

AN ATTEMPT TO APPLY THE SERVQUAL METHOD TO EVALUATE THE QUALITY OF AN E-COURSE

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***Abstract:** The challenge faced by e-learning is to ensure its quality. In addition to traditional methods of quality assurance, there is an increasing tendency to use tools and techniques from other disciplines. The paper presents the possibility of application of the SERVQUAL method in assessing the quality of an e-course. The method and the main stages of the examination have been characterized. A survey was used to assess the expected and the perceived quality of an e-course. Exemplary results have been presented. The Servqual method allows to identify the discrepancies that may arise between the expectations of the student and his perception of the e-course. The methodology can allow to make improvements to the e-course.*

Keywords: E-learning, e-course, quality, SERVQUAL

INTRODUCTION

E-learning is the transfer of knowledge conducted with the use of the computer tools and multimedia. The level of use of information technologies in e-education varies significantly. There are e-courses that only support traditional teaching processes, and those which in whole or in part replace them. The implementation of e-learning, however, is a complex undertaking. It requires effective quality management at the university level. It also calls for continuous improvement of the quality of e-courses in which the student takes part.

The student, recipient of an e-course, has its own requirements and will expect a course of appropriate quality. Quality complying with his needs, which are shaped, among others, by the development of information technologies and a widespread use of the Internet.

There are different methods of assessing the service quality, but the SERVQUAL method is becoming more and more popular. The growing interest in the method

results from its advantages such as: the simplicity to apply the method, the possibility to select different evaluation criteria, the possibility to monitor the quality of services at the time, and the possibility to benchmark.

Although the SERVQUAL method is universal, it should always be adapted to the conditions in which the service is performed. The paper presents an attempt to apply the SERVQUAL method to assess the quality of an e-course.

1. QUALITY OF AN E-COURSE

Distance learning or e-learning is no longer a set of electronic presentations made available for students nor is it providing a pdf file or a link to a website. Nowadays, e-learning/e-teaching or e-education means an interactive method of education which comprises delivering teaching materials, managing the didactic process, monitoring and assessing progress, and ensuring student-teacher as well as student-student communication and interaction by means of information technologies, particularly Internet communication tools (Walasek et al. 2011). Distance learning is becoming a new way of gaining knowledge, alternative to traditional education and the existing educational structures.

Looking at e-learning as a service and following the terminology of quality management, it can be assumed that the quality of e-education can be measured by the extent to which a service (e-education) caters for the demands and expectations of the client. The main recipient of e-education is the student for whom an e-course is a 'product' on offer. The student is the external client of e-education. The academic teacher who develops an e-course and conducts online classes is the internal client.

With such a division of the stakeholders, there seems to be an obvious need for the evaluation made from the point of the external client– the student, the internal client – the e-teacher as well as for the peer evaluation or peer review of the e-course. The surveys or evaluation sheets are very often based on the e-course assessment criteria. Attempts to develop such standards were undertaken by the Association for Academic E-learning (Zajęc and Stanisławska 2009). The assessment criteria for the quality of e-classes are publicly available at the Association's web page (<http://www.sea.edu.pl/kryteria/>).

More and more courses that are created for universities and colleges tend to be of very high quality. They meet all or nearly all the assessment criteria, they are subject to regular evaluation with input from the students, teachers and managers. There is a significant change in the methodology of e-courses as far as the application of communication tools, multimedia, visual setting, etc. is concerned. Often, however, these are uncoordinated actions and the methods used to improve the e-learning quality do not always go in the right direction. Reflecting on the further improvement of the e-course and trying to understand the needs of internal and external clients, the present authors tried to use the SERVQUAL method to assess the quality of an e-course.

3. METODA SERVQUAL

Together with the growth of interest in e-learning, more attention will be paid to the tools enabling the evaluation of e-education quality. One of the methods measuring service quality in a number of areas is the SERVQUAL Method (SERVices QUALity), which was developed in the 1980's by Parasuraman and co-authors (Parasuraman et al. 1985), (Parasuraman et al. 1988).

The measurement of service quality from the client's point of view forms the basis for this method. It takes into account a number of features characteristic of the service in question. Before the client experiences the service, he builds expectations for the service and its quality (expectations quality). The expectations are shaped by e.g. previous experience, exchange of information, personal needs and beliefs. While making use of the service, the client compares his expectations to what is being offered to him (perceived quality).

The service quality Q is calculated to be the difference between the perceived service quality P (P – Perception) and the expected (ideal) service quality E (E – Expectation):

$$Q = P - E \quad (1)$$

A negative result, $P < E$, means that the client's expectations have not been fulfilled and the provided service does not satisfy the client (unsatisfying quality). A positive result, $P > E$, means that his expectations have been surpassed (surprising quality). In case when $P = E$, his expectations have been fulfilled (satisfying quality).

