

Information Quality - Crucial Aspect of E-Commerce

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Abstract: *In the absence of an opportunity to physically interaction with products in the online environment, online information plays a critical role in enabling e-Commerce consumers purchase decisions. Thus, it is critical to understand what leads to consumer satisfaction with online information quality. This paper investigates how the quality of certain attributes of e-commerce systems — such as information quality, system quality, and service quality — can be leveraged to enhance business benefits as indicated by customer commitment and customer retention. This study argues that relationship quality, a concept encapsulating the ideas of both trust and satisfaction, is crucial for transferring attributes of e-commerce systems into business benefits. A research model of relationship quality in e-commerce was built, drawing upon information systems and marketing literature. This model was then examined using a survey of 140 online auction sellers at uBid.com. The empirical results confirmed the research model. Information quality, system quality, and service quality affect relationship quality significantly. Relationship quality in turn has significant impact on customer commitment and customer retention.*

Keywords: *E-Commerce, Verbal and Nonverbal Product Information, Decision Support Tools, Information quality., system quality, Service quality, Relationship quality, Online Auction, Sellers.*

I. Introduction:

With the popularity of the internet, the e-commerce market has also been flourishing the scale of the global e-commerce market significantly expands every year, and it expands at a stunning speed.

A main goal for marketers is to keep consumers satisfaction with their shopping experiences as customer satisfaction has a strong impact on consumers , purchase intention, loyalty, and repeat purchases (Rodgers et al., 2005). Information quality (IQ) plays a critical role in enabling online consumers' purchase decisions in the absence of an opportunity to physically interact with products in the online environment (Wixom & Todd, 2005; Kim & Lennon, 2008).

Within an e-Commerce context, verbal and nonverbal information (VI, NVI) play an important role in supporting consumers in their decision making (Kim & Lennon, 2008). In addition, and as there is an abundance of available online information often making it difficult and time consuming to evaluate products, decision support (DS) tools such as product comparison matrices and agents also help consumers to make better decisions (Park & Gretzel, 2010)

This research investigates how the quality of certain attributes of e-commerce systems — including information quality, system quality and service quality— can create tangible business benefits. The empirical results of this study suggest that information practitioners should work with their colleagues in the marketing department to leverage information technology attributes of their e-commerce systems in order to reap desired business benefits. Rapid advances in information technology have —dramatically changed how services are conceived and delivered [Massey et al. 2007 p.278]. Web-based information technology has enabled online services, while traditional business-customer interactions are now mediated by e-commerce systems maintained by service providers rather than salespeople [Evanschitzky et al. 2004; Meuter et al. 2000]. An e-commerce system is typically a web-based information system that provides online transaction services for both buyers and sellers. An e-commerce service provider (often called the intermediary) is a third-party institution that uses e-commerce systems to facilitate transactions between buyers and sellers in its online marketplace by collecting, processing, and disseminating information [Pavlou and Gefen 2004; Sarkar et al. 1995]. Examples of e-commerce service providers include eBay.com, Amazon.com, and uBid.com.

According to DeLone and McLean [2004], there are three types of attributes in e-commerce systems: the web content of e-commerce websites, the technical aspect of the e-commerce system, and the services delivered through the e-commerce system. The quality of these attributes — here after labelled as information quality, system quality and service quality respectively — may impact business benefits rooted in customer commitment and customer retention. Clearly, e-commerce service providers should leverage the attributes of their e-commerce systems to help retain their customers and to maximize business benefits.

Despite its importance to e-commerce practitioners, the mechanism through which the attributes of e-commerce systems affect business benefit factors such as customer commitment and customer retention remains

unclear. DeLone and McLean [2004] argued that information quality, system quality, and service quality can influence business benefits indirectly through two factors: intention to use/actual use of e-commerce systems and user satisfaction. However, not all researchers share this viewpoint. For instance, Molla and Licker [2001] proposed an e-commerce model that, unlike DeLone and McLean's model, includes trust, which is an important factor for e-commerce success. More recently, Cyr [2008] also studied how attributes of the e-commerce system can influence customer loyalty through trust and satisfaction.

This study offers an alternative view of the mechanism through which the attributes of e-commerce systems can impact business benefits (Figure 1). Specifically, business benefits are indicated by two factors: customer commitment and customer retention. The quality of the relationship between customers and the e-commerce service provider is one — albeit probably not the only one — key factor that connects attributes of the e-commerce system and business benefit factors.

