Service Quality Of Educational Websites: An Empirical Study

Soumava Bandyopadhyay, Lamar University
Vivek Natarajan, Lamar University

ABSTRACT

This paper employs a measurement of the service quality of educational Websites as perceived by students, following a conceptual model developed by Santos (2003). Perceived service quality of educational Websites is conceptualized as dependent on the following variables—ease of use, content, reliability, privacy, and interaction. An empirical test with university students validates the overall model. As for the individual independent variables, all of them except privacy are found to have a significant effect on perceived service quality.

INTRODUCTION

*M*easurement of service quality is a well-developed research stream in marketing. This stream was pioneered by Parasuraman, Zeithaml, and Berry (1985). Their SERVQUAL scale (Parasuraman, Zeithaml, and Berry, 1988) has been widely adapted as the "industry standard" for the measurement of service quality. Over time, the SERVQUAL scale was customized for diverse applications, such as healthcare (Sower et al., 2001), restaurants (Heung, Wong, and Qu, 2000), groceries (Eastwood, Broker, and Smith, 2005), railways (Cavana, Corbett, and Lo, 2007), and mobile communications (Lai et al., 2007).

Following the growth of e-commerce in the mid 1990s, the SERVQUAL scale has also been employed to measure the service quality of websites (Cai and Jun, 2003). Some important changes have been suggested to the scale, however, owing to the contextual differences between the setting of the original SERVQUAL instrument (retailing), and the new context, the Internet (Tan, Xie, and Li, 2003). A conceptual model of the determinants of electronic service quality was proposed by Santos (2003). In this paper, we follow Santos' (2003) model to develop a scale to measure service quality of websites. We then apply the scale to measure the students' perception of service quality offered by an educational website.

Universities offer various types of education-related services to their students through their websites. There are websites through which students can access their campus e-mail, register for courses, apply for financial aid, search electronic databases for research work, etc. Course delivery websites, such as WebCT and Blackboard, are also used by many professors to disseminate course materials. Universities obviously have a vested interest in having their students use these websites extensively. The extent of student use of these university websites is likely to depend on the students' level of satisfaction with the services obtained from such websites. In this study we investigate the impact of various service characteristics of educational websites on students' level of satisfaction.
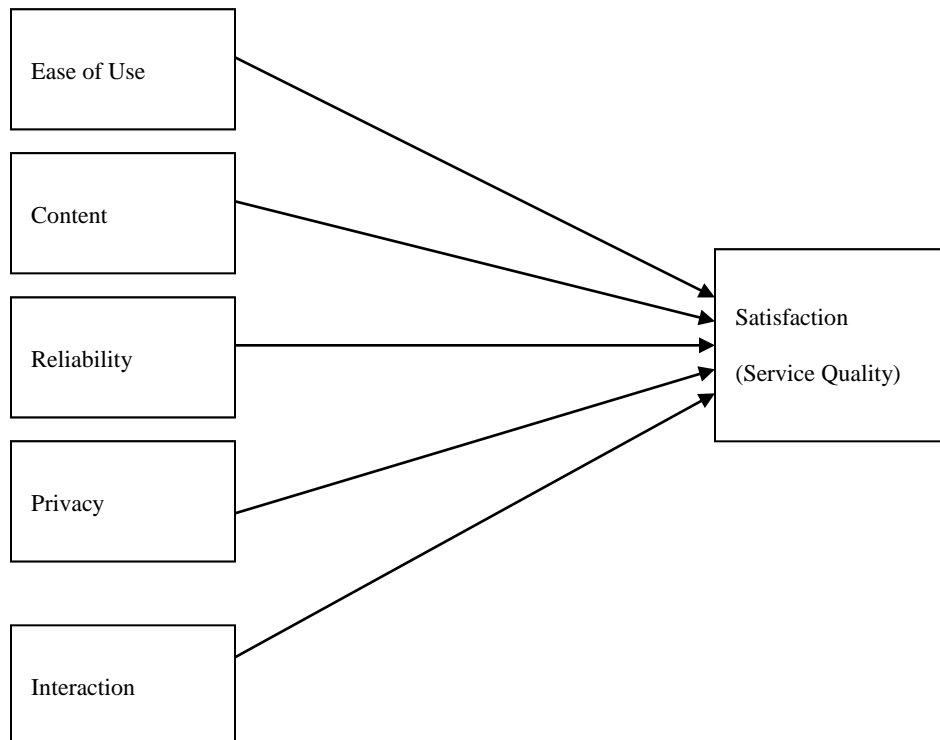
THE MODEL

