Services quality in technology supported education: Brazilian case

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Abstract

This article aims to measure students' perceptions of distance education quality, through a services quality model. For this, students from a distance Management undergraduate course in Brazilian universities were interviewed, totalizing a 593 sample. Data showed favorable perceptions of distance education quality and offered further information for strategic decisions.

Keywords: services quality, distance education, Brazilian universities

Introduction

Distance education (DE) brings structural and cultural changes to the institutions and allows them to reach people located all over the world; that is how the global competition happens to the education market. Therefore, each institution should recognize its expertise areas, in which they have competitive advantage, and elaborate and offer courses in these areas, becoming specialized in a set of disciplines (MOORE; KEARSLEY, 2008).

Kramarae (2001) points out some factors that explain distance education growth, considering US experience: reduction on the amount of public subsidies for public higher education institutions; increase of the cost of higher education in general; increase in the number of employed women; decrease in the long-term jobs; increasing number of companies requiring credentials from their employees; fast technology changes; growth of online businesses; increasing in higher education enrollment; requirement of lifelong learning (continuous pursuit of educational development for personal or professional reasons); stronger competition among educational institutions; growth of globalization, including in educational market; increase of the use of technology and the web to deliver education and training in the workplace (KRAMARAE, 2001).

In Brazil, higher education both face-to-face and at a distance has been increasing since the last decade (years 2000), as a response to market's demand for a better qualified workforce

and to the federal efforts to develop economy, reduce social inequality and expand job opportunities for unprivileged population.

Quality is a key factor to guarantee competitiveness and sustainability for both distance and traditional institutions. The concept of services quality is abstract and is related to the individual attitudes, his/her satisfaction and experience with the service.

Cheng (2011) emphasizes the concept of quality is related to the stakeholders; that is, the groups or individuals who have a legitimate interest in higher education quality, such as development agencies, the government, employees, faculty, students and alumni, each one owning different expectations regarding education.

The present research will consider for quality assessment student perception of the course experience. The fast growing of DE in Brazil during the last decade and the social structure and geographic dimension of this country provide a powerful juncture to disseminate national education. Therefore, evaluating distance programs outcomes is important, and considering the high levels of competition in higher education, with the increasing number of credentialed schools and new courses, using a market-oriented vision seems to be appropriate.

Considering the national relevance of Open University of Brazil for Brazilian education development and its peculiar characteristics, this study aims to identify student's perceived quality of DE, for the specific case of UAB. Additionally, the most important dimensions underlying student's perceived quality will be identified.

Theoretical foundation

Service quality

According to Šimić and Čarapić (2008), many studies about quality assessment took place during the 1980's and the 1990's resulting in some assessment models. Among the most popular models are SERVQUAL by Parasuraman, Zeithalm and Berry (1988) and SERVPERF by Cronin and Taylor (1992); each of them can be applied to many different businesses.

The approaches proposed by Parasuraman, Zeithaml and Berry (1988) and by Cronin Jr. and Taylor (1992) had become the ones most often used and mentioned in the literature on the quality of services. Many confirming and comparative studies have been conducted based on the SERVQUAL and SERVPERF methodologies in several areas of services and sociocultural contexts, thus maintaining the two theoretical lines alive (MEHTA; DURVASULA, 1998; ANGUR *et al.,* 1999; LASSAR *et al*., 2000; MATOS; VEIGA, 2000; REIS, 2001; CARVALHO; LEITE, 2001; GONÇALVES *et al.*, 2002; SURESHCHANDAR *et al.*, 2002; MELLO *et al.*, 2002, CUI *et al.,* 2003; MIGUEL; SALOMI, 2004; SALOMI *et al.*, 2005).

