students are met" by the higher education institution (Tan & Kek, 2004). From a pedagogic point of view, measurement and improvement establish a quantitative basis for evaluating education in order to control the educational system and manage how much, and what kind of, education should be offered to certain categories of students (Mitrovic & Radulovic, 2011).

The definition of quality criteria is carried out through the research of internal evaluations of teaching, where quality management models are distinguished (Cheng & Tam, 1997), which can be

recognized as the goal-specification model, the input resource model, the process model, the satisfaction model, and the organizational learning model. The model, in its function of providing strategies for continuously meeting the expectations of the participants, implies the alignment of requirements, where the confirmation of expectations is directed toward students, professors, administrators, or management (Mitrovic & Radulovic, 2011). The quality improvement system significantly influences student satisfaction and loyalty. Students are expected to provide feedback, which also represents their perception of quality at the higher education institution, serving as a basis for the institution's improvement (Tan & Kek, 2004). The pedagogical aspect can, in many ways, point out certain omissions to the professor, but this is usually not a complete picture of the quality of the professor's work. Through the econometric direction, the focus is placed on a society that learns, survives, and values achievements based on investment, while the other direction focuses on changeability and scientificity. This second stream represents the socio-humanistic paradigm of the existence of education, where a person is not seen as existing solely to earn money, but feels accepted when sharing knowledge and training others for the common good and the sustainable survival of society, a healthy environment, and science.

A couple of indicators in the study of the quality of higher education institutions are the satisfaction and loyalty of students, which largely depend on the quality of the services provided (Villafaina & Mosquera, 2024). The implementation of a quality system at a specific higher education institution is crucial for university loyalty and student satisfaction during their studies. The examination of these parameters is a significant segment in the advancement of quality control at the institution, and the subject of this research focuses on examining the perception of the level of service quality provided by faculties in the Republic of Serbia.

The reason for investigating the perception of the quality level of the higher education institutions themselves is reflected in the context of social, political and global changes in which the younger population finds themselves, who must develop critical thinking, include logical reasoning and constantly ask questions, while professors would not have the purpose of just presenting the material, but to motivate students to think, research and debate, in order to succeed in introducing an algorithmic way of solving problem situations.

The aim of the research is to carry out an evaluation in education, in order to improve quality through frequent research on working methods and effects (OECD, 2009). The evaluation of education must not serve as mere proof of expediency, but the evaluation findings should demonstrate to the general public that institutions meet the adopted standards expected of an educational institution—namely, quality programs and teaching, certified lecturers, and, most importantly, that students possess the necessary knowledge and skills. It is not desirable to constantly use results presented as student achievements to determine the quality of teachers' work, because it can be expected that the long-term outcomes of students will be neglected.

Actualization of the quality of education results in superficiality, not content. The culture of quality control of education, where external control of the outcome is carried out, relies on mechanistic-technical values, while the sociocultural content relies on uniqueness, development, dynamism, and unpredictability as the basis of the educational process (Stancic, 2012).

In order to determine the quality of the university's work, it is necessary to observe the faculties, study programs and direct participants - professors and students, and this would mean that the key interest is the satisfaction of one of the participants, and not the wider society. Also, quantification becomes a huge help in achieving objectivity when introducing measurable categories, but there is a danger of losing the diversity, individuality, inventiveness and inimitability of ingenious ideas.

Researching only one aspect of the essence of the quality of services at universities is not enough, but in addition to researching the level of development of critical thinking as an indicator of the

quality of work of higher education institutions, logical perception of opinions and conclusions must be placed, and then research and confirmation of new scientific facts. The need for standards and achieved competences in the European qualification framework is a starting point, but it is not an obligation that everyone must have. It is the framework to be strived for, and it represents the adoption of given competencies such as critical thinking, logical reasoning and confirmation of satisfaction with life and social well-being.

## 2. Research hypotheses

The key problem posed for study relates to examining the dimensions of the questionnaire conducted, which contributes to shaping students' attitudes about satisfaction and the quality of services provided by higher education institutions in the Republic of Serbia, as well as their satisfaction with available services.

