A Study on WebQual and its Uuefulness for Measuring Quality of E-Commerce Websites

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***Abstract*:- The Website quality issues are raised from the perspective of the users who are purchasing from the e commerce websites, and the e-qlty plays an important role in making the users in building the trustworthiness of e-commerce website by providing the value for money goods and the valid and secure payment gateways…quality function deployment is chosen as a framework for identifying the ecommerce website quality in demand of users website quality makes the consumer reuse of website, this paper includes the Website Development(WD) and Validation process of a website quality measuring with 12 core dimensions**

Keywords — E-service quality; online stores; customer service; scale development

INTRODUCTION

Web sites are the critical component of rapidly growing phenomenon of e Commerce websites. Worldwide, Internet retail sales have grown from $18.23 billion in the fourth-quarter of 2000 to $25.29 billion in the fourth-quarter of 2001 (Pastore 2002).Web sites play a significant role in the overall marketing communication mix (Berthon etal. 1996)—they complement the direct selling activities from the vendors to consumers, by giving the small scale businesses and a large scale businesses a corporate image, also by provide basic company information to customers. both small scale and large scale Businesses are eager to develop means for measuring and analyzing consumer responses to different kinds of Web site designs. Of particular concern to businesses is the question and the key challenge to web developers whether, based on a consumer's reaction to a Web site, that person is likely to revisit or make a purchase from the site in the future. The importance is given to both practitioners and researchers, it is critical that an instrument specifically designed to measure the consumer's perception of Web site quality is developed following a rigorous and comprehensive method. Existing efforts till today have more weakened their scope, have used weak measurement validity tests, or too small sample sizes. Though valuable, developed with the rigor required for the potentially widely used measure of a critical construct in research and practice are included by none of those measures .This research seeks to address that gap in which the realm of business-to-consumer Web sites are fulfilled, by reporting on the development of an instrument, e-qlty, to measure Website quality. We use a strong theoretical base, a careful instrument development which has included 12 core dimensions.

- Informational fit-to-task
- Tailored communications
- Trust
- Response time
- Ease of understanding
- Intuitive operations
- Visual appeal
- Innovativeness
- Emotional appeal
- Consistent image
- On-line completeness
- Relative advantage

INFORMATION QUALITY

These are based on the literature and interviews with Web designers and consumers this was refined by the consumers who using ecommerce websites Finally it was tested with a third confirmatory sample of 311 Web users. Implications and recommended courses of action are given for Web site managers as well as future research questions for IS researchers. Consequently the communication theory demonstrates the serial nature of information (as a form of communication)website quality and the promotion is generally grows with the word of mouth and that word of mouth is depends on the web design and how ease of use makes users to stay tuned their websites. system, such as the Web, creates information which is communicated to the other users or consumers, who is then influenced (or not)by the information.

literally in addition to first consumer access of information, where the user directly seeks or "pulls" information from the Web, technology is also available but these information included in this article are taken from the users directly who participated in the survey which is filled with questionnaires

Customer Loyalty Phase-Using 11 point Net Promoter Score: Word of mouth is the engine of viral growth and the 11 point Net Promoter Score has become the defect measure of customer and user loyalty. If users are saying positive things about your website or other product to a friend then

growth prospects are good. Conversely, if others have had bad experiences and are telling others then bad news is spreading fast. In both cases you'll want to have a good measure of customer loyalty to act upon.

Product Usefulness-- Using the Technology Acceptance Model(TAM): we have the most usable and elegant product but if no one feels a need to use it, not much else matters. The questionnaire based on the TAM is 20 items, 10 provide a measure of usefulness which can be used as a measure over time or when comparing products with different features from the different competing e commerce websites

One thing fixed: Once done asking what the problem is, used the opportunity to ask users what they would fix in the software or website. While we can't expect users to be designers or do the job for us, it's good to capture those problems that are at the top-of-mind of users. You can't fix everything, but usually there are 1 or 2 things that are not too difficult to fix and the improvement would benefit a lot of users.

METHODOLOGY

Secondly, following those 12 core dimensions to be check in development and validation process, we believe that they are most useful for businesses, an instrument measuring Web site quality must identify in more detail the specific aspects that cause a Web site to be easy to use or useful to consumers. This greater clarity of detail is important conceptually since we may discover empirically that some aspects are more important than others in determining consumer behavior. It is important from a practical business sense because without having a finer grained measure than "ease of use" or "usefulness," business might not know what changes to make in a Web site that was, for example, rated low in "usefulness."