SERVQUAL and SERVPERF scales

The SERVQUAL scale, proposed by Parasuraman, Zeithaml and Berry (1988) for measuring consumer-perceived quality within the service context, is the result of qualitative and quantitative researches in service sector activities carried out by the authors that made it possible to reduce the previously proposed number of service quality dimensions (ten SERVQUAL dimensions: reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding and tangibles) to five dimensions (tangibles, reliability, responsiveness, assurance and empathy). This scale proposed by Parasuraman, Zeithaml and Berry (1988) is named SERVQUAL and intends to measure perceived quality in these five different dimensions. It consists of a scale with 22 items, which asks the respondent to classify his/her expectation about a determined service and his/her actual perception of the service (after

experience); quality will be measured by the gap between expectations and real perceptions (PARASURAMAN *et al.*, 1988).

Since its development, SERVQUAL has been applied by many researchers and criticized for its multidimensionality (five dimensions) and its gap approach (difference between expectations and perceptions).

Cronin and Taylor (1992), based on quantitative research carried out in service sector activities, criticized SERVQUAL scale and proposed an alternative instrument named SERVPERF. They suggested the gap approach for measuring quality is inappropriate, since in their opinion, there is no empirical evidence that perception gap is basis for perceived quality, which makes a pure performance approach more effective (CRONIN; TAYLOR, 1992).

The attributes used for evaluating service quality are the same in both the SERVQUAL and SERVPERF scales. Therefore, as far as the key elements of service evaluation are concerned, Cronin Jr. and Taylor (1992) present no new concept, considering that the relationship attributes proposed by Parasuraman, Zeithaml and Berry (1988) are adequate:

Using an analysis based on the modeling of structural equations, Cronin Jr. and Taylor (1992) pointed out the non-confirmation of the five SERVQUAL dimensions and proposed the uni-dimensional use of the 22 scale attributes.

The SERVPERF scale is frequently mentioned because of how easy to use it is, as well as because of its greater reliability when compared with the SERVQUAL scale (CRONIN JR.; TAYLOR, 1992; CRONIN JR.; TAYLOR, 1994; LEE *et al.*, 2000). However, some studies contradict this understanding (ANGUR *et al.*, 1999) and state that in its concept the methodology has a lesser degree of understanding of the consumer, because it does not deal with his/her desires and expectations (PARASURAMAN *et al.*, 1994; ANGUR *et al.*, 1999).

Proposal of the SERVPERF scale, and consequent criticism of the SERVQUAL scale, started a fruitful debate between Parasuraman *et al.* (1991; 1994) and Cronin Jr. and Taylor (1992, 1994) on how to measure service quality. These two scales are the most often referred to approaches in literature dealing with the evaluation of service quality and although many alternative scales have been proposed after them, their main characteristics continue being considered by new models.

Quality perception in e-learning courses

"Quality in higher education is a complex and multifaceted concept" (GRUBER *et al.*, 2010, p.107).

Distance education is just an educational method that may be effective or not, like traditional educational methods. Effectiveness depends on how it is conducted. Using distance education tools to provide a high quality program is a complex issue since quality assessment and standards creation are hard to define (STELLA; GNANAM, 2004).

Kassim and Zain (2010) define service quality as a source of competitive advantage for HEI. Institutions must monitor quality to guarantee stakeholders' expectations and needs are met. In their opinion, students are the stakeholders who should evaluate service quality, since they receive the service (KASSIM; ZAIN, 2010).

Udo *et al.* (2011) applied a modified version of SERVQUAL to measure student's perceptions in e-learning courses. For these authors SERVQUAL has been broadly used in many different kinds of services but within educational field it remained unexplored until recently (UDO *et al.*, 2011). Their version uses adapted assurance, empathy, responsiveness and reliability questions to evaluate instructors' relations and performance. Tangibles dimension had its name altered to "website content", as in their point of view, physical facilities and equipment

(evaluated by tangibles) are less important for DE; then contents, audio, video and every material posted on the course's website are evaluated by the dimension "website content". This dimension includes the quality of information provided, appropriateness of the amount of information available, kinds of media and image employed and website appearance (UDO *et al.*, 2011).

In addition, Udo *et al.* (2011) defend student's performance expectation influences his/her perception about the course quality (UDO *et al.*, 2011).

