

METHODS AND TOOLS FOR HIGHER EDUCATION SERVICE QUALITY ASSESSMENT (SURVEY)

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Abstract: The concept of quality of education in education, a number of years ago and is associated with the achievement of agreed standards, as well as consistency between the objectives of the program and the competence of graduates. There is no uniform terminology and definition of "quality education" is understood as in any field. By E. Deming, "Quality is what satisfies and even delights the customer". Customer in college are students who express an opinion on the services received.

Keywords: quality in education, Total Quality Management, service quality

1. Introduction

The concept of quality in education is quite new and until now not a well developed field of study. There is no unified terminology and the term "quality of education" is understood in different ways by different authors. All authors, however, adapt the concept of quality of education from industry, as in the following definitions: excellence in education [1] value addition in education [2] fitness of educational outcome and experience for use [3]; defect avoidance in the education process [4]; meeting or exceeding customer's expectations of education [5]. Liberalization and economization; growing competitiveness are the most significant reasons for growing importance of the quality concept in higher education.

The application of Total Quality Management (TQM) philosophy and methodology in the context of higher education is fully acknowledged and widely used today [6, 7, 8]. The necessity to use the TQM philosophy is aimed at providing educational services and giving results of academic and research activities. TQM methods are also implemented in the Quality Standards ISO 9001-2000, also known as the basic quality principles for Higher Education Institutions by Bologna Process.

On the international political level the necessity of Quality Management in Higher Education is formulated and conceptualized in the mentioned Bologna Process and in the variety of complementary communiqués. There are following historical steps in recognition and discussion on Higher Education Quality importance.

- 1999: 29 European countries signed the so called Bologna Declaration. The main important issue of this declaration in the context of this research brings the principles of ISO 9001-2000 in the sector of education, which according to this declaration have a crucial impact on the educational sector. The quality model in ISO 9001:2000 is quite different in comparison with 9001-1994. It is now based upon a Process Model that any Higher Educational Institution can use.
- 2001: Prague Communiqué with its key issue that quality management systems should assure a high level of quality in higher education and provide the comparability of qualifications within the EU.
- 2001: Bergen Communiqué with its key issues about further development concerning the participation of students in a quality management process and international co-operation.
- 2003: Berlin Communiqué that declares the importance of effective quality policy and the development of quality criteria and methodology on different levels.
- 2005: Helsinki Standards and Guidelines for Quality Assurance in the European Higher Education Area declared by the European Association for Quality Assurance in Higher Education. Key issues here underline the role of students in quality management process and necessity of permanent quality monitoring.
- 2009: Leuven and Louvain-la-Neuve, The European Higher Education Area in the new decade Communiqué of the Conference of European Ministers Responsible for Higher Education. Key issues: underlining life-long learning, student-centred learning, statement of the goals of European Higher Education, and others.

2. The analysis of service quality measurement instrument

As it has been pointed out by different authors, quality is only measured at the end of the process, that is, when the service has been concluded, and there is no way to change the client perception regarding the service received to meet his expectation. According to previous research regardless of the type of service, consumers basically use the same criteria to assess quality. Service quality is a general opinion the client forms regarding service delivery, which is constituted by a series of successful or unsuccessful experiences [9-14]. Two arguments must be taken into consideration

to assess this category, namely the customer's perception and his initial expectation regarding the service received.