Unexpected problems may arise, reflected in insufficient interest in appropriate study programs, transitions to other fields, and student dissatisfaction with the curriculum and teaching process, all of which impact the quality of study programs (Song, Lee, Liew, & Subramaniam, 2023). Pavlina, Zorica, & Pongrac (2011) found that the quality of service and lectures has the greatest impact on student satisfaction.

Hence we suggest:

**Hypothesis H1:** The content of the study program can have a positive effect on student satisfaction with the quality of services provided.

A group of researchers (Hill, Lomas, & MacGregor, 2003; Smith & MacGregor, 2009) believes that in the operations of higher education institutions, teaching staff play a crucial role, being responsible for the level of student satisfaction. If the service meets the users' expectations, the user will be satisfied, and vice versa. It can happen that the service exceeds the user's expectations as "positive verification of assumptions," but dissatisfaction can arise if the user receives less than expected upon purchasing the service, resulting in "negative non-verification of assumptions" (Daniel, Chowdhury, & Genetina, 2024).

Hence we suggest:

**Hypothesis H2:** A high level of teaching staff competence can have a positive effect on student satisfaction with the quality of services provided.

The direct influence on the perception of quality, from the perspective of students, actually comes from non-teaching staff and student service employees, as established by Iqbal, Taib, & Razalli (2024). For the functioning of higher education institutions, students highlight the kindness of non-teaching staff, often failing to recognize the significance of their activities, which greatly affect not only the overall quality of the institution's operations but also represent an important part of its business (Al Hassani & Wilkins, 2022; Iqbal et al., 2024). The control element of the institution consists of the service users, namely the students, who indicate the extent to which educational institutions are effective in fulfilling desires and needs in delivering value to users (Rashid & Raj, 2006).

Hence we suggest:

**Hypothesis H3:** A high level of non-teaching staff competence can have a positive effect on student satisfaction with the quality of services provided.

The reputation of higher education institutions can be applied to studying available services, as well as student loyalty and satisfaction (Abdullah, Alnasser, Aamjad, & Husain, 2000), through the examination of comparative advantages, reputation, and impressions. According to students, there is an "excellent academic reputation" as the most important characteristic of the faculty among

eighteen proposed (Bakker, Krabbendam, Bhulai, Meeter, & Begeer, 2023). Hagel & Shaw (2010) confirm that "reputation" is the most significant factor in assessments made by prospective students when choosing a faculty.

Hence we suggest:

**Hypothesis H4:** The reputation of the faculty can have a positive effect on student satisfaction with the quality of services provided.

Many authors (Knanh & Ngoc, 2024; Trevisan, Filho, & Pedrozo, 2024) highlight that students use the institution's image as a parameter when enrolling in their desired faculty, viewing it as an indicator of the academic quality of the institution, which can be achieved by providing appropriate services.

Hence we suggest:

**Hypothesis H5:** The image of the faculty can have a positive effect on student satisfaction with the quality of services provided.

### 3. Methods

#### 3.1 Participants

In a sample of 1,212 individuals from public universities in the Republic of Serbia, 70.4% of the respondents were female, accounting for more than two-thirds of the total sample. The remaining 29.6% were male respondents, making up one-third of the sample. The largest age group among respondents was 18 to 25 years old (91.1%), while in terms of education level, 94.2% of the respondents were pursuing undergraduate studies, and 6.8% were enrolled in master's or doctoral programs. Looking at the fields of study, over half of the respondents (58.3%) were studying social sciences and humanities, while 23.8% were in technical and technological sciences, 0.4% in medical sciences, and 1.3% in the arts. A significant 80.2% of respondents lived in the city where they studied, while 19.9% commuted from home to attend classes. Among the respondents, 70.3% were not employed, while 20.0% held temporary or freelance jobs, and only 9.7% were fully employed.

Regarding the educational attainment of the respondents' mothers, 60.8% completed secondary education, 15.4% have higher education, and 3.8% hold a master's or doctoral degree. A similar educational structure was observed for the respondents' fathers. The highest percentage of fathers (62.3%) completed secondary education, while the lowest percentage held a master's or doctoral degree (3.3%).

#### 3.2 Measuring Instrument

As an initial instrument for data collection, a questionnaire was used that included statements with proposed responses on a five-point scale from 1 to 5, where: 1 - strongly disagree; 2 - disagree; 3 - no opinion; 4 - agree; 5 - strongly agree. The implemented questionnaire is based on instruments described in similar studies conducted in higher education institutions (Faig, 2024; Henard & Roseveare, 2012; Lungulov, 2010).