Kassim and Zain (2010) also used a modified version of SERVQUAL in order to measure business students' service quality perception. They observed students attributed high expectation scores to all the five dimensions. Total perceived quality score was lower than expectation score, which means there was a quality gap in the overall educational experience (course did not meet student's expectation). Quality gap was negative to the five dimensions. Empathy had the bigger gap, followed by responsiveness, assurance, tangibles and reliability (KASSIM; ZAIN, 2010).

Kenney and Khanfar (2009) also mention SERVQUAL as the most popular instrument for service quality evaluation; however, they point out SERVPERF may be a more appropriate scale, because it measures customer's real perceptions about the service consumed, while SERVQUAL assesses the gap between customer's expectations and customer's perceptions regarding the service (KENNEY; KHANFAR, 2009). Kuo and Ye (2009) corroborate Kenney and Khanfar (2009) saying that in educational field, students will evaluate their educational experience based on their actual experience; that is, expectations will be biased by real situations lived by students during the long period they spent at school. For this reason, Kuo and Ye (2009), just like Kenney and Khanfar (2009), recommend the collection of perceptions, as a measure of perceived quality, instead of the difference between expectations and perceptions (proposed in the original SERVQUAL model) (KUO; YE, 2009).

Parasuraman *et al.* (2005) assume from empirical standpoint there is controversy on defining quality as the gap between expectations and performance of the service; and the existence of five distinct dimensions for measuring services quality (PARASURAMAN, A. *et al.*, 2005).

In our study, adapted version of SERVQUAL applied by Udo *et al.* (2011) was used in order to measure students' perceptions of a Management course. However, the study considered only the actual perception in order to measure quality, instead of considering the gap between expectations and perceptions, as proposed by Udo *et al.* (2011). This approach was also employed by other researchers in similar studies (KENNEY; KHANFAR, 2009; KUO; YE, 2009; UDO *et al.*, 2011).

So, it is possible to classify the model employed in our study as a mix of SERVQUAL (five dimensions; tangibles dimension replaced by website content) and SERVPERF (gaps replaced by perceptions) scales.

Based on the literature, the following hypotheses are defined in this study:

H1: Assurance has a positive relation to student perceived quality

H2: Empathy is positively related to student perceived quality

H3: Responsiveness is positively related to student perceived quality

H4: Reliability is positively related to student perceived quality

H5: Website content is positively related to student perceived quality

Methodological Aspects of the Study

The methodological procedure for the creation of a model for measurement of quality of distance education services will be described in this section.

A survey was conducted with students of under-graduate distance Management course from universities members of Open University of Brazil (UAB) and included, besides of profile variables, agreement questions concerning to the dimensions website content, reliability, responsiveness, assurance and empathy. These institutions are distributed in the regions of Brazil. Considering the research model proposed for the study, the appropriate sampling framework would be stratified cluster sampling, which is a double sampling technique or two-phase sampling (COCHRAN, 1977; THOMPSON, 1992). A double sampling design extracts a unit sample in order to obtain additional information and from these initial units a second sample is selected. The purpose of this framework is to obtain better results, since the relations between the first and the second samples are taken into account (THOMPSON, 1992).

This framework initially stratifies the population into strata, which would be Brazilian geographic areas. Then, the universities in each stratus are selected composing the sample (first sample). Finally, for each university enrolled in the research, a convenience sample of students was selected, which results in the second and final sample.

The Open University of Brazil (UAB) was chosen as a case study for this study. UAB is a system created by the Ministry of Education, which comes to articulate public higher education institutions which already exist, to offering distance courses. These institutions provide Distance Education (DE) courses that are already in progress for at least one year. In these circumstances, students are able to evaluate the course.

Data collection occurred during the first semester of 2012 and the final sample totalized 593 valid responses (from a total of 600 questionnaires) from students.

Data from student survey allowed hypotheses testing through a structural equation model and other kinds of statistical analysis. Student's perspective data analysis tested hypotheses: H1 to H5.

The present study developed one questionnaire for measuring student's perceptions of Management course. This instrument was electronically self-administered, developed through GOOGLE DOCS ® and emailed to the subjects or posted on the course learning management system (LMS). This format was chosen, since it allows the collection of information from people geographically dispersed, such as students from UAB. In addition, considering they are distance students, used to technology in some extent, online format would not be a constraint for the data collection. Finally, this questionnaire used closed questions.

