

Service Quality Assessment in Distance Learning

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Abstract: The distance learning sector has despite of fast evolution still some vague areas. This paper addresses the problem area of distance education service quality assessment. Numerous factors, describing education service quality, are divided into two main categories: educational service quality factors and electronic service quality factor that causes the existence of two independent quality assessment approaches. Based on the analysis of these approaches the Kansei concept is offered as the compromise theory taking into account technical, emotional, pedagogical and other aspects of distance learning phenomenon.

1 Introduction

Nowadays the fast competition that is taking place in the current global market has affected the educational sector as well. Education is now a global product with institutions worldwide competing for students and finding ever more creative ways to satisfy student needs and preferences. At the same time the student populations have transformed from homogenous and captive to domestic constraints and expectations, to multi-cultural, dispersed and subject to a plethora of constraints and expectations [Pa91]. Economic, social and technological forces revolutionise every day the teaching and learning processes in organisations, universities and schools. Regarding this teaching and learning evolution, several different expressions of distance education have been used to characterise the innovations. Among them e-learning, distributed learning, online learning, web-based learning and distance learning can be quoted. For all above mentioned learning technology the educational content is delivered via the Internet, intranet/extranet, audio or videotape, satellite TV and CD-ROM.

Distance education is preferred for a variety of reasons: it provides consistent and worldwide training, reduces delivery cycle time, increases learner's convenience, reduces information overload, improves tracking and lowers expenses [WWBS03].

However, the distance education is still characterised by many open questions. Among them there is the complex, and perhaps most important, question of distance education service quality assessment. In this regard, this paper is devoted to discuss the complicated problem of distance learning service quality assessment methods and tools.

2 Distance Education Service Quality Factors

Higher education providers throughout the world were urged to operate more commercially, education service quality has been identified as the core ingredient to success, and as the evolution of dynamic competition continues, students as clients must be satisfied. In general the education service quality is no longer just for manufacturers. As higher education providers, like universities, face internationalisation, they must now compete with the standards set by other educational institutions of the world. This exposure has stimulated a demand for better information and transparency about their service quality in order to attract and retain students, both national and international. Some authors suggest that education service is a product [Pa91]. According to their understanding, to use resources most efficiently, the needs of the student/consumer should be assessed. In general the complete and precise assessment of the distance education service quality should be accomplished. The products have a different name, logo, colour and physical attributes. Distance education institution is a brand and a brand is a way of differentiating of one product from another; the greater the perceived similarity of products, the more important the brand in establishing the differences. There are numerous even more sophisticated arguments that have its influence on educational service quality. All this factors can be divided into two category educational service quality factors and electronic service quality factors. Within the first category the most important are the factors related to the educational and didactical materials such as up-to-date, clearly prepared, well organised, useful, knowledgeable, available, and so on. The second category is dealing mostly with factors describing the information technology service (electronic service) quality are used for technical support of distance learning process. Among such factors the following arguments can be recognised: easy-to-use, user friendly, secure, stable, fast, responsive, and many others. It should be emphasised that these factors correlate within the same category (dimension), as well as cross correlate in between this two domains. Nowadays there are independent approaches for education service quality assessment and for information technology (electronic service) quality evaluation.

3 Service Quality Models in Higher Education

One of the most extensively used service quality models and measurement instruments is SERVQUAL, because of easiness to use, possession of simple structure and capability of generalisation [SPB90, PZB85, PZB88]. According to Zeithaml, Parasuraman and Berry, SERVQUAL is universal method and can be applied to any service organisation to assess the quality of services provided [ZPB90]. Regardless of the type of service, consumers basically use the same criteria to assess the quality.

Service quality is a general opinion that the client forms regarding its delivery, which is constituted by a series of successful or unsuccessful experiences.

Conceptual model of the SERVQUAL is based on the assessment that satisfaction is found in situations where perceptions of service quality meet or exceed consumer expectations. In other words Service Quality (SQ) is evaluated by comparison between the customer perception P and the expectation E ($SQ=P-E$). The SERVQUAL scale compares consumers' perceptions of twenty-two aspects of service quality to their rating of each factor's importance (expected service quality) [ZPB90, PBZ91, PZB94, Ru98]. In their initial study Parasuraman and associates found that there were ten determinants that characterise customers' perceptions of the service provided. However, as a result of a later study they reduced the ten determinants of service quality to five: reliability, tangibility, responsibility, security and empathy [PZB85, PZB94, Ru98]. These dimensions are briefly commented below [Ru98, OF09].