The questionnaire, in addition to an introductory section, consists of basic demographic questions related to the respondents' gender and age, level and field of study, place of residence during studies, work engagement during studies, field of study, and education of the father and mother. The main section of the questionnaire comprises 34 statements covering 5 defined elements in the analysis of service quality:

**Quality of Teaching Staff:** This includes 10 statements related to the quality of lectures, validity, thoroughness, and accessibility of the teaching staff, as well as their support and assistance to students in understanding and overcoming problems encountered during their studies, in order to provide the best service to their students.

**Quality of Non-Teaching Staff:** This includes 6 statements related to the availability of all faculty services, staff friendliness, professionalism of officials, and the accuracy of the information provided by the faculty services.

**Quality of Study Programs:** This includes 4 statements related to the quality of the study program, innovative solutions within the program, free access to information about study programs, and the application of knowledge acquired in the study program.

**Reputation of the Faculty:** This includes 4 statements related to the faculty's standing in the community, student safety at the faculty, the credibility and understanding provided by staff to students, as well as the fulfillment of promises made to students.

**Public Image of the Faculty:** This includes 4 statements related to the security and creativity of the staff, significant contributions to society, reputation, and relationships with students.

**Analysis of Student Satisfaction:** This includes 6 statements related to the quality that students receive at the higher education institution, the knowledge acquired, the achievement of educational and career goals, and the intention to continue their education at a higher level.

#### 4. Results

The KMO indicator (Kaiser-Meyer-Olkin measure) is one way to quantify the degree of correlation between variables and the appropriateness of factor analysis (Table 1). The index ranges from 0 to 1. The closer the KMO value is to one, the easier it is to predict a particular variable using the other variables. KMO is interpreted according to the following scale: above 0.80 – very strong correlation; between 0.70 and 0.80 – strong; between 0.60 and 0.70 – moderate; between 0.50 and 0.60 – weak; and below 0.50 – unacceptable. KMO can be increased in the following cases: by increasing the sample size, increasing the average correlation, increasing the number of variables, and decreasing the number of factors.

**Table 1.** KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.922
Bartlett's Test of Sphericity	Approx. Chi-Square	3875.009
	Df	561
	Sig.	.000

Note: df – degrees of freedom; Sig. – significance

The obtained KMO value of 0.922 (Table 1) significantly exceeds the recommended KMO value of 0.6, with a significance level of  $p=0.000$ , indicating that no variables were excluded from further analysis (Fazlic & Djonlagic, 2016; Kaiser, 1970, 1974).

For the effective application of factor analysis and other multivariate techniques of interdependence, there needs to be a minimum amount of redundancy among the variables, meaning that the variables should overlap in meaning to some extent. This redundancy allows for the identification of patterns in the behavior of the variables, or the underlying idea (factor) that they share. When conducting a survey, redundancy often occurs among the questions posed. When designing a questionnaire, a researcher can never be sure that they have fully covered the topic with

the questions selected. Therefore, multiple questions that relate to the research topic in the same or a similar way are often included in the questionnaire. Additionally, a KMO value of 0.961 was obtained, which also significantly exceeds the recommended KMO value of 0.6, with a significance level of  $p=0.000$ .

Table 2 shows the correlation between specific elements of the quality of services provided at the faculty, where a positive correlation exists (Pearson's correlation coefficient less than 0.7), but it is not strong.

**Table 2.** Correlation of Elements of Service Quality Provided at the Faculty

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.922
Bartlett's Test of Sphericity	Approx. Chi-Square	3875.009
	df	561
	Sig.	.000

Source: Empirical research.

The highest factor loading on the first factor was obtained for the statement "Study Program" (0.906), on the second factor for the statement "Teaching Staff of the Faculty" (0.858), on the third factor for the statement "Non-Teaching Staff of the Faculty" (0.165), and on the fourth factor for the statement "Opinion about the Faculty" (0.481), which is presented in Table 3.