Analysis of the Results

Firstly data was tested for outlier cases. Mahalanobis distance was used in a conservative t-student test (significance level=0.1%) finding no outliers; then, all the 593 responses were used on data analysis. Normal distribution was also checked through Kolmogorov-Smirnov test and considering 1% significance level, none of the variables were found to have normal distribution. By the way, non-normality does not impact on the statistical analysis chosen for this study.

In order to verify the relevance of each dimension for the quality distance course evaluation, the Structural Equation Modeling (SEM) was employed. Partial least square (PLS) was applied in order to check the significance of each of the five dimensions in the model proposed for evaluating the students' perceived quality.

As proposed by Parasuraman *et al.* (1988) services quality has five different dimensions: assurance, empathy, reliability, responsiveness and tangibles. Udo *et al.* (2011) proposed a

modified version of SERVQUAL, adapted to DE. This modified model was applied in the present study in order to test the study's hypotheses. PLS was applied to measure the relationships between SERVQUAL constructs and overall perceived quality. Each rectangle represents a variable of SERVQUAL instrument; the circles represent theoretical constructs; the arrows connecting the circles to the rectangles contain factor load value (it shows whether each variable is related to the construct it is trying to measure); the arrows connecting the circles present beta coefficient values; values showed inside the circles present R-square value (how much the independent variables explain the dependent variable). Figure shows factor loadings for all the variables in the model have value higher than 0.3, which suggests good adherence (HAIR *et al.*, 1998). R-square for overall perceived quality is 63.2%, which indicates perception of course quality is 63.2% explained by SERVQUAL dimensions. Beta coefficient shows website content has the strongest influence on perceived quality.