2.1 SERVQUAL

"SERVQUAL" is one of the most extensively used service quality measurement instrument because of its easiness to use, possession of a simple structure and capability of generalization [9-11]. According to Zeithaml, Parasuraman and Berry, SERVQUAL is a universal method and can be applied to any service organization to assess the quality of services provided [9]. Regardless of the type of service, consumers basically use the same criteria to assess quality. Service quality is a general opinion the client forms regarding service delivery, which is constituted by a series of successful or unsuccessful experiences. Conceptual model of the SERVQUAL is based on the assessment if satisfaction is found in situations where perceptions of service quality meets or exceeds consumer expectations. The client satisfaction is a result of the difference between the expectations and performance obtained. In other words Service Quality is evaluated by comparison of customer perception with expectation ($SQ = P - E$). The SERVQUAL scale compares consumers' perceptions of twenty-two aspects of service quality with their rating of each factor's importance (expected service quality) [9, 12, 13, 14]. In their initial study Parasuraman and associates found that there were ten determinants which characterize customers' perceptions of the service provided. However, as a result of a later study they reduced the ten determinants of service quality to five. They were able to identify the following five dimensions of service quality: reliability, tangibility, responsibility, security and empathy [11, 14, 15]. These dimensions are briefly commented below [14, 15]. Reliability is the most important dimension for the consumer of services. This dimension expresses the accuracy and dependability with which the company provides its services and allows getting the answer to the following questions: Is the company reliable in providing the service? Does it provide as promised? Tangibility concerns the service provider's physical installations, equipment, staff and any materials associated with service delivery. Since there is no physical elements to be assessed in services, clients often trust the tangible evidence when making their assessment. Responsibility is the demonstration of the company employee's capabilities of providing the best service for the customer. This dimension is responsible for measuring company and employee receptiveness towards clients. Security encompasses the company's competence, courtesy and precision in providing their service. This dimension allows getting the answer to the following question: Are employees well-informed, educated, competent and trustworthy? Empathy is the

capacity to experience another person's feelings. It can be formulated as the following question: Does the service company provide careful and personalized attention? SERVQUAL instrument was developed on the basis of these five dimensions, using twenty-two aspects (questions) of service quality to their rating. The SERVQUAL scale (questionnaire) has two sections: one to map client expectations in relation to a service and the other to map perception in relation to a certain service company. However, as suggested later the twenty-two attributes of the original SERVQUAL instrument, as well as five dimensions do not always accurately describe all aspects of a given service [16-18]. An adapted version of the SERVQUAL scale for Higher education services was proposed through a review of literature in [15]. Table 1 shows the adapted questionnaire model that was used to conduct the quality expectations and perceptions survey for the Production Engineering program at UNESP/Bauru by its students [15].

Table 1: The questionnaire for the High Education Service

Dimension	Expectation (E)	Perception (P)
Reliability	<ol style="list-style-type: none"> 1. When excellent institutions of Higher education promise to do something in a certain time, they must do so. 2. When a student has a problem, excellent institutions of Higher education demonstrate sincere interest in solving it. 3. Excellent of institutions of Higher education will do the job right the first time and will persist in doing it without error. 	<ol style="list-style-type: none"> 1. When your institution of Higher education promises to do something in a certain time, it does so. 2. When you have a problem, your institution of Higher education demonstrates sincere interest in solving it. 3. Your institution of Higher education will do the job right the first time and will persist in doing it without error.
Tangibility	<ol style="list-style-type: none"> 1. Excellent Higher education institutions must have modern equipment, such as laboratories. 2. Higher education institution installations must be well conserved. 	<ol style="list-style-type: none"> 1. Your Higher education institution has modern equipment, such as laboratories. 2. Your Higher education institution installations are well conserved.