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 for the following questions. Is the company reliable in providing the service? Does it provide as promised?

Tangibility is 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 for providing their service. This dimension allows getting the answer for the following question. Are employees well informed, educated, competent and trustworthy?

Empathy is the capacity of the person to experience another's feelings. It can be formulated as the question. Does the service company provide careful and personalised attention?

SERVQUAL quality measurement tools were developed based on 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 was suggested later the twenty-two attributes of the original SERVQUAL instrument, as well as five dimensions do not always accurately describe all aspects of the given service [Gr00, Cu96].

An adapted version of the SERVQUAL scale for Higher education services was proposed by Oliveira and Ferreira through the literature review [OF09]. They have also proposed 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 [OF09].

4 Electronic Service Quality Models

Whereas aspects of traditional service quality (models, dimensions, attributes and measurement tools) have been studied extensively over the past two decades, the study of the service quality of electronic service like websites is a fledgling domain [ZPM02]. One of the first definitions of electronic service quality has been proposed by Parasuraman as “the extent to which a web site facilitates efficient and effective shopping, purchasing, and delivery of products and services” [ZPM02]. On the base of this definition of electronic service quality, it is possible to make the comparison with traditional service quality to recognise the similarities and differences between these two concepts.

The most important and probably the most evident difference between traditional service quality and electronic service quality is the *replacement of interpersonal interaction with human-machine interaction*. This simple distinction raises many questions concerning the type of dimensions that can or must be considered to assess service quality in the e-learning (distance education) context. Companies may try to emulate human interaction with technology it stays different because some aspects of human interaction cannot be replaced with technology, e.g. courtesy, friendliness, helpfulness, care, commitment, flexibility and cleanliness. The absence of these aspects of human interaction through which the quality can be delivered to customers will have to be compensated by better performance on other quality factors or by excellent performance on specific electronic service quality factors.

The most of the factors and aspects that have been defined for general service environments are also important in electronic service quality, especially in E-Business. Besides the five factors as defined by Berry, Parasuraman and Zeithaml [ZPB90, PZB85], empirical evidence might come up with more specific dimensions related to electronic service. Some research has been done in this area [AP02, CD02, MM02], however more research is needed.

Taking into account specific nature of online higher education, direct application of the service quality dimensions developed in other environments is not appropriate. However, till now, there is no consensus concerning the dimensions of electronic service quality in general and for distance learning in particularly [BN04]. As have been pointed in [BN04] it is difficult to apply classic evaluations of traditional service quality based on the calculation of a gap between expectations and perceptions for the measurement of electronic service quality. The reason is that respondents find it difficult to formulate their expectations concerning electronic service quality, as well as the direct measure of the perceptions of electronic service quality, after the service has been delivered.

There are two main approaches for electronic service quality measuring [Cu00]. These are the behavioural and attitudinal measures. The first one is the focus on the measurement of the commercial activity of the electronic facilities (site, tools, and software applications) [To03, LA00, JMFB01]. Behavioural measurement technique that has proven is very useful for website analysis [LDB01, SGB02]. Attitudinal measures based on traditional measurement scales that evaluate perceptions of consumers or that rely on professional experts to measure these perceptions. There are two main approaches of attitudinal electronic service quality measurement. The first one generally based on experts' evaluation or interstitial surveys seem more common among practitioners. The second one, more grounded in psychometric theory, is more prevalent among scholars [BN04].

Within the electronic service quality domain the quality assessment is used more often for the web site quality evaluation. Some methods and tools for the web site quality evaluation are available now. The WebQual, the scale for web sites rating, is based on 12 dimensions: informational fit to task, interaction, trust, response time, design, intuitiveness, visual appeal, innovativeness, flow-emotional appeal, integrated communication, business processes, and substitutability [PZM05]. However, this scale's primary purpose is to generate information for Web site designers rather than to measure electronic service quality as experienced by customers. Completely different scale to measure the quality of e-commerce services have been proposed by Barnes [BV03]. Also called WebQual, composed of 22 items on 3 dimensions (quality of information, quality of interactivity (confidence and Empathy), and usability of the site (usability and design)). The scale of EtailQ for electronic service quality measuring includes 14 items divided into 4 dimensions (design, customer service, reliability (compliance with commitments) and security (privacy)) [WG03]. SITEQUAL includes 9 items distributed over 4 dimensions (ease of use, design, processing speed and security) [YD01].