To identify the specific beliefs important to predicting consumer reuse of a Website, we draw upon both management information systems (MIS) and marketing literature, as well as conducting exploratory research and using expert judges. An initial instrument was refined through three different versions.

For each version we carefully analyzed the instrument's measurement validity using large samples (510, 336 and 311 students respectively) and further refined the conceptualization and the questions. The final version contains 36 questions on 12 dimensions of Web site quality. It demonstrates strong measurement validity, and it predicts intention to buy from or revisit a Web site.

BACKGROUND

Quality of a Web site has been evaluated by approaching three major types machine, expert judges, and customer's evaluation. We now consider each of these approaches.

Machine

The machine approach uses software to record automatically the key characteristics of a Web site. The process is completely automated and visitors' opinions are not sought. As one of the developers of this approach notes, it enables the analysis of thousands of systems but lacks data on the perceptions of those who visit the pages (Bauer and Scharl 2000).

Expert as judge

The expert judge approach typically starts with the researchers identifying a set of characteristics for classifying sites. This work has resulted in the creation of taxonomies of varying dimensions and emphasis (e.g., Hoffman 1997; Olsina et al. 1999). In one case, the experts identified the dimensions of Web site quality and then a team of five experts evaluated 120 sites (Psoinos and Smithson 1999). In another case, 68 criteria to assess the information content and ease-of-use of government Web sites were identified by a group of experts (Eschenfelder et al. 1997; Wyman et al 1997) and applied by another expert to evaluate New Zealand government Web sites (Smith 2001).

Customer as judge

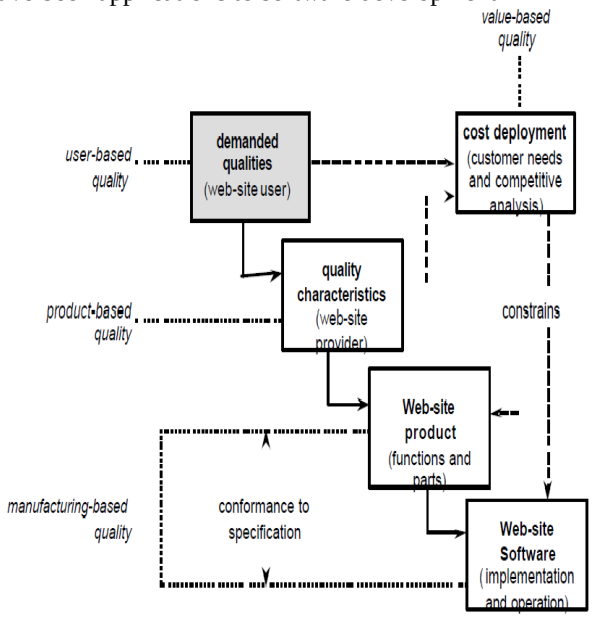
Though the machine and expert approaches may identifyimportant characteristics of Web sites, they ignore the point of view of the customer, the ultimate judge of a Website's success. The final approach is to ask the customer, the visitor to the Web site and consumer of the information, to evaluate the Web site. Though we concur with the desirability of this approach, our assessment is that existing efforts along these lines have not yet meet the methodological requirements needed for such a critical measure. More specifically, they are weak in terms of either the sample size used for analysis (which makes many measurement validity analysis tools suspect), too rapid a convergence on a narrow subset of constructs (which leaves open the question of whether all critical constructs are included)

In our opinion, customer-oriented approaches have not yet completed the rigorous development that is required to produce a valid, comprehensive measure for general use. Without the careful development customarily expected of general use instruments, it would be dangerous to move too quickly to widespread use. In this article, we believe we demonstrate that level of expected rigor in creating WebQual.

THE RESEARCH APPROACH

The research approach adopted is to use quality function deployment (QFD) as a framework for exploring website quality. QFD is a "structured and disciplined process that provides a means to identify and carry the voice of the customer through each stage of product and or service development and implementation" [27]. This approach is also reflected in the work of Strong et al., who underline the importance of going beyond intrinsic data quality: "the quality of data cannot be assessed independent of the people who use data – data consumers" [28]. Based upon a distinction of 'what' and 'how', a series of matrices are used to deploy customer-demanded qualities through design

requirements, product functions, part characteristics, and manufacturing operations into production requirements ([15], [17]). QFD has roots in manufacturing industries but there have been applications to software development



We have adapted QFD for web-site development and incorporated Garvin's [13] different views of quality into our conceptual framework (Fig. 1). This view of quality recognises that although customers might drive quality there is also a place for product-based quality (the supplier perspective),conformance to specification, and a general recognition of cost constraints and competitive pressures as real-world factors to be taken account of. For example, in the context of web-sites, one of the user web-site qualities identified in our research was "is easy to find". A quality characteristic relevant to this user need might be "percent of correct guesses at URL of web-site by users in a panel test" together with some target, such as 90% recognition. Another characteristic related to this quality might be ranking in search engines, where a web-site function associated with the characteristic might be the capacity for automated submission of the site to search engines.