**Table 3.** EFA - Factor analysis

Pattern Matrix										
Component	NOF_3	NOF_4	NOF_5	NOF_6	NOF_7	NOF_8	NOF_9	NOF_10		
1	.187	-.073	.107	.065	.137	-.108	.214	.060		
2	-.009	-.084	.088	.007	.172	.012	.239	.111		
3	-.730	-.791	-.724	-.652	-.661	-.674	-.530	-.694		
4	-.067	.070	-.166	.078	-.092	.293	-.045	-.043		
	NNOF_1	NNOF_2	NNOF_3	NNOF_4	NNOF_5	NNOF_6	SPF_1	SPF_2	SPF_3	SPF_4
1	-.046	-.085	-.088	.068	.135	.101	.114	.692	.637	.659
2	.777	.858	.820	.851	.824	.338	.140	-.086	.007	.111
3	-.153	-.046	-.136	.165	.102	-.241	-.038	-.040	-.065	-.059
4	-.036	-.025	.038	.053	.017	.196	.699	.294	.247	-.062
	RF_1	RF_2	RF_3	RF_4	IF_1	IF_2	IF_3	IF_4		
1	.611	.486	.405	.172	.746	.778	.896	.906		
2	.059	.234	.187	.162	-.047	.036	.031	-.006		
3	.037	-.154	-.366	-.194	-.022	.021	.048	.032		
4	.284	.190	.046	.481	.264	.146	-.141	-.183		
	SS_1	SS_2	SS_4	SS_5	SS_6					
1	.694	.627	.684	.782	.807					
2	.040	.000	.035	.020	.023					
3	-.176	-.239	-.240	-.145	.071					
4	.061	.150	-.077	-.088	-.073					

Extraction Method: Principal Component Analysis.  
 Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 8 iterations.

Source: Empirical research.

Figure 1 shows the scree plot of components extracted through exploratory factor analysis. A break point is noticeable at the third component. Four factors were isolated (Table 4).



Figure 1: Scree Plot of Components

Table 4 presents the results obtained through varimax rotation, specifically the correlations of factors and factor loadings of the statements. The highest correlation on the first factor was obtained for the statement "My faculty is better than other institutions" (0.844), while the highest correlation on the second factor was related to the statement "Non-teaching staff professionally meets the demands of students" (0.853). The highest correlation on the third factor was found for the statement "Teaching staff of the faculty conducts lectures effectively and efficiently" (-0.805), and on the fourth factor, the highest correlation was obtained for the statement "I have a positive attitude toward my faculty" (0.622). The obtained results and correlation values confirm that the factor analysis was conducted correctly and that the names of the individual factors are appropriate and maximally tailored to the formed groups of questions.

Table 4. Correlation Coefficients of Statements and Factors (Structure Matrix - for 4 Factors)

Structure Matrix										
Component	NOF_3	NOF_4	NOF_5	NOF_6	NOF_7	NOF_8	NOF_9	NOF_10		
1	.549	.327	.483	.436	.541	.341	.594	.467		
2	.425	.284	.460	.374	.543	.352	.591	.471		
3	<b>-.805</b>	-.731	-.775	-.713	-.791	-.709	-.748	-.767		
4	.202	.264	.097	.291	.179	.462	.223	.203		
	NNOF_1	NNOF_2	NNOF_3	NNOF_4	NNOF_5	NNOF_6	SPF_1	SPF_2	SPF_3	SPF_4

1	.391	.337	.383	.398	.475	.446	.407	.760	.748	.724
2	.823	.835	<b>.853</b>	.813	.841	.544	.356	.321	.391	.438
3	-.500	-.415	-.504	-.305	-.380	-.518	-.373	-.451	-.479	-.444
4	.155	.139	.221	.200	.197	.367	.772	.493	.456	.173
	RF_1	RF_2	RF_3	RF_4	IF_1	IF_2	IF_3	IF_4		
1	.704	.734	.701	.494	.813	.827	<b>.844</b>	.832		
2	.388	.578	.568	.437	.371	.423	.402	.369		
3	-.400	-.582	-.686	-.506	-.472	-.452	-.400	-.391		
4	.466	.427	.312	<b>.622</b>	.481	.377	.116	.075		
	SS_1	SS_2	SS_4	SS_5	SS_6					
1	.825	.799	.805	.842	.759					
2	.468	.445	.460	.442	.354					
3	-.582	-.616	-.597	-.542	-.346					
4	.327	.407	.204	.190	.149					

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

Source: Empirical research.