Thus, although past studies provide insights about criteria that are relevant for evaluating of electronic service quality, the scales developed in those studies also raise some important questions that call for additional research on the topic. On the basis of the comprehensive detailed review, five broad criteria sets relevant to the electronic service quality perceptions have been recognised, namely [ZPM02]: (1) information availability and content (2) ease of use or usability, (3) privacy/security, (4) graphic style, and (5) reliability (fulfilment).

In general, all electronic service quality models can be regarded as an extension or modification of the well known early-proposed software quality models [Ka02].

One of the first software quality model, commonly called the FCM (Factor-Criteria-Metric) was proposed by McCall [MRW77]. This model possesses a hierarchical structure, consisting of high-level quality factors that are composed of lower-level quality criteria, which are measured with metrics [MRW77]. The reason of the hierarchical structure of the software quality models could be explained by the fact, that the factors that should be measured are too abstract to be measured directly. In 1992, a modification of the McCall model was adopted as ISO standard 9126. An extended version ISO 9126-1 was published in 2001.

This standard is decomposed the software quality into six main quality characteristics (dimensions): functionality, reliability, usability, efficiency, maintainability and portability. Functionality is the essential purpose of any product or service. Following functionality, there are 5 other software attributes that characterise the quality of the software in a given environment. Each of the following five characteristics can only be measured (and are assumed to exist) when the functionality of a given software product is present. These five characteristics are briefly described below [Ka02, ISO06].

Reliability defines the capability of the system to maintain its service provision under defined conditions for defined periods of time. One aspect of this characteristic is *fault tolerance* that is the ability of a system to withstand component failure.

Usability refers to the easiness of use for a given function.

Efficiency is concerned with the system resources used when providing the required functionality.

Maintainability can be described as the ability to identify and fix a fault within a software component is what the maintainability characteristic addresses. In other software quality models this characteristic is referenced as supportability.

Portability can be referred as how well the software allows the adaptations to changes in its environment or with its requirements.

Both educational service quality evaluation methods and methods for electronic service quality assessments including the software quality are grounded in the Gronroos's service theory [Gr00]. Different approach to measure electronic services quality is taken by researchers in information technologies (IT) and web quality theory to examine data quality, information quality, software and system quality, documentation quality, information systems service quality, and global information systems quality function.

Based on presented survey it is possible to summarise that there are two leading approaches for service quality assessment for educational service and electronic service, namely SERVQUAL very often is applied for education and ISO 9126-1 standard is dominated model for electronic service. A brief analysis of described characteristics allows make the conclusion about the similarity in-between earlier presented SERVQUAL dimensions and ISO 9126-1 characteristics. Some of these characteristics are the same, for example reliability the others are very cloth related. This fact allows to make the conclusion that for distance education service quality evaluation is quite questionable to apply the assessment in two separate domain, namely within the educational service quality and electronic service quality factors. The unified approach that takes into account all aspects of distance education service should be offered.

5 Kansei Approach and the emotional dimension of the Distance Learning Services

A number of researchers have evaluated the quality of site-based educational services using variations of the SERVQUAL instrument [HR01, SBBL04]. Unfortunately the SERVQUAL, electronic service quality, and web quality instruments are not directly applicable for the purpose of distance learning service quality evaluation. These instruments do not capture the vast majority of service encounters that take place in various distance-learning spaces that are critical to the student's learning experiences. A major limitation of IT research is that it focuses mainly on the perspectives of the software (web) designers and developers. Distance learning is like a complex issue that includes educational service aspects as well as electronic service elements. A recent survey of the literature indicates absence of a complex psychometrically based instrument to evaluate the quality of distance learning services. The endpoint of all products and services is a customer with his own mentality, priorities and emotions. The success of the product or service depends not only on its objective characteristics but also on a customer's subjective perception. The need to take this perception into account is recently recognised. Appear new directions of research and industrial design, such as the Emotional Design and the Affective Design. Pleasure becomes a very important dimension of any product or service. This study addresses this trend by offering the Kansei Approach as a framework for further implementation of students' mental categories influencing attitude to the service into the service design. It is supposed that the concept of Kansei Engineering Approach is exactly the way in which the psychometrically based instrument for quality evaluation in distance learning context could be developed.