Santos (2003) defined electronic service quality as the consumer's overall evaluation and judgment of the excellence and quality of e-service offerings in the virtual marketplace. This definition goes beyond the assessment of the quality of the website itself and looks at the service delivered by the website. Santos (2003) proposed that e-service quality had two separate dimensions—*incubative* and *active*—for increasing hit rates, site stickiness, and customer retention (all of which depend on the level of customer satisfaction). The *incubative* dimension consists of the design elements of a website, such as ease of use, appearance, linkages, structure and layout, and content. The *active* dimension includes the direct service elements, such as reliability, efficiency, support, communications, privacy, and incentives.

For application in the context of educational websites, we adopted five factors from Santos' (2003) original model as determinants of service quality (i.e., user satisfaction). We included the incubative dimensions of *ease of use* and *content*. When developing the scale, items describing the other incubative variables (appearance, linkages, structure and layout) were collapsed into these two factors. Similarly, we retained three active factors—*reliability*, *privacy*, and *interaction* (communication) in our model, with the remaining variables from Santos'(2003) original model (efficiency, support and incentives) collapsed into these three factors. Our model is illustrated in Figure 1 below.

Figure 1

The Model for Measuring Service Quality of Educational Websites

The hypotheses related to the model are:

User satisfaction (service quality) from an educational website is positively related to perceptions regarding:

H1):   the ease of use of the website,
H2):   the quality of content provided by the website,
H3):   the reliability of the website,
H4):   the privacy offered by the website, and
H5):   the level of interaction provided by the website.

Further explanation of the above five determinants of website service quality is given in the next section, where the individual measurement items for these five factors are presented.

THE EMPIRICAL TEST

An online survey was given to undergraduate and graduate students of business at a regional state university. The survey asked them about their experience with one (following their preference) of the two educational websites maintained by the university that they used. One was a website that the students could use to access their campus e-mail accounts, to search the university library catalog and databases, and to register for courses and manage their class schedules. The other was the course management website WebCT—which at least one of their professors was using to provide instructional materials, hold discussion groups, post grades, etc. To use either website, students would need to personally log in with a user ID and password. The questions in the survey covered the five independent variables relating to the selected website—ease of use, content, reliability, privacy, and interaction; and the dependent variable—satisfaction, indicative of the website's perceived service quality.

Each variable in the study was measured by a multi-item scale. Each item asked the respondent on a 5-point Likert scale his or her level of agreement (1=strongly disagree, 5=strongly agree) with statements describing various aspects of the chosen educational website. The items covering the five independent variables and one dependent variable were as follows:

Ease of Use:
      1. I am able to navigate this website with ease.
      2. The number of links provided at the website is adequate.
      3. The website is well organized.
      4. The manner in which information is presented is helpful in navigating this website.

Content:
      1. I like the colors that are used on this website.
      2. The website has an ideal amount of images/graphics.
      3. The graphics on this website are appealing.
      4. The contents of this website are useful for my purpose.

Reliability:
      1. The website is available when I need it.
      2. The links at this website work reliably.
      3. The website loads quickly on my computer and browsing is usually fast enough.

Privacy:
      1. I feel secure when I use this website.
      2. The website respects my privacy concerns.
      3. The security mechanisms at this website are adequate.

Interaction:
      1. The website offers adequate user guidelines to help me.
      2. I am kept well informed of the developments at this website.
      3. My needs/queries are adequately addressed by this website.
      4. The university encourages me to use this website.