Since the initial matrix lacks simple structure characteristics, a factor rotation is performed, which alters the relationship between variables and factors. Factor rotation can be conducted using one of the orthogonal rotation methods or one of the oblique methods. In this study, the Varimax factor rotation method was applied (Hinkin, 1998). This method, compared to other rotation methods, is more successful in achieving the principle of simple structure. Varimax factor rotation results in the simplification of both the columns in the factor structure matrix and the factors themselves. The factor structure matrix and the factor loading matrix after rotation are the basis for factor interpretation. The next table, Table 5, shows the factor structure matrix for 31 variables after the Varimax factor rotation has been conducted. The results indicate that the structure of factor loadings has been modified. The structure of factor loadings after rotation allows for better interpretation of the factors compared to the initial factor matrix.

**Table 5.** Factor Structure Matrix

Totated Component Matrix										
Component	NOF_3	NOF_4	NOF_5	NOF_6	NOF_7	NOF_8	NOF_9	NOF_10		
	1	.352	.121	.288	.237	.327	.105	.387	.254	
2	<b>.716</b>	<b>.706</b>	<b>.704</b>	<b>.633</b>	<b>.681</b>	<b>.635</b>	<b>.599</b>	<b>.683</b>		
3	.170	.068	.240	.152	.315	.136	.368	.252		
4	.085	.178	-.016	.196	.063	.385	.107	.096		
	NNOF_1	NNOF_2	NNOF_3	NNOF_4	NNOF_5	NNOF_6	SPF_1	SPF_2	SPF_3	SPF_4
1	.172	.128	.146	.224	.294	.256	.225	<b>.671</b>	<b>.642</b>	<b>.652</b>
2	.316	.227	.308	.074	.139	.351	.169	.215	.242	.235
3	<b>.747</b>	<b>.793</b>	<b>.778</b>	<b>.777</b>	<b>.775</b>	<b>.390</b>	.185	.069	.149	.237
4	.077	.074	.147	.141	.124	.292	<b>.733</b>	.400	.360	.071
	RF_1	RF_2	RF_3	RF_4	IF_1	IF_2	IF_3	IF_4		
1	<b>.608</b>	<b>.570</b>	<b>.521</b>	.300	<b>.722</b>	<b>.748</b>	<b>.820</b>	<b>.820</b>		
2	.158	.337	.489	.311	.217	.193	.165	.169		

3	.174	.348	.326	.240	.111	.182	.183	.152		
4	.382	.321	.196	.556	.381	.273	.004	-.038		
	SS_1	SS_2	SS_4	SS_5	SS_6					
1	.712	.666	.702	.765	.736					
2	.349	.391	.390	.320	.127					
3	.206	.172	.206	.191	.157					
4	.209	.291	.081	.068	.051					

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Source: Empirical research.

Before presenting the research results and testing the established hypotheses, the reliability of the scale, as well as the extracted factors, was assessed, and the normality of the distribution of results was examined. The reliability of the scale was tested using the Cronbach's alpha test (Christmann & Van-Aelst, 2006). The Cronbach's alpha coefficient ranges from 0 to 1. The closer it is to one, the more consistent the items will be with each other (and vice versa). On the other hand, it should be noted that the longer the test, the higher the alpha. An alpha coefficient greater than 0.70 indicates good reliability (Pallant, 2009). An alpha coefficient greater than 0.80 is considered high (Nunnally, 1978), and an alpha greater than 0.90 is very high (Cronbach, 1951; Taber, 2018), which is presented in Table 6.

**Table 6.** Internal Consistency Coefficients for Specific Groups of Questions

Internal Consistency Coefficients for Specific Groups of Questions (Cronbach's Alpha)	
	α Coefficient
Quality of Faculty Teaching Staff	0.906
Quality of Non-Teaching Staff	0.882
Quality of Study Programs	0.820
Reputation of the Faculty	0.836
Public image of the Faculty	0.905
Student Satisfaction	0.914
<b>Overall Questionnaire</b>	<b>0.964</b>

Source: Empirical research.