Initially, Kansei approach was developed in Japan in seventies. This approach has a goal to translate customer's emotional request on a product or service into practical solutions considerate to the customer's mental needs. This approach is very successful in Asia, especially in Japan and Korea. Outside this region the level of development and recognition is difficult to compare. In spite of several publications in English and some positive experience of Kansei methods adoption (for example Nestle adopted Kansei for emotional packaging design [Ch09]), both practical and theoretical level of Kansei approach on the West still have a huge potential and doesn't allow to speak about Kansei as about the consistent concept. It still has a fragmentary character and needs more research and description. That is why all implementations of Kansei methods have also an academical importance. Starting from industrial design, Kansei was sequentially involved in all significant areas, for example in the service sector and than even in the virtual reality technique area [ILNS08]. Stable development of distance learning makes this service available for a wide range of students, makes it mass. As a result, it is possible to predict the interpretation of Kansei Concept and it's adapting to distance learning.

6 Conclusion

Recent commercialisation of education emphasises the role of customer's quality perception. In this conditions, the category of the quality becomes key important. Distance education quality assessment becomes the essential element of the distance-learning phenomenon. The analysis of two leading approaches for service quality assessment for educational service and electronic service (SERVQUAL and ISO 9126-1) reveals their essential similarity. Inexpediently to consider the quality of distance education service fragmentary using different approaches to the different aspects. It leads to the unnecessary complications and distort the phenomenon's consistency. The need of consistent, not fragmentary concept is evident. Kansei theory is offered as the decision. The implementation of Kansei concept allows design distance learning offer in the way that could meet the requirements of web-design, emotional design and pedagogical aspects of educational services.

References

- [AP02] Aladwani, A.M., Palvia, P.C.: Developing and validating an instrument for measuring userperceived web quality, *Information and Management*, Vol. 39, No. 6, pp. 467 – 476; 2002.
- [BN04] Bressolles G. and Nantel J.: Electronic Service Quality: A Comparison of Three Measurement Scales, *Proceedings of the 33th EMAC Conference*, Murcia (Spain), 2004.
- [BV03] Barnes S.J., Vidgen R.T.: An Integrative Approach to the Assessment of E-commerce Quality. *Journal of Electronic Commerce Research*, 3(3), pp. 114 – 127; 2003.
- [CD02] Cox, J., Dale, B.G.: The Key Quality Factors in Web Site Design and Use, *International Journal of Quality and Reliability Management*, Vol. 19, No. 7, 2002.
- [Ch09] Charles, G.: Nestle adopts Japanese design philosophy kansei to tap into consumer emotions. *marketingmagazine.co.uk*, 2009. <http://www.marketingmagazine.co.uk/news/893153/Nestle-adopts-Japanese-design-philosophy-kansei-tap-consumer-emotions>, 2009. (Accessed 14 February 2010)
- [Cu00] Cunliffe D.: Developing Usable Web Sites – A Review and Model. *Internet Research*, 10, pp. 295 – 308; 2000.
- [Cu96] Cuthbert, P, F.: Managing service quality in HE: is SERVQUAL the answer? Part 1, *Managing Service Quality*, Vol.6, No.2, pp.11 – 16, 1996.
- [Gr00] Gronroos, C.: *Service management and marketing: A customer relationship management approach*, 2nd edition, John Wiley & Sons, West Sussex England, 2000.
- [HR01] Holdford, D. and Reinders, T.: Development of an Instrument to Assess Student Perceptions of the Quality of Pharmaceutical Education. *American Journal of Pharmaceutical Education* (65), pp. 125 – 131, 2001.
- [ISO06] *ISO/IEC 9126*. <http://www.iso.org/>, 2006. (Accessed 14 February 2010)
- [ILNS08] Ingrassia, T, Lombrado, E., Nigrelli, V., Sabationo, G.: *Kansei Engineering and Virtual Reality in Conceptual Design* <http://www.ep.liu.se/ecp/033/043/ecp0803343.pdf>, 2008. (Accessed 14 February 2010)
- [JMFB01] Johnson E. J., Moe, W.W., Fader, P.S., Bellmann, S., Lohse, G., L.: *On the Depths and Dynamics of Online Search Behavior*. Working Paper, Wharton Marketing Department, 2001.