Table 1: The questionnaire for the High Education Service

Dimension	Expectation (E)	Perception (P)
	<p>3. Employees and teachers at excellent institutions of Higher education must present themselves (clothes, cleanliness, etc.) in an appropriate manner for their position.</p> <p>4. The material associated with the service provided in excellent institutions of Higher education, such as journals, printed matter, must have a good visual appearance and be up to date.</p>	<p>3. The employees and teachers at your institution of Higher education present themselves (clothes, cleanliness, etc.) in an appropriate manner for their position.</p> <p>4. The material associated with the service provided in your institution of Higher education, such as journals, printed matter, has a good visual appearance and is up to date.</p>
Responsibility	<p>1. Employees and teachers at excellent institutions of Higher education promise their clients the services within deadlines they are able to meet.</p> <p>2. The employees and teachers at excellent institutions of Higher education are willing and available during service providing.</p> <p>3. The employees and teachers at excellent institutions of Higher education will always show good will in helping their students.</p> <p>4. The employees at excellent institutions of Higher education are always willing to explain doubts their students may have.</p>	<p>1. Employees and professors at your institution of Higher education promise you the services within deadlines they are able to meet.</p> <p>2. The employees and teachers at your institution of Higher education are willing and available during service providing.</p> <p>3. The employees and teachers at your institution of Higher education always show good will in helping.</p> <p>4. The employees and teachers at your institution of Higher education are always willing to explain your doubts.</p>
Security	<p>1. The behavior of employees and teachers at excellent institutions of Higher education must inspire confidence in the students.</p>	<p>1. The behavior of employees and teachers at your institution of Higher education inspire confidence.</p>

Table 1: The questionnaire for the High Education Service

Dimension	Expectation (E)	Perception (P)
	<p>2. Students at excellent institutions of Higher education feel safe in their transactions with the institution.</p> <p>3. The employees and teachers at excellent institutions of Higher education must be polite to the students.</p> <p>4. The employees and teacher at excellent institutions of Higher education must have the knowledge needed to answer student questions.</p>	<p>2. You feel safe in your transactions with your institution of Higher education.</p> <p>3. The employees and teachers at your institution of Higher education are polite.</p> <p>4. The employees and teachers at your institution of Higher education have the knowledge needed to answer your questions.</p>
Empathy	<p>1. Excellent institutions of Higher education must have convenient business hours for all students.</p> <p>2. Excellent institutions of Higher education must have employees and teachers who provide individual attention to each student.</p> <p>3. Excellent institutions of Higher education must be focused on the best service for their students.</p> <p>4. Excellent institutions of Higher education must understand the specific needs of their students.</p>	<p>1. Your institution of Higher education has convenient business hours for all students.</p> <p>2. Your institution of Higher education has employees and teachers who provide individual attention to each student.</p> <p>3. Your institution of Higher education is focused on the best service for its students.</p> <p>4. Your institution of Higher education understands the specific needs of its students.</p>

These questions should be scored on a Likert scale from 1 (strongly disagree) to 7 (strongly agree). The scored results E and P from the two sections (Perceptions and Expectations) of Table 1 are compared to reach a parameter (difference) for

each of the questions, that is, the final score is generated by P–E. A negative result indicates that the perceptions are below expectations, revealing the service failures that generate an unsatisfactory result for the client. A positive score indicates that the service provider offers a better service than expected. The main idea of the SERVQUAL authors was that differences between the perceived performance and expected performance determine overall service quality and can be evaluated with the following P–E measurement model [19].

$$SQ_i = w_j(P_{ij} - E_{ij}) \quad (1)$$

Where SQ_i is the overall perceived service quality of stimulus i ; k – number of attributes; P_{ij} is the performance perception of stimulus i with respect to attribute j ; E_{ij} represents service quality expectation for attribute j that is the relevant norm for stimulus i ; and w_j is the weighted factor if attributes have different weights [20, 21]. SERVQUAL has been criticized for not being applicable to all services without modification as the dimensions are dependent on the type of service [22–26]. Moreover, some authors described that the Service Quality differs from industry to another industry of services [22, 27]. New factors should be added and taken into account based on generic dimensions and appropriateness of services sectors. Further research has been conducted and new results show that perceived quality alone correlates better with service quality than does the SERVQUAL gap analysis of the difference between the perceived and expected quality [23]. According to the research that has been presented in [23] the conventional disconfirmation model has conceptual, theoretical and measurement problems. Some of the issues are pointed out within the framework of the service quality measurement by SERVQUAL [11]. Because of these problems, the following evaluated performance perceived model is developed addressing the ideal point problem [28, 29, 30] by formally incorporating the classic ideal point concept into the perceived quality model [24]. Within this research the service quality has been used according to Monroe and Krishnan’s perceived product quality definition as “the perceived ability of a product to provide satisfaction relative to available alternatives” [31]. On the basis of this definition and the assumption that the perceived ability of the product to deliver satisfaction can be conceptualized as the product’s relative congruence with the consumer’s ideal product features the following probabilistic model of perceived quality has been proposed [24].