The methodology of SERVQUAL makes use of two surveys, each containing 22 appropriately selected statements which are assigned to 5 categories (dimensions) of the service. In both surveys, respondents decide with the help of the Likert's scale to what extent they agree with the presented statements. The first survey, given to the client before he makes use of the service, aims to assess his expectations for the service quality and to determine value E . The client assesses a service which is ideal in his opinion. The second survey, which is based on the same statements but this time regarding a specific service, aims to assess the perceived service quality and to determine value P .

The statements included in the abovementioned surveys are assigned to five categories (dimensions) of service quality (Parasuraman 1988):

- tangibles – the appearance of premises, equipment, mass media, staff,
- reliability – ability to provide solid and trustworthy service,
- responsiveness – speed of acting and reacting to the demands of service recipients,
- assurance – qualifications and expertise of the staff; ability to rouse the client's trust,
- empathy – identification with the client's needs.

In the survey, the statements are grouped into sets of 4 or 5 so that each set can be used to measure one of the abovementioned categories. At the third stage, the client is asked to divide 100 points between the five categories thus indicating their weight in creating service quality.

Survey results can be interpreted in two ways. The first interpretation makes use of the so called unweighted SERVQUAL result, which is the difference between arithmetic means of perception and expectations results received from all respondents for all the statements or only those included in specific categories. The second interpretation makes use of the weighted result. Within a given category, the received responses are weighed with the points assigned to the category by the client.

Both ways of interpretation allow us to detect variances (gaps) which may appear between perceived and expected service. Therefore, we are able to indicate the areas in which the client is dissatisfied with the service, assess importance of each category in the eyes of the client and take steps to improve the service.

The categories suggested by the authors of the method are by no means universal. It should be remembered that every type of service, including distance education, is unique. For this reason the classic method needs to be modified by means of adjusting it to the service features and the service provider's needs e.g. by offering own categories and survey statements.

The usefulness of SERVQUAL for e-learning also results from the service quality model adopted by the method and the model-related concept of gaps (variances) (Parasuraman 1985). The gaps describe situations in which the provided service quality differs from the service quality expected by internal or external client. Such gaps may appear at any stage of the service life cycle. They will also appear in the process of e-learning so they should be taken into consideration during the implementation stage.

Drawing on the conducted research, the authors of the SERVQUAL tool enumerated five gaps concerning service quality.

- GAP 1. The difference between the client's expectations and the way in which the organization authorities perceive these expectations.
- GAP 2. The difference between the client's expectations as perceived by the authorities and the service specification.
- GAP 3. The difference between the specified and provided service.
- GAP 4. The difference between the provided service and the service promised by an organization.
- GAP 5. The difference between the expected and perceived service.

4. SERVQUAL AND THE E-COURSE

SERVQUAL is not only a tool allowing us to evaluate service quality from the client's point of view, but it also helps to analyse the factors which have influence upon the service – both at the level of the whole organization and at the level of direct contact between the client and the service. Thanks to its multi dimensions, the method can be applied to research problems related to e-education quality which appear at the stage of incorporating and implementing e-learning in a higher school and, later, during online classes (Kucharczyk et al., 2011).

Table 1.

Dimensions of an e-course

DIMENSIONS	FACTORS
TANGIBLES	<ul style="list-style-type: none"> • course design, • functionality of the platform, • universality of the platform (works on most popular systems), • e-content, • information about the course.
RELIABILITY	<ul style="list-style-type: none"> • time schedule, • teacher's reliability, • teacher's concern about the opinion of students, • accessibility of the content, • technical suport.
RESPONSIVENESS	<ul style="list-style-type: none"> • information about the rules concerning participation in the course, • reaction to the students' needs, • communicative skills of the teacher, • composure and patience of the teacher.
ASSURANCE	<ul style="list-style-type: none"> • teachers expertise, • teacher's objectivity, • teacher's e-qualifications, • usefulness of the e-content.
EMPATHY	<ul style="list-style-type: none"> • individual approach to the student, • teacher's manners, • moderation of e-discussions, • understanding the students' problems, • motivating the students.

Source: Own elaboration

Due to its multi-dimensionality, the method was chosen to assess the quality of an e-course measured by the level of satisfaction of the course participants, i.e. the students. The e-course is the key element of e-learning. On the one hand (technical), it is a finished "product" ready for the student (client) to use. On the other (functional), it is the process of providing teaching services by the teacher.