- [Ka02] Kan, S.H.: *Metrics and Models in Software Quality Engineering*. 2nd Edition, Addison-Wesley Professional, 2002.
- [LA00] Lynch J.G., Ariely D.: Wine Online: Search Cost and Competition on Price, Quality and Distribution. *Marketing Science*, 19(1), pp. 83 – 103; 2000.
- [LDB01] Li H., Daugherty T. and Biocca F.: Characteristics of Virtual Experience in Electronic Commerce: A Protocol Analysis. *Journal of Interactive Marketing*, 15(3), 2001.
- [MM02] Madu, C.N., Madu, A.A.: Dimensions of e-quality, *International Journal of Quality and Reliability Management*, Vol. 19, No. 3, pp. 246 – 258; 2002.
- [MRW77] McCall, J.A., Richards, P.K., Walters, G.F.: *Factors in Software Quality*. General Electric Co., 1977.
- [OF09] Oliveira, O. J., Ferreira, E. C.: Adaptation and application of the SERVQUAL scale in higher education. *Proceedings of POMS 20th Annual Conference Orlando, Florida U.S.A.*, 2009.
- [Pa91] Pardey, D.: *Marketing for Schools*, London, Kogan Pag, 1991.
- [PBZ91] Parasuraman, A., Berry, L., Zeithaml, V.: Refinement and reassessment of the SERVQUAL scale. *Journal of Retailing*, Vol. 67, pp.420 – 450; 1991.
- [PZB85] Parasuraman A., Zeithaml, V. A., Berry, L.: A conceptual model of service quality and its implications for future research. *Journal of Marketing*, vol. 49, pp. 41 – 50; 1985.
- [PZB88] Parasuraman, A., Zeithaml, V., Berry, L.: SERVQUAL: A multi-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, vol. 64, pp. 12 – 40; 1988.
- [PZB94] Parasuraman, A., Zeithaml, V., Berry, L.: Reassessment of expectations as a comparison standard in measuring service quality: Implications for further research. *Journal of Marketing*, vol. 58, pp. 111 – 124; 1994.
- [PZM05] Parasuraman, A., Zeithaml, V., Malhotra, A. : E-S-Qual: A multiple-item scale for assessing electronic service quality. *Journal of Service Research*. 7(3), 2005.
- [Ru98] Ruby, C.: Assessing Satisfaction with Selected Student Services Using SERVQUAL, a Market-Driven Model of Service Quality. *NASPA Journal*, vol. 35, pp. 331 – 341; 1998.
- [SGB02] Senecal S., Gharbi J-E., Nantel J.: The Influence of Flow on Hedonic and Utilitarian Shopping Values. In S. Broniarczyk and K. Nakamoto (Eds.), *Advances in Consumer Research* (29), 2002.
- [SBBL04] Sherry, C., Bhat, R., Beaver, B., Ling, A.: Students' as customers: The expectations and perceptions of local and international students. *HERDSA Conference Proceedings*, 2004.
- [To03] Totty M.: E-Commerce (A Special Report): Selling Strategies – Business Solutions, *Wall Street Journal*, New York, N.Y., 2003;
- [WG03] Wolfenbarger M., Gilly M.C.: eTailQ: dimensionalizing, measuring and predicting etail quality. *Journal of Retailing*, 2003.
- [WWBS03] Welsh, E.T., Wanberg, C.R., Brown, K.G., Simmering, M.J.: E-learning: emerging uses, empirical results and future direction. *International Journal of Training and Development*, 2003.
- [YD01] Yoo B., Donthu N.: Developing a Scale to Measure the Perceived Quality of Internet Shopping Sites (SITEQUAL). *Quarterly Journal of Electronic Commerce*, 2(1), pp. 31 – 47; 2001.
- [ZPB90] Zeithaml, V. A., Parasuraman, A., Berry, L.: *Delivering quality service: balancing customer perceptions and expectations*. London, Macmillan, 1990.
- [ZPM02] Zeithaml V.A., Parasuraman A. & Malhotra A.: Service Quality Delivery Through Web Sites: A Critical Review of Extant Knowledge. *Journal of the Academy of Marketing Science*, 30(4), pp. 362-375; 2002.