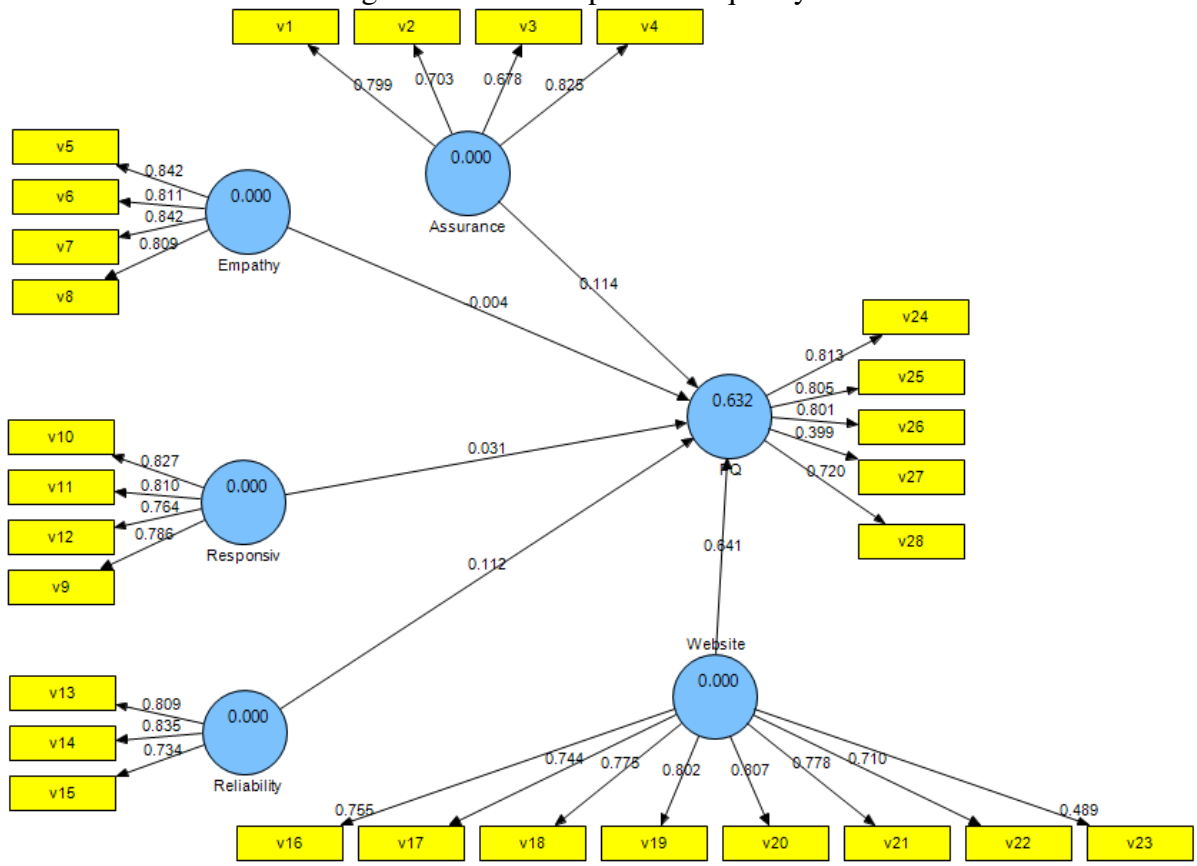

Figure 1. SERVQUAL model

Bootstrapping obtained t-student test results (values on the arrows present observed value of t-student statistic), considering the following hypotheses H_0: beta coefficient =0; H_1: beta coefficient is different from zero. Strength of relationships between the constructs was tested and only website content, assurance and reliability have significant influence on perceived quality. Website content has the strongest influence on perceived quality, followed by assurance and reliability (the last two with similar values). Then hypotheses H1, H4 and H5 are confirmed, while H2 and H3 are rejected in this study. Udo *et al.* (2011) also found, in their study, significant relationship between assurance and website content and perceived quality; website content also had the strongest relationship with perceived quality. However, the present study

differs from Udo *et al.* (2011) results since they found a significant relation between empathy and responsiveness with perceived quality and no significant relation between reliability and perceived quality. In addition, Udo *et al.* (2011) paper reported R-square=70.6% for perceived quality, which was slightly higher than that obtained here.

Goodness of fit statistics show the model meets the minimum quality standards (Table1).

Table 1. Goodness of fit – SERVQUAL model

	AVE	Composite Reliability	Cronbach's Alpha	Communality
Assurance	0.57	0.84	0.75	0.57
Empathy	0.68	0.90	0.85	0.68
PQ	0.53	0.84	0.76	0.53
Reliability	0.63	0.84	0.71	0.63
Responsiveness	0.64	0.87	0.81	0.64
Website content	0.55	0.90	0.88	0.55

Table 2 shows correlations among the latent variables and on the diagonal AVE square root values. As AVE square root has higher value than the correlations, discriminant validity is accepted.

Table 2. Correlation matrix for latent variables

	Assurance	Empathy	Reliability	Responsiveness	Website
Assurance	0.75				
Empathy	0.65	0.83			
Reliability	0.68	0.71	0.79		
Responsiveness	0.61	0.72	0.65	0.80	
Website	0.45	0.48	0.62	0.43	0.74

Each variable researched was measured through a 5 point Likert scale. In order to obtain the degrees of perceived quality the five dimensions were calculated as the average of the variables composing each of them.

Table 3 presents descriptive statistics for the quality dimensions analyzed. As demonstrated, all dimensions have average value higher than 3 which indicates students have favorable perceptions in all of them.

Table 3. Descriptive statistics - quality dimensions

	Mean	Std. Deviation	Variation Coeficient
Assurance	3.6	0.7	20%
Empathy	3.4	0.8	23%
Reponsiveness	3.3	0.8	23%
Reliability	3.6	0.8	22%
Website content	3.6	0.7	21%

Quality	3.7	0.8	21%

So, the objective of measuring the perceived quality as well as identifying the most important dimensions in relation to the overall quality perceived regarding distance education was attained.

Main Conclusions

This study aimed to identify the students' perceptions regarding DE offered by UAB.