TABLE 1
SUMMARY AVERAGES FOR WEIGHTED AND UNWEIGHTED DATA SETS

No.	Description	Import.	Bath Data		LBS Data		MBS Data		WBS Data	
			Score	Wgt. Score	Score	Wgt. Score	Score	Wgt. Score	Score	Wgt. Score
1	is easy to use	4.35	3.76	16.43	3.37	14.65	3.15	13.85	3.50	15.24
2	has things where you expect to find them	4.11	3.67	15.43	3.50	14.59	3.28	13.70	3.63	14.96
3	is easy to find your way around	4.35	3.67	16.35	3.33	14.46	3.30	14.57	3.70	16.04
4	has fast navigation to pages	4.11	4.30	17.63	3.87	15.93	4.02	16.57	3.83	15.67
5	has useful links to other sites	3.02	2.72	8.78	3.04	9.65	2.67	8.41	2.76	8.61
6	is easy to find	4.11	3.72	15.41	3.74	15.57	3.76	15.63	3.37	13.96
7	facilitates return visits	3.39	3.39	12.07	3.50	12.57	3.30	11.61	3.20	11.46
8	has an attractive appearance	3.76	3.59	13.63	4.02	15.46	2.35	8.67	3.17	11.78
9	has an appropriate style of design for site type	3.56	3.72	13.36	3.49	12.69	2.78	9.71	3.52	12.41
10	provides quick and easy access to finding information	4.54	3.72	17.17	3.43	15.61	3.35	15.17	3.76	17.09
11	provides relevant information	4.41	3.72	16.57	3.46	15.30	3.50	15.50	3.63	16.11
12	provides information at an appropriate level of detail	3.96	3.67	14.67	3.33	13.07	3.20	12.61	3.50	13.96
13	provides information content that is easy to read	4.11	3.98	16.72	3.52	14.65	3.22	13.37	3.59	15.02
14	communicates information in an appropriate format	3.83	3.74	14.48	3.26	12.59	3.07	11.83	3.43	13.24
15	provides information content that is easy to understand	4.04	4.02	16.52	3.57	14.46	3.54	14.50	3.80	15.57
16	has information that is updated regularly	4.11	3.24	13.52	3.78	15.72	3.37	13.89	3.30	13.76
17	has reliable information	4.43	3.72	16.70	3.67	16.50	3.63	16.30	3.59	16.09
18	has a reasonable loading time	4.33	4.26	18.59	3.87	16.85	4.00	17.37	3.91	17.13
19	creates an experience	3.07	2.98	9.13	3.48	11.09	2.52	7.67	3.00	9.30
20	conveys a sense of community	2.72	3.17	8.76	3.24	9.04	2.93	8.22	3.02	8.22
21	keeps the user's attention	3.96	3.22	13.07	3.57	14.39	2.43	9.80	2.98	11.96
22	is a site that feels secure	3.43	3.52	12.80	3.37	12.02	3.28	11.87	3.33	12.04
23	makes it easy to give feedback	3.43	3.22	11.37	3.09	10.89	3.20	11.26	3.22	11.13
24	makes it easy to contact the organisation	4.11	3.96	16.74	3.78	15.98	3.91	16.48	3.74	15.65
		TOTALS:	86.67	345.90	84.27	333.71	77.78	308.56	82.48	326.39

business administration undergraduates, on a four year 'sandwich' course, and 14 responses from a total of 33 M.Sc. students studying Management and Strategic IS, a one-year taught conversion course for graduates. The questionnaire responses were received via e-mail and converted into a form usable in SPSS, the statistical package.