Satisfaction (E-Service Quality):
      1. Using this website is usually a satisfying experience.
      2. I am more satisfied with this website compared to other websites I use for education-related needs.

The survey was given to 400 students in the college of business. Altogether, 305 complete and usable responses were obtained, resulting in a response rate of 76.25%. Of the respondents, 251 (82.3%) were undergraduates, and 54 (17.7%) were graduate students. One hundred and seventy (55.7%) respondents were male, and 135 (44.3%) were female. On average, the respondents spent 16.6 hours per week browsing the Internet, of

which 4.6 hours were spent on education-related websites. The multi-item measures for the variables exhibited satisfactory reliability, with Cronbach's alpha values of .849 or above. All scale items could be retained for the final data analysis. The scale properties are presented in Table 1.

Table 1

Measurement Scale Properties

Measure	Number of Items	Reliability (Cronbach's Alpha)
Ease of Use	4	.919
Content	4	.868
Reliability	3	.849
Privacy	3	.906
Interaction	4	.864
Satisfaction (Service Quality) 2		.864

RESULTS

To test the hypothesis, a multiple regression analysis was run, with *satisfaction* as the dependent variable, and *ease of use*, *content*, *reliability*, *privacy*, and *interaction* as the independent variable. The value of each variable was computed as the average score of the number of scale items included in the variable. The results of the multiple regression analysis are presented in Table 2.

Table 2

Results of Multiple Regression Analysis (Dependent Variable: Satisfaction)

Independent Variable	β (Standardized Coefficient)	t-Value	Significance
Ease of Use	.453	6.910	$p < .0001$
Content	.193	3.418	$p < .001$
Reliability	.235	4.209	$p < .0001$
Privacy	-.065	-1.228	$p = .220$
Interaction	.116	1.726	$p < .01$

Adjusted R2 = .773

F-value for the regression model = 208.4, with 5 degrees of freedom, $p < .0001$

It is seen from Table 2 that the overall regression model is a good fit, with an adjusted R^2 value of .773. The F-value for the overall model is 208.4, with 5 degrees of freedom, which corresponds to a level of significance at $p < .0001$. As far as the individual independent variables are concerned, *ease of use*, *content*, and *reliability* significantly impact the dependent variable, satisfaction, at the $p < .001$ level, and *interaction* significantly impacts the dependent variable at the $p < .1$ level. Only one independent variable, *privacy*, does not significantly affect the dependent variable. Therefore, the data supports hypotheses H1, H2, H3, and H5, while no support is found for hypothesis H4.

DISCUSSION

Our results indicate that the two incubative factors—*ease of use* and *content*, and two of the three active factors, *reliability* and *interaction*—significantly affect user satisfaction with educational websites, indicating perceived service quality of such websites. One of the active factors—*privacy*—did not show any significant impact on user satisfaction (and therefore, perception of service quality).

Ease of use refers to how easy a website is for both internal navigation within a website and conducting external searches (Santos, 2003). The importance of this attribute for website users was also previously noted by other researchers, such as Abels, White, and Hahn (1999), and Yang (2001). Students typically are likely to be impatient with educational websites that do not offer easy navigation and, therefore, this attribute is found to be a significant determinant of the website's service quality.

Content addresses how information and functions at a website are laid out and presented (Santos, 2003). This includes the use of attractive colors and graphics, and the presence of useful content. Students are not likely to rate the service quality of an educational website high unless the site is visually attractive, and the content is useful for their academic purpose. Because the website is tied to the students' academic requirements, they may be forced to use it even though it is not attractive or useful, but they are not likely to be satisfied by the service provided.

In the original SERVQUAL scale, Parasuraman, Zeithaml, and Berry (1988) stated that *reliability* was the most important dimension of measuring service quality. Students are going to be particularly frustrated with academic websites that are not available when they need it, such as before submission deadlines for assignments, or before examinations. The website ought to load fast on the student's computer (an indicator of efficiency, which was included under the reliability dimension in our study), and the links must work consistently.