Data processing was conducted using the statistical program SPSS, where Cronbach's alpha reliability coefficients were calculated for specific groups of questions as well as for the entire questionnaire. The results indicate that the scales for measuring the degree of satisfaction have high or very high reliability. The reliability coefficient for the entire questionnaire is 0.964, which indicates very high reliability (Table 7).

The normality of distribution is tested using the Kolmogorov-Smirnov test (Mordukhovich&Sarabi, 2016) for samples larger than 50 respondents (N>50) and involves comparing the empirical and theoretical distributions of the results. In addition to the Kolmogorov-Smirnov statistic and its significance, the normality of the distribution was also assessed by examining the skewness (Sk) and its standard error (SEsk), as well as the kurtosis (Cu) and the standard error of kurtosis (SEcu).

**Table 7.** Normality Test of Distribution for Subscales of the Scale

Subscale	K-S test	P	Sk	SEsk	Cu	SEcu
The quality of the faculty's teaching staff	0.092	0.000**	- 0.669	0.071	0.042	0.142
The quality of the faculty's non-teaching staff	0.117	0.000**	-0.855	0.070	0.379	0.144

The quality of the faculty's study programs	0.247	0.000**	-0.855	0.080	0.215	0.155
The faculty's reputation	0.316	0.000**	-0.855	0.082	0.022	0.164
The faculty's public image	0.232	0.000**	-0.855	0.075	0.032	0.133

df=1212; p<0,01\*\*;

Source: Empirical research.

The results of the research indicated (Table 7) that the distribution of scores on all subscales or dimensions shows a statistically significant deviation from normal distribution (at a significance level of  $p < 0.01$ ) (Boskovic, Dragutinovic, Pavlicic, & Lovric, 2012).

For the model validity analysis, three different fit indices were used, which relate to the model's validity: RMSEA, NFI, and CMIN. The CMIN factor is dependent on sample size, but after model validity analysis, one should rely on the values obtained from the CMIN/df ratio, where df represents degrees of freedom. In addition to the chi-square and validity indices, during model assessment, each of them may use different elements or parameters for evaluation. It can also be said that they are less sensitive to sample size than  $\chi^2$  (chi-square) (Hahs-Vaughn, 2023).

Since the analysis included scales of predictor components, it is necessary to assess reliability. The reliability of the overall scale of items included in the model, measured by Cronbach's Alpha, is 0.92. The reliability assessment for individual subscales yields results indicating a high level of reliability, as all Cronbach's Alpha values exceeded the threshold of 0.7. Table 8 presents the fit indices for the validity of the confirmatory model.

**Table 8.** Fit Indices for the Confirmatory Model

Fit indices	Recommended Values	Calculated Values
CMIN/df	< 3	2.712
NFI	> 0.9	0.993
RMSEA	0.05 –0.08	0.0519

Source: Empirical research.

It can be observed that the described indicators, i.e., the fit indices, fall within the acceptable value ranges. The RMSEA value is 0.066, which fits within the range indicating acceptable model validity (values between 0.05 and 0.08 represent reasonable validity). Values above 0.1 indicate unacceptable model fit (validity) (Lazarevic, 2008; Kline, 2023; Piotrowska, 2023). As noted, the NFI value is 0.996, and the CMIN/df ratio is less than the recommended value of 3, reaching 2.927.

It can be concluded that the structural model is valid, as all calculated values fall within the recommended ranges. The data are suitable for forming a structural model based on the theoretically defined structure of connections between the formed latent variables. In the next step, structural modeling, result analysis, and testing of defined hypotheses will be conducted.

The results of the confirmatory model in the form of standardized regression weights and correlation coefficients can be further analyzed to verify the convergent and discriminant validity of the model in question (Table 9).

**Table 9.** Indicators for Assessing Convergent and Discriminant Validity of the Confirmatory Model

Scale	CR	AVE	MSV	ASV	QSP	QFTS	QNTS	OAF
Quality of Study Programs (QSP)	<b>0.831</b>	0.720	0,77	0.71	0,820			
Quality of Faculty Teaching Staff (QFTS)	0.721	0,750	0.680	0.772	<b>0.773</b>	0.723		

Quality of Non-Teaching Staff (QNTS)	0.882	<b>0.885</b>	0,884	0.862	0.862	0.855	0.864	
Opinion About the Faculty (OAF)	0.873	0.779	0.776	0.882	<b>0.887</b>	0.886	0.700	0.876

Note: CR – Composite Reliability; AVE – Average Variance Extracted; MSV – Maximum Shared Squared Variance; ASV – Average Shared Squared Variance (Tarhini, Teo, & Tarhini, 2016).