A. Comparing Questionnaire Samples

In order to conduct analysis with a higher level of significance, it was desirable to combine the two questionnaire sets into just one set of data. This makes intuitive sense, since both were sets of students studying similar topics at the same University. The demographics were also quite similar in terms of the proportions of a international students and age. However, there were some differences, such as the length of tuition at the University and familiarity with the Internet. Thus, in order to confirm that the two questionnaire sets can be soundly combined, it was important to compare the distributions of the two samples to establish similarity. To compare the questionnaire sets, two main tests were conducted. A t-test was used to test for differences in means. Levene's test was used to compare for equality of variances. These tests were conducted on the weighted responses for each of the assessed web-sites: Bath, LBS, MBS and WBS. Levene's test confirmed that, for 23 questions, the variances were the same for the samples collected from both groups of students, with 95% confidence. The exception was question 18, which failed the test for three of the four business school data sets; this question was later removed from the analysis. The reason for this result may be due to the bias of network architecture for the local site, in which case it should be removed. The t-test for comparison of means showed that with a few notable exceptions, the means were also the same, again with 95% confidence. The exceptions were some close calls for three questions in single

data sets, which, in the overall context of the complete sets of data, were not considered important.

B. Discussion of the Summary Data

Table 1 shows a number of items for discussion. Firstly, the Import. score gives the average importance ranking for each question, based on the 46 responses. Secondly, the per question average scores for each of the business school data sets is given. This is displayed in two modes: Score is the average for raw, unweighted ratings (with a theoretical range of 1 to 5), and Wgt. Score is the average for weighted ratings (theoretically ranging from 1 to 25). The latter refers to multiplying the unweighted score by the importance for each
respondent, and then calculating the average. Referring to Table 1, we see some interesting patterns in the data. In terms of the importance ratings of particular questions, there are some useful grouping to note. Those questions considered most important, e.g. above upper quartile of 4.16, are all about getting fast and easy access to relevant and reliable information. Here we find, in order of importance, questions 10, 17, 11, 3 and 1 (question 18 was removed from the analysis - see above). At the other end of the spectrum, those questions considered least important, e.g. below the 3.53
lower quartile, are based around the experience, security, links, feedback and return visits. Specifically, questions 20, 5, 19, 7, 22 and 23 are in ascending order of importance.

VI. SUMMARY AND FUTURE WORK

The WebQual instrument was developed from a quality workshop and tested in the domain of business school websites. Analysis of the results suggests that the WebQual instrument has validity, although clearly further testing with larger and varied samples is needed. Although the primary aim of this research was to develop the WebQual instrument, a necessary output of the research is a ranking of business school web-sites. To check for bias it would be desirable to conduct the same WebQual survey using students from each of the business schools to see to what extent the use of Bath students may have biased the results. Future development of the instrument falls into three main areas. Firstly, we will develop the instrument through application to different domains and populations and conduct further statistical tests to ascertain validity and generalizability across domains (e.g., travel bookings). Secondly, we will enhance the questionnaire through comparison with existing instruments - notably Bailey and Pearson for information quality and SERVQUAL for web-site service quality – to improve internal validity and to check for external validity. Thirdly, we aim to deploy the WebQual qualities into web-site characteristics and web-site functions to give the instrument predictive ability. Aligned with this will be tests where WebQual is administered before and after web-site redesign to assess by how much user perceptions of quality have improved. More generally, we will also include benchmarking against exemplary or well-known sites, such as Amazon books, so that organizations can gauge how their WebQual Index compares with industry leaders and the industry average.

CONCLUSION

An e-commerce economy will demand continuous business improvement and organizational effectiveness to compete in the challenging markets. The Internet channel provides better availability Ð 24 3 7 ordering. Customers will see savings in terms of time and cost due to the ability to self-service. E-commerce will increase complexity in staying. It will require employees who are not only fluent on the phone, but who are effective and efficient communicators. Businesses need to be proactive. This will require developing online customer service to stay ahead of competition, maintain loyalty and increase revenue. Open issues must be resolved for the full benefits. Despite the ever-quickening speed of change, three immutable truths will prevail: Quality and business process breakthroughs must occur faster than ever.

Constant improvements in responding to customers must accelerate. Customer expectations must be met beyond anticipation. The need for a creative, effective, quality-conscious and ever-ready work culture cannot be ignored. E-business is becoming an indispensable part of the world, presenting many of the challenges: focus on Efficiency and Customer care in e-business strategy. Customer care is more than an e-mail function, Internet chat or online posting of frequently asked questions. Re-engineering business processes for e-commerce integration will bring added benefit. National governments can play key roles in removing national barriers and ensuring fair competition. Technology suppliers, user companies and individual consumers play equal roles in enabling, adopting and exploiting e-commerce. Customer feedback and surveys must be employed in order to improve the system and maintain the momentum of continuous improvement and assure the effectiveness of the current system.

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