Interaction (or communication) is defined as how well the website keeps users properly informed and whether it communicates in a language that is easily understood (Santos, 2003). In our study, we also included Santos' (2003) two other factors, support and incentives, under the interaction dimension. Language was not a critical factor in our study, since all participants were English speakers. Having an effective "help" section was important, however, since many students were relatively new at managing their classes through a website. It was also important to keep the students informed about all updates to the site as the site was the main medium for disseminating course-related information, such as new announcements, assignments, reviews for examinations, etc. Updated information on these elements was likely to be considered critical by the students as such information could have a large impact on the students' performance. The students would also value encouragement from the university and individual professors to use the educational website on a regular basis to be able to fully appreciate its quality of service.

Our study did not find *privacy* to be a significant determinant of student satisfaction or perception of service quality. This is probably due to the fact that the educational websites in question did not offer many privacy-sensitive services, such as financial transactions.

CONCLUSION

Our study investigated the impact of several factors on students' satisfaction and, therefore, perceived service quality of educational websites. In the Internet age, universities and professors are relying more on educational websites to manage students' academic programs as well as individual courses, and to provide a variety of education-related services. It is important to incorporate the right dimensions in these websites, so that students use such websites extensively, thus fulfilling the educators' objectives for offering these websites, such as better course management and cost reduction. Students will use educational websites extensively only if they are satisfied with what these sites offer, thus perceiving a high quality of service from these sites. Our study identified *ease of use*, *content*, *reliability*, and *interaction* to be the major determinants of perceived service quality for educational websites. Consequently, educational website designers should be particularly careful in adequately addressing these dimensions.

REFERENCES

1. Abels, E.G., White, M.D., & Hahn, K. (1999). A User-Based Design Process for Websites. *OCLC Systems and Services*, 15 (1), 35-44.
2. Cai, S. & Jun, M. (2003). Internet Users' Perception of Online Service Quality: A Comparison of Online Buyers and Information Searchers. *Managing Service Quality*, 13 (6), 504-519.
3. Cavana, R.Y., Corbett, L., & Lo, Y.L. (2007). Developing Zones of Tolerance for Managing Passenger Rail Service Quality. *The International Journal of Quality and Reliability Management*, 24 (1), 7-14.
4. Eastwood, D.B., Broker, J.R., & Smith, J.D. (2005). Developing Marketing Strategies for Green Grocers: An Application of SERVQUAL. *Agribusiness*, 21 (1), 81-96.
5. Heung, V.C.S., Wong, M.Y., and Qu, H. (2000). Airport-Restaurant Service Quality in Hong Kong. *Cornell Hotel and Restaurant Administration Quarterly*, 41 (3), 86-96.
6. Lai, F., Hutchinson, J., Li, D., & Bai, C. (2007). An Empirical Assessment and Application of SERVQUAL in Mainland China's Mobile Communications Industry. *International Journal of Quality and Reliability Management*, 24 (3), 244-262.
7. Parasuraman, A., Zeithaml, V.A., & Berry, L.L. (1985). A Conceptual Model of Service Quality and Its Implications for Future Research. *Journal of Marketing*, 49 (Fall), 41-50.
8. Parasuraman, A., Zeithaml, V.A., & Berry, L.L. (1988). SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality. *Journal of Retailing*, 64 (Spring), 12-40.
9. Santos, J. (2003). E-Service Quality: A Model of Virtual Service Quality Dimensions. *Managing Service Quality*, 13 (3), 233-246.
10. Sower, V., Duffy, J.A., Kilbourne, W., Kobers, G., & Jones, P. (2001). The Dimensions of Service Quality for Hospitals: Development and Use of the KQCAH Scale. *Health Care Management Review*, 26 (2), 47-58.
11. Tan, K.C., Xie, M., & Li, Y.N. (2003). A Service Quality Framework for Web-Based Information Systems. *The TQM Magazine*, 15 (3), 164-172.
12. Yang, Z. (2001). Consumer Perceptions of Service Quality in Internet-based Electronic Commerce. Proceedings of the 30th EMAC Conference, Bergen.