Based on the values of the indicators for assessing the convergent and discriminant validity of the model presented in Table 10, it is clear that the confirmatory model derived is valid. The CR value should be higher than 0.7, the AVE value should be higher than 0.5, and CR should be greater than AVE to establish convergent validity (Tarhini et al., 2016).

Basic descriptive statistics were performed using SPSS 20.0. SEM analysis was conducted using AMOS 24.0.0. For all tests, a significance level of  $p \leq 0.05$  was used.

### 5. Discussion

To enhance teaching and learning, it is desirable for higher education institutions to focus on users in order to meet their expectations. Consequently, higher education institutions should pay more attention to students' personal values and assess the decision-making process when enrolling in faculty, prioritizing the delivery of quality services. Establishing certain satisfaction models contributes to a better understanding of the decision-making process and all elements that influence students' opinions, while allowing universities to more successfully adapt their offerings to market demands and define an effective differentiation strategy.

The opinions of students are important, especially in the context of the econometric current of thought. It represents an important basis when education is viewed through the prism of economic activity, but this point of view is not characteristic of the educational or socio-humanist current, which advocates the view that the sustainability of education is possible through higher intentions, as an altruistic manifestation of knowledge, critical thinking, logical thinking, algorithmic problem-solving, constant research, and widely accepted conclusions.

Considering that the instrument used in the research was not standardized but created for the research purposes, the first step in the result analysis was factor analysis. Exploratory factor analysis confirmed 5 factors explaining 66.5% of the total variance. After excluding some questions that did not meet the unidimensionality condition in the repeated factor analysis, the number of factors was reduced to 4, explaining 64.8% of the total variance.

The obtained results showed that all factors or subscales have very high reliability, and that proportionality was observed in the surveys of the surveyed population. This is just a review of one of the important ways of examining the quality of education services, for which this non-standardized instrument was developed. Descriptive statistical indicators for all subscales confirmed a significantly above-average satisfaction with the quality of services provided by faculties in the Republic of Serbia. It is noted that the study program has the greatest importance in terms of service satisfaction, followed by teaching staff, and only then by the influence of non-teaching staff. Such results are most often expected and desirable from the point of view of higher education, because when choosing a faculty and major, a decisive role for students is played by the professional direction and the teaching staff. However, it is worrisome that in other studies we find data indicating that in Serbia up to 59% of students have developed critical thinking, and deficiencies are observed in soft or social skills, communication, logic, and socialization—all due to the constant use of digital devices and the imposed status symbols of success, wealth, and confirmation in society

Based on the results of the conducted research, we can conclude that the proposed general hypothesis can be accepted, namely that the questionnaire with five integrated elements largely determines students' perceptions of the quality of services at public faculties in the Republic of Serbia, as well as their satisfaction with the services provided. This means that the reputation of the faculty is the most important in the eyes of the respondents, followed by the professionalism of the student service, and the efficient and effective conduct of classes. Accordingly, in acceptance of the general hypothesis and the research results:

- Hypothesis H1 is accepted: The content of the study program positively influences student satisfaction with the quality of services provided.
- Hypothesis H2 is accepted: The competence of the teaching staff positively influences students' opinions about the quality of services provided.
- Hypothesis H3 is accepted: The competence of the non-teaching staff positively influences student satisfaction with the quality of services provided.
- Hypothesis H4 is accepted: The reputation of the faculty positively influences students' opinions about the quality of services provided.
- Hypothesis H5 is accepted: The image of the faculty positively influences students' opinions about the quality of services provided.

## 6. Conclusion

The primary purpose of education in the 21st century is to achieve lifelong goals that contribute to the continuous provision and affirmation of quality higher education. Future development is based on knowledge, internationalization, and changes in society, culture, and the global economy. The further development of global conditions for higher education is crucial for forming a knowledge market, while the conditions for aligning the mechanisms of higher education and creating an authentic educational environment are achieved through new methods and improvements in the educational system.