$$Q_i = -1 \left(\sqrt{r \sum_{j=1}^m w_j \sum_{k=1}^{n_j} P_{ijk} |A_{jk} - I_j|^r} \right) \quad (2)$$

Where Q_i is the individual's perceived quality of object i ; w_j - importance of attribute j as a determinant of perceived quality; P_{ijk} - the perceived probability that object i has amount k of attributes j ; A_{jk} - amount k of attributes j ; I_j - ideal amount of attribute j as conceptualized in classical ideal point attitudinal models; m - number of attributes; n_j - number of amount categories of attribute j ; r - Minkowski space parameter. Multiplication the right side of the equation by -1 results in larger values of Q_i being associated with higher level of perceived quality [24, 32].

The proposed perceived quality model (2) is a general model allowing for several alternative perceived quality concepts and measures derived from (2) and a simplified version of this model for Minkowski distance space parameter $r=1$. For example, if it is assumed that the individual evaluates object i with perceived certainty and that object i has a constant amount of each attributes the next deterministic model of perceived quality for $r=1$ can be derived [23, 24, 33].

$$Q_i = -1 \left(\sum_{j=1}^m w_j |A_{ij} - I_j| \right) \quad (3)$$

Where Q_i , w_j and I_j are defined in equation (2). A_{ij} equals the individual's perceived amount of attribute j possessed by object i . This model is Manhattan Distance, or City Block Distance metric for ideal point model [32].

With an assumption that the perceived ability of the product to deliver satisfaction can be conceptualized as the product's relative congruence with the consumer's ideal product features. If the object i is defined as the excellence norm that is the focus of revised SERVQUAL concept, the above metrics can be used to define the perceived quality of excellence norm Q_e in terms of similarity between the excellence norm and the ideal object with respect to m attributes. The quality of another object i , Q_i relative to the quality of excellence norm then normed quality (NQ) is [24, 19].

$$NQ_i = (Q_i - Q_e) \quad (4)$$

Where NQ_i is the normed quality index for object i ; Q_e represents the individual's perceived quality of the excellence norm object and Q_i is defined in equation (2). If the excellence norm is equal to the ideal or perfect object ($Q_e = 0$) then normed quality $NQ_i = Q_i$.

Last equations (3) and (4) can be used to derive the following modified SERVQUAL model that addresses the ideal point problem by incorporating the ideal point concept [24].

$$NQ_i = -1 \left(\sum_{j=1}^m w_j (|A_{ij} - I_j| - |A_{ej} - I_j|) \right) \quad (5)$$

Where NQ_i is the normed quality index for object i ; A_{ej} represents the individual's perceived amount of attribute j possessed by excellence norm. The meaning w_j and I_j are the same as in equation (2) and A_{ij} is defined in (3).

For infinite ideal points, normed quality is [24, 19].

$$NQ_i = \sum_{j=1}^m w_j (A_{ij} - A_{ej}) \quad (6)$$

Last equation is similar to the original SERVQUAL model described in (1). Two assumptions are used in the equation (6), namely all the m attributes have infinite classic ideal points and that the SERVQUAL normative expectations concepts is redefined as the excellence norm specified in (5).

Poor reliability and inter-factor correlations of SERVQUAL leads to proposing SERVPERF (perception-only model) and HEDPERF (Higher Education PERFormance) for efficient measurement of service quality [21, 34, 35].