At this stage, the focus was on indicating, for the selected e-course, the size of gap 5. The gap is the difference between the client expectations and his perception of the obtained service. The size of the gap will therefore tell what the expectations of the student were with regard to a perfect course and how these expectations were fulfilled in the course in which he participated. As a result, the analysis of this gap may indicate the places where changes should be made to improve the e-course.

At the same time, the size of the gap is particularly important, as an e-course is the end result of a series of activities connected with, for instance, organization, marketing, methodology, and general operation of e-learning. It will, therefore, also indirectly show the students' opinion about the whole e-learning system in a given university.

The research into the students' satisfaction with the e-course was carried out using the solution proposed by the authors of the method: two surveys, each containing 22 statements assigned to the five dimensions (categories).

Table 1 shows the adopted dimensions of the e-course quality. For each dimension, the factors which may constitute specific criteria for assessing the quality of the e-course were indicated. These factors are the basis of the statements listed in the surveys addressed to the students, the e-course participants.

5. CASE STUDY

The SERVQUAL method was used to assess the quality of an e-course conducted at the Department of Mechanical Engineering and Computer Sciences of Czestochowa University of Technology. The course was delivered via the MOODLE platform. There were 34 participants who were asked to take part in the research and complete the surveys, respectively before the course began and after it ended. The surveys were anonymous.

Each survey consisted of 22 statements. The first contained statements relating to a perfect e-course. The second contained the same statements, but referred to the actual e-course. For each statement the student was to allocate a numeric value, best reflecting his feelings. The study used the seven-grade Likert scale. The scale consists of seven answers, arranged in the order from completely negative (1 - strongly disagree) to the total acceptance (7 - strongly agree). The central response was the most neutral (4 - I have no opinion). The maximum value allocated by the respondent was thus 7, and the minimum – 1.

After collecting the surveys, the calculations were carried out in stages. For each i -th pair of statements, average values of e_i (perfect e-course) and p_i (actual e-course) were determined by dividing the corresponding amount of points by the number of students. The q_i value was determined as the difference between p_i and e_i .

Then, the Q_j value was determined for each j -th dimension. Value Q is the average value of Q in the j -th dimension, taking into account the factors specific to this dimension. The total value of Q (e-course quality) was obtained by summing up Q_j , and then dividing the result by the number of dimensions. The results obtained for dimension 1 (tangibles) are shown in table 2. The results are shown in fig. 1.

The analysis of the data presented in table 2 and in figure 2 shows that the greatest expectations of students related to e-materials ($e_4 = 6.82$). Unfortunately, the same factor also had the largest gap: $q_4 = -1.57$.

The size of the gap can be explained by the fact that a tool commonly used by students in the process of finding information is the Internet. It offers a wide variety of multimedia content: from the text and hypertext, through illustrations and photos, tables and charts, flash animation, audio and video, to ones which are sometimes difficult to define clearly (blogs, podcasts, tools such as Glogster, Voxopop, Padlet any hundreds of others). It can therefore be assumed that students' expectations as to the diversity and attractiveness of e-course content had been firmly shaped by their experiences with the Internet. And what the students found in the e-course was mainly PDF files. There was no visual (video) content where, for example, they would have a chance to see the teacher.

Table 2.

An example of the survey and the results for the dimension 1

Dimension 1 – e-course tangibles				
	e_i		p_i	$q_i = p_i - e_i$
1. The page of a perfect e-course should be attractive and readable.	6,60	1. The page of e-course X is attractive and readable.	6,15	- 0,45
2. A perfect platform is functional and safe.	6,06	2. The platform of e-course X is functional and safe.	5,80	-0,26
3. A perfect e-course works properly in the most popular environments (Windows, iOS, Android)	6,15	3. E-course X works properly in the most popular environments (Windows, iOS, Android)	5,45	-0,70
4. Perfect e-content is attractive and multimedial.	6,82	4. The e-content of e-course X is attractive and	5,25	-1,57

multimedial.				
5. Information about the e-course should be complete and comprehensible.	6,35	5. Information about e-course X is complete and comprehensible.	5,18	-1,17
Average quality Q_1 for dimension 1				-0,83