The achieved results of the conducted research can be reduced to an example of the assessment of satisfaction and realization of the students' predictions, the comparison of the model obtained on the basis of the observed, that is, the described data, in comparison with the concept that is present at local universities. Higher education institutions that aim to increase the quality of their services, based on research results, can use certain measuring instruments to understand the main points in which student satisfaction occurs. In addition, the management of higher education institutions is offered the chance to adequately plan the next steps in order to monitor activities towards the most important factors of student satisfaction.

Satisfaction can be called an important determinant of students' future behavior as well as their decision to continue their education at higher levels of study or perhaps to end their education at a higher education institution. Apart from that, satisfaction is also expressed through positive word-of-mouth propaganda, which has an impact on attracting new potential students, thus creating a positive image of the faculty, that is, the university in the public eye.

We must highlight the fact that measuring student satisfaction is only one factor, and that the breadth of evaluation of the work of higher education institutions is not based on consumerism. Students, as end users, can be included in the analysis that should contribute to changes and adjustments, but it is not sustainable in the long term in education. The European framework of competences and the national framework must be based on the creation of a greater number of conscious, self-critical individuals, who will not neglect their own and social role in the environment. Education must not be seen as a quantification of the university's operations, but rather the adoption of long-term values and aspirations towards a society of knowledge, well-being of spirit and social empathy. It is expected that in the coming period, efforts will be made to research the conditions for accepting plans, which would implement development processes in learning,

fostering critical thinking, logic, without a heavy load of unnecessary data that students can find on their own by simply searching the Internet or using artificial intelligence.

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## UTICAJ KVALITETA USLUGA NA SATISFAKCIJU STUDENATA U USTANOVAMA VISOKOG OBRAZOVANJA U REPUBLICI SRBIJI

**Sažetak:** Cilj realizovanog istraživanja bio je ispitivanje koliko kvalitet ponuđenih usluga na visokoskolskim ustanovama obrazovanja u Srbiji uticu na zadovoljstvo studenata. Osmišljen upitnik je obuhvatio 34 iskaza koji su pokrivali hipotetske faktore. Zarad sprovođenja istraživanja kreirana je skala za ispitivanje kvaliteta usluga fakulteta, a istraživanje je sprovedeno na uzorku od 1212 ispitanika. Istraživanje je obuhvatilo 13 visokoobrazovnih ustanova na Univerzitetu u Beogradu, Nisu i Kragujevcu. Urađena je faktorska analiza kao i odgovarajuće modelovanje na bazi strukturalnih jednačina. Modelovanje strukturalne jednačine je rađeno u okviru AMOS softverskog dodatka u okviru statističkog programa SPSS. Ostvareni rezultati su potvrdili da proučavani model poseduje dobre karakteristike, tačnije rečeno, da korisnici upitnik, sa određenim promenama u samoj strukturi ajtema, mogao bi biti upotrebljen kao adekvatan instrument za analizu kvaliteta usluga koje nudi visokoskolska ustanova. Na osnovu analiziranih rezultata iz anketa, najvažniji faktor je diferencijacija izabranog fakulteta u odnosu na druge, a onda uticaj nenastavnog osoblja koje profesionalno obavlja svoj posao, da bi na trecem mestu dosla efikasnost i efekti predavanja profesora. Metodologija istraživanja je koncipirana na prikupljanju i analizi podataka iz ankete, tako da se primenjuju Cronbach-Alpha test, KMO indikator, Pearson-ov koeficijent korelacije. Problem istraživanja se odnosi na ispitivanje dimenzija iz upitnika koji uestvuje u kreiranju stavova studentske populacije po pitanju zadovoljstva i kvaliteta usluga na univerzitetima u Srbiji. Ovaj rad je imao za cilj ispitivanje zadovoljstva studenata kvalitetom usluga na univerzitetima, pri čemu treba istaci da se očekuju nova istraživanja koja će imati fokus na usvojenim kompetencijama i standardima, te omogućiti kritičko mišljenje i logičko zaključivanje studenata i tako utvrditi kvalitet obrazovnja na postdijskim programima i nivoima studija.

**Ključne reči:** institucionalna slika, kvalitet usluga, akademska reputacija, zadovoljstvo studenata, institucije visokog obrazovanja.

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