2.2 SERVPERF

Due to the controversy relating to the SERVQUAL instrument, a more direct approach to the measurement of service quality has been proposed [26]. New approach was developed as the measurement instrument called SERVPERF which is used for the service quality assessment. The SERVPERF instrument like the SERVQUAL uses an attribute approach. But in comparison with SERVQUAL the SERVPERF tool measures only customers' experiences of the service. This instrument makes use of the original SERVQUAL scales. It also requires the consumer to rate the provider's service performance on a seven point scale. Comparing with SERVQUAL the SERVPERF uses a single set of questions concerning post consumption perceptions of service quality and does not seek to measure expectations [26].

It was illustrated that service quality is a form of a consumer attitude. Therefore, measuring only performance of service quality is an enhanced means of measuring service quality [10, 34]. According to this research service quality can be conceptualized as an attitude and can be regarded as the adequacy-importance model. Thus, service quality is evaluated by perceptions only without expectations and importance weights as follows [19, 21].

$$SQ_i = \sum_{j=1}^k P_{ji} \quad (7)$$

Where SQ is the overall service quality of object i ; k – number of attributes; P_{ij} is the performance perception of stimulus i with respect to attribute j [21].

2.3 HEdPERF

More recently, a new industry-scale called HedPERF (Higher Education PERFormance) has been developed comprising a set of 41 items [36]. This instrument aims at considering not only academic components but also aspects of the total service environment as experienced by the student. The author identified five dimensions of the service quality concept. Non-academic aspects. This dimension includes items that are essential to enable students to fulfill their study obligations, and relates to duties carried out by non-academic staff. Academic dimension. These are responsibilities of the academics. Reputation. Responsibility of higher learning institutions to project a professional image. Access dimension. This dimension includes such issues as approachability, ease of contact, availability and convenience. Programme issues. This aspect concerns the importance of offering a wide ranging and reputable academic programmes/specializations with flexible structure. The SERVPERF and HedPERF scales were compared in terms of reliability and validity. Consequently, the superiority of the new purposed measurement instrument [37] was concluded.

2.4 FM-SERVQUAL

FM-SERVQUAL was developed on the basis of original SERVQUAL i.e. through mechanism of comparison between customers' perception of the services provided by the local authority and expectations of services desired by customers [11]. It includes the use of Integrated Facilities Management Framework, combination of perception and expectation statements, using positive wording solely to avoid the confusion over the development of measurement element according to appropriateness of rule and function services of the local authority to the community.

FM-SERVQUAL instrument is able to measure Service Quality in the local authority delivery system [38]. FM-SERVQUAL can also serve as an essential gauge in policy formulation and future planning of an organization. FM-SERVQUAL is a tool for measuring Service Quality in local authorities through the comparison between customer perception and expectation of the quality of the services provided. The structured survey in such a design is suitable for collecting data in a big sample size for evaluating quality services in local authorities.

The process of constructing FM-SERVQUAL comprises several steps, it starts with defining the assessment of the Service Quality through the formula of $SQ = PIE$. The variation PIE where the perception of Service Quality received is asked with respect to the customer's expectation of what was actually received [38]. Then 90 items have been created that will characterize the concept of Service Quality based on

Integrated Facility Management Framework. The next steps deal with data collection and data analysis, service quality identification, and FM-SERVQUAL reliability and validity evaluations [38].

2.5 INTQUAL

Quality is widely studied using various adaptations of the SERVQUAL instruments as has been shown by the previously presented results. The internal service quality measures called INTQUAL were developed by Caruana and Pitt [39] as one of the SERVQUAL adaptation.

INTQUAL model is an internal service quality measure for service organization as an alternative to SERVQUAL that emphasizes customer's point of view. It is an attempt to establish the operational method for the internal service quality measurement.

INTQUAL is an adaptation of SERVQUAL model. It used by Berry and Parasuraman for service quality measures on management of expectation and service reliability as an adopted model for internal measure for service quality [40].