Students' sample showed some consistent results to literature published findings and some different results from those reported in other studies. In general, students have a favorable perception of their course, with positive scores. Considering SERVQUAL dimensions, only assurance, reliability and website content (tangibles) influence significantly overall quality perception, which means, for this sample instructor's expertise and dependability and resources provided on LMS are the only determinants to perceived quality. Specifically website content has the strongest relation with overall quality, which seems reasonable to accept for a distance course study, since on this format students are expected to be more active and independent learners; so contents provided on the course LMS are expected to be relevant. Thus, DE providers should invest on resources offered through the course website in order to make learning experience dynamic, interesting and rich. Instructors attributes are also concerning; thus instructor expertise and instructor-student relationship should be monitored.

Students also expressed good perceptions of institutional support, which includes course organization, technical support, interaction with colleagues and structure availability.

This research found favorable conditions of DE in Management course, which makes it possible to consider it as a successful initiative.

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References

ANGUR, Madhukar G. *et al. Service quality in the banking industry : an assessment in a developing economy.* **International Journal of Bank Marketing**. Bradford: MCB University Press, v. 17, n. 3, p. 116-125, 1999.

CARVALHO, Frederico A. de; LEITE, Valdecy F. Refinando a conjetura PBZ: uma revisão da relação entre importância e tolerância em qualidade de serviços. **Revista de Administração Contemporânea**. [S.l.], v. 5, n. 1, p. 43-60, 01-04/2001.

CHENG, M. Transforming the learner versus passing the exam: understanding the gap between academic and student definitions of quality. **Quality in Higher Education**, v.17,n.1, p.3-17, 2011.

COCHRAN, W.G. **Sampling techniques**. 3rd ed. New York: John Wiley & Sons, 1977. 428 p.

CRONIN, J. J.; TAYLOR, S. A. Measuring Service Quality: A Reexamination and Extension. **Journal of Marketing**, v. 56, n. 3, p. 55, jul 1992.

CRONIN, J. J.; TAYLOR, S. A. SERVPERF versus SERVQUAL: Reconciling Performance-Based and Perceptions-Minus-Expectations Measurement of Service Quality. **Journal of Marketing**, v. 58, n. 1, p. 125, jan 1994.

CUI, Charles Chi *et al*. *Service quality measurement in the banking sector in South Korea*. **International Journal of Bank Marketing**. Bradford: MCB University Press, v. 21, n. 4, p. 191-201, 2003.

GONÇALVES, Carlos Alberto *et al.* Avaliação de um modelo de mensuração de desempenhol de serviços oferecidos por empresas públicas. **Congresso Internacional del Clad**, 7., 2002, Lisboa., 2002.

GRUBER, T.; FUS, S.; VOSS, R.; GLÄSER-ZIKUDA, M. Examining student satisfaction with higher education services: Using a new measurement tool. **International Journal of Public Sector Management**, v. 23, n. 2, p. 105-123, 2010.

HAIR, J.F.Jr.; ANDERSON, R.E.; TATHAM, R.L.; BLACK,W.C. **Multivariate data analysis.** 5th ed. Upper Saddle River: Prentice Hall, 1998. 730 p.

KASSIM, N. M.; ZAIN, M. Service Quality : Gaps in the College of Business. **Business**, p. 235-252, 2010.

KENNEY, M. G.; KHANFAR, N. M. Antecedents of Repurchase Intention: Propositions Towards Using Marketing Strategy to Mitigate the Attrition of Online Students. **Services Marketing Quarterly**, v. 30, n. 3, p. 270-286, 22 jun 2009.

KRAMARAE, C. **The third shift:** women learning online. Washington: AAUW, 2001. 86p.

KUO, Y.-K.; YE, K.-D. The causal relationship between service quality, corporate image and adults' learning satisfaction and loyalty: A study of professional training programmes in a Taiwanese vocational institute. **Total Quality Management & Business Excellence**, v. 20, n. 7, p. 749-762, jul 2009.

LASSAR, Walfried M. *et al*. *Service quality perspectives and satisfaction in private banking*. **Journal of Services Marketing**. Bradford: MCB University Press, v. 14, n. 3, p. 244-271, 2000.