Source: Own elaboration

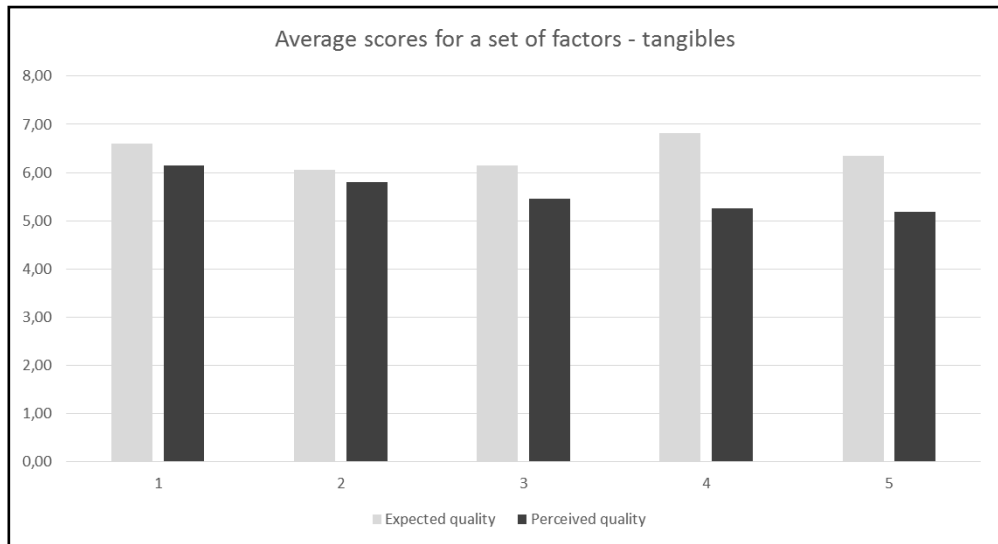


Figure 1. Average score for the factors assigned to dimension 1 – tangibles

Source: Own elaboration

It is worth noting though that, in the opinion of the author of the course, the content was very interesting. The author focused on the substantive content of the materials and did not attach special attention to the way in which they were "given" to students. Thus, with regard to the e-content, the basic direction for improvement was indicated – there should be more variety and modality in the e-materials.

The least important to the surveyed students was the functionality and safety of the platform by means of which the course was delivered ($e_2 = 6.06$). This factor also had the smallest gap, $q_2 = -0.26$. Perhaps what we can observe here is the phenomenon of "invisible quality" - if there are no problems or disorders, the client does not see any potential problems. During the course, there were no problems related to the platform safety or functionality.

For each dimensions, table 1, the average value of quality Q_i is shown below:

- $Q_1 = -0,83$ (*tangibles*);
- $Q_2 = -0,54$ (*reliability*);

- $Q_3 = -0,70$ (*responsiveness*);
- $Q_4 = -0,35$ (*assurance*);
- $Q_5 = -0,41$ (*empathy*).

The smallest difference between the expected and the perceived quality appeared for dimension 4 - assurance (reliability and professionalism of the teacher). It can be assumed that the students highly appreciated, among others, the teacher's knowledge and objectivity.

For dimension 3 (response to the requirements of students) the size of the gap results mainly from the teacher's delays in responding to students' queries.

Frequently, the students had to wait for longer than the declared 48 hours. Some of the students perceived this as the unreliability of the teacher. The teacher excused himself with an accumulation of teaching duties in the given semester and the lack of time. The teacher, who conducted an e-course for the first time and declared an individual approach to each student, did not realize the amount of work which was associated with running the e-course.

The total value of the e-course quality Q was -0.57 . At this stage of the application of the SERVQUAL method to evaluate the quality of an e-course, it is difficult to interpret this result. Since it is negative, it can only be concluded that the students were not fully satisfied with the delivered e-course. Another survey conducted for the same course in the next academic year would indicate the direction for improvements in the quality of the e-course. However, it should be remembered that the assessment made by the students is subjective. Students represent different levels of intellectual capacity, different systems of values, different approaches to becoming engaged in the process of acquiring the knowledge (Seredocha, 2007). Consequently, the next year students may interpret the statements in the survey in a totally different way. The "quality" of students could result in a different allocation of the points. Hence, it is recommended to survey a larger group of students, as the increase in the number of respondents should provide a more objective result.

The presented results relate to the so called unweighted SERVQUAL method. The quality of the e-course was determined as the difference between the perceived and the expected quality. At the current stage of the research, the students did not complete the third survey in which they would divide a specific number of points between the defined dimensions. This would enable to order the dimensions in terms of their importance for students. The unweighted version of the method only allows to determine which e-course dimensions (component factors) should first be analyzed in order to better suit the student – the e-course recipient.

6. CONCLUSION

The quality of services provided by institutions of higher education, including e-learning, is becoming increasingly important. It is becoming one of the measures of its position on the market. The challenge is to meet the expectations of our clients. The SERVQUAL method is a tool for decision making with regard to the quality of services from the client's perspective. Due to its multi-dimensionality, the method may be particularly useful for researching the quality of e-learning. In the SERVQUAL method it is possible to connect the system approach, looking at issues of e-learning in the context of the whole university, taking into account the client's point of view and preferences. It also allows to monitor the quality improvement in a specific time and in specific areas of e-learning.

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