Frost and Kumar developed a conceptual model which they called INTSERVQUAL, based on the SERVQUAL scale proposed by Parasuraman et al. [41]. The study was conducted in a major international airline for measuring expectations and perceptions of internal customers. According to the authors, the two scales exhibited adequate validity as separate measures of front-line staff (customer-contact personnel) expectations of support services and their perceptions of the support staff's performance. The results indicated that the scales can be successfully used to assess the magnitude of the gap between front-line staff perceptions and expectations.

2.6 DL-sQUAL

DL-sQUAL was introduced as there were needs for an instrument to measure the quality of online education. Previous SERVQUAL and e-SQ models measured the quality of traditional and eCommerce services and there were no instruments available to measure the quality of distance learning services. In their research, Shaik et al., found that the DL-eSQUAL scale demonstrated psychometric properties based on the validity and reliability analysis [42]. Their findings from the exploratory research offered useful initial insights about the criteria and processes students use in evaluating distance learning services. These insights, in addition to serving as a starting point for developing a formal scale to measure perceived DL-sQUAL,

constituted a conceptual blueprint that distance learning administrators can use to qualitatively assess the potential strengths and weaknesses of their services. It also helps to target specific service elements requiring improvement, and training opportunities for staff. Analyzed at the item level, data drawn from application of the DL-sQUAL instrument have practical implications for distance learning administrators. This is an exploratory study with the goal of developing a DL-sQUAL scale. The scale should be viewed as a preliminary scale because the sample is limited to a single distance learning institution located in the south-east part of the United States and represents the service experiences of the students at that institution. Due to the limited nature of the sample, the results of this study cannot be generalized beyond the specific sample domain. The generalization of the results of this research study is also constrained by the absence of standardized data for comparison [43].

2.7 Conclusions and remarks

SERVQUAL is extensively used as a high education service quality measurement instrument due to its simple structure, generalization capability and the ease of use [21, 44, 45]. Nevertheless, since the quality of service largely depends on human behavior, the quality dimensions of the measuring instrument differ in different service settings. For example, empathy and responsiveness are more significant in the healthcare sector, whereas reliability is important in transportation [44]. That is why the SERVQUAL dimensions, and items under each dimension, are modified to suit a particular application [21, 44, 46, 47]. The more complicated modifications have been recognized as the new service quality measurement instruments: SERVPERF, HEdPERF, FM-SERVQUAL, Weighted SERVQUAL, Weighted SERVPERF and Weighted HedPERF [21, 44, 46, 47].

In the education sector, intangibility and lack of physical evidence of service makes the perceptions of service quality a complex composition and poses difficulties for analysis. The educational literature suggests how imperative it is for high education institutions to actively assess the quality of the services they offer and to commit themselves to continuous improvements of their service.

In order to evaluate the high education service quality fitting to most of the key stakeholders, a new attempt has to be made to propose a new instrument based on new approaches and techniques. At the same time the long practice and experimental application of SERVQUAL are quite important for further research. More than forty survey items relevant to high education service quality assessment compiled from various sources are considered in this study.

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METODY I NARZĘDZIA OCENY JAKOŚCI KSZTAŁCENIA W UCZELNI WYŻSZEJ

Streszczenie Pojęcie jakości kształcenia w edukacji pojawiło się kilka lat temu i wiąże się z osiągnięciem przyjętych standardów, a także spójności między celami, programem i kompetencjami absolwentów. Nie ma jednolitej terminologii i określenie „jakość kształcenia” jest rozumiane tak jak w każdej dziedzinie. Wg E. Deminga „jakość jest tym, co zadowala, a nawet zachwyca klienta”. Klientem w uczelni wyższej są studenci, którzy wyrażają opinię w zakresie usług otrzymanych.

Słowa kluczowe: jakość w edukacji, kompleksowe zarządzanie jakością , jakość usług

Artykuł zrealizowano w ramach pracy badawczej S/WI/5/08