LEE, Haksik *et al*. *The determinants of perceived service quality and its relationship with satisfaction.* **Journal of Service Marketing.** Bradford: MCB University Press, v. 14, n. 3, p. 217-231, 06/2000.

MATOS, Celso Augusto; VEIGA, Ricardo Teixeira. Avaliação da qualidade percebida de serviços: um estudo em uma organização não-governamental. **Caderno de Pesquisas em Administração**. São Paulo, v. 07, n. 3, 07-09/2000.

MEHTA, Subhash C.; DURVASULA, Srinivas. *Relationships between SERVQUAL dimensions and organizational performance in the case of a business-to-business service*. **Journal of Business & Industrial Marketing**. Bradford: MCB University Press, v. 13, n. 1, p. 40-53. 1998.

MELLO, S.C.B. *et al*- **Aplicação do modelo SERVQUAL para a avaliação da qualidade de serviço numa instituição de ensino superior baseado na percepção dos alunos**. Encontro Nacional de Engenharia de Produção, 22. Curitiba, 2002.

MIGUEL, Paulo Augusto Cauchik; SALOMI, Gilberto Eid. Uma revisão dos modelos para medição da qualidade em serviços. **Revista Produção.** [S.l.], v. 14, n. 1, p. 12-30, 2004.

MOORE, M.G.; KEARSLEY, G. **Educação a distância:** uma visão integrada. São Paulo: Cengage Learning, 2008. 398 p.

PARASURAMAN, A.; BERRY, L.L.; ZEITHALM, V.A. Refinement and Reassessment of the SERVQUAL Scale. **Journal of Retailing**, v. 67, n. 4, p. 420-450, 1991.

PARASURAMAN, A.; ZEITHAML, V. A.; MALHOTRA, A. E-S-QUAL : A Multiple-Item Scale for Assessing Electronic Service Quality. **Journal of Service Research**, v. 7, n. 3, p. 213-233, 2005.

PARASURAMAN, A.; ZEITHAML, V. A.; BERRY, L. L. Reassessment of Expectations as a Comparison Standard in Measuring Service Quality: Implications for Further Research. **Journal of Marketing**, v. 58, n. 1, p. 111-124, jan 1994.

PARASURAMAN, A.; ZEITHAML, V. A.; BERRY, L. L. Servqual : A Multiple-Item Scale For Measuring Consumer Perceptions of Service Quality. **Journal of Retailing**, v. 64, n. 1, p. 12-40, 1988.

REIS, Izabel Cristina da Silva. **A escala SERVQUAL modificada:** avaliação da qualidade percebida do serviço de lazer oferecido por um complexo poliesportivo num parque florestal. Florianópolis, 2001. Dissertação (Mestrado em Engenhara de Produção) – Programa de Pós-Graduação em Engenharia de Produção, Universidade Federal de Santa Catarina.

SALOMI, Gilberto Gabriel Eid *et al*. *SERVQUAL x SERVPERF : comparação entre instrumentos para avaliação da qualidade de serviços internos*. **Gestão e Produção**. São Carlos, v. 12, n. 2, 05-08/2005.

STELLA, A.; GNANAM, A. Quality assurance in distance education : The challenges to be addressed. **Higher Education**, v. 47, p. 143-160, 2004.

SURESHCHANDAR, G. S. *et al*. *Determinants of customer-perceived service quality : a confirmatory factor analysis approach*. **Journal of Services Marketing**. Bradford: MCB University Press, v. 16, n. 1, p. 9-34, 2002.

THOMPSON, S.K. **Sampling**. New York: John Wiley & Sons, 1992, 343 p.

UDO, G. J.; BAGCHI, K. K.; KIRS, P. J. Using SERVQUAL to assess the quality of e-learning experience. **Computers in Human Behavior**, v. 27, n. 3, p. 1272-1283, maio 2011.

ŠIMIĆ, M. L.; ČARAPIĆ, H. Education service quality of a business school: former and current students' evaluation. **International Review on Public and Nonprofit Marketing**, v. 5, n. 2, p. 181-191, 16 out 2008.