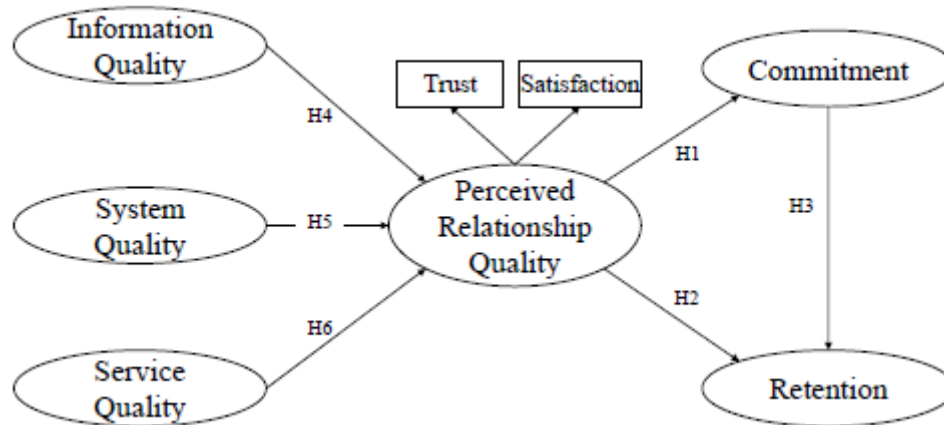


Figure 1: Research Model

The values of this paper lie in the synthesis of the prior research on trust and satisfaction from a relationship quality perspective. Several IS researchers have studied how attributes of e-commerce systems influence trust [e.g., Cyr 2008; Flavian et al. 2006; Wang and Emurian 2005] and satisfaction [e.g., DeWulf et al. 2006; Molla and Licker 2001; Szymanski and Hise 2000]. Relationship quality allows us to synthesize the prior research on these two important concepts in a parsimonious way. This synthesis has the following advantages. First, it enriches our understanding of trust and satisfaction. From prior relationship quality research, we know that trust and satisfaction are both rooted in customer relationships. Prior research on the impact of the attributes of e-commerce systems on trust and satisfaction respectively can be knitted together to give insight into how the design of e-commerce systems influences the customer relationship. The synthesis can further specify how relationship quality is reflected at different magnitudes by trust and satisfaction. Second, the synthesis of trust and satisfaction in relationship quality helps us to connect the attributes of e-commerce systems to business benefit factors more explicitly and effectively, given that relationship quality has been closely tied with business benefit factors in marketing literature [e.g., Crosby et al. 1990; Dorsch et al. 1998; Dwyer et al. 1987; Hennig-Thurau and Klee 1997; Kumar et al. 1995; Lages et al. 2005; Leuthesser 1997; Palmatier et al. 2006]. The relationship quality literature suggests that neither trust nor satisfaction alone can fully explain how the attributes of e-commerce systems influence business benefits; taken together, however, they appear to be able to do so. This gives new opportunities for IS research to understand the impact of system attributes, which is a promising new direction for IS research [Benbasat and Barki 2007]. In fact, DeLone and McLean [2004] argued explicitly that in order to study the —net benefits of e-commerce, one should refer to marketing research literature in addition to IS literature. This research demonstrates the usefulness of this approach and provides a convenient vehicle for doing so through studying relationship quality.

This research focuses on one type of e-commerce systems: online auction, and one type of customers: sellers. Both sellers and buyers are considered customers of online auction systems (e.g., eBay.com or uBid.com) and both are critical for the success of online auctions. Yet the existing e-commerce literature focuses exclusively on buyers, without taking the sellers into consideration. In light of the fact that more and more individuals sell things online, studies from their perspective beg attention.

The structure of this paper proceeds as follows. First, the concept of relationship quality from the marketing literature is introduced, leading to hypotheses about its relationships with attributes of e-commerce systems and business benefits factors. Second, the research methods are presented, followed by data analyses and results. Thereafter, the findings, limitations, contributions, and implications of this research are discussed.

II. Research Model:

Satisfaction with Information Quality (IQ):

It is defined as an affective state capturing consumer's emotional reaction to the different types of product information available on a website (McKinney et al. 2002). Wixom & Todd (2005) showed that object-based consumer beliefs regarding IQ lead to object-based consumer attitudes regarding information satisfaction, which ultimately contributes to forming consumer attitudes towards and intention to purchase from a website.

Perceived Quality of Verbal Information (VI):

Refers to consumers' assessment of the quality of verbal product information (i.e. textual product descriptions) along such dimensions as completeness, accuracy, format, and whether it is up to date (Nelson et al. 2005; Wixom & Todd, 2005). Kim & Lennon (2008) suggest that VI helps consumers evaluate products, make more informed decisions, and improve their satisfaction with their online shopping experience.

Perceived Quality of Nonverbal Information (NVI):

Refers to the perceived quality of visual presentations of product information (e.g. images of a product) (Chauet et al. 2000). Kim & Lennon (2008) suggest that NVI helps consumers evaluate a product and improve their satisfaction with their online shopping experience.

Perceived Quality of Decision Support (DS) Tool:

Consumers are increasingly utilizing DS tools in their online shopping to help them navigate the abundance of choices and associated information for products they may be seeking (Park & Gretzel, 2010). Such tools enable product comparisons, finding similar products with the same brand, finding a product's best price and showing product reviews by others. DS tools provide consumers additional verbal and nonverbal product information and, as such, we argue that they would be associated with information in customers' minds.

Decision-making Style (DMS):

It is defined as "a mental orientation characterizing a consumer's approach to making choices" (Sproles & Kendall, 1986, p. 268.)

Consequences of Relationship Quality:

Relationship quality can have various consequences depending on what context it is studied in. For instance, in studying the relationship between IS departments and IS users within organizations, Carr [2006] proposed two consequences of a high quality relationship: identification with the IS department and voluntary participation with the IS department. Given the focus of this study on business benefits in the e-commerce context, two different consequences of relationship quality, customer commitment and customer retention, are of particular interests. These two factors are considered two organizational benefits of e-commerce in DeLone and McLean's E-Commerce Model [2004]. Marketing researchers have argued that a company's current customers provide the most reliable source of future revenues and profits [e.g., Lemon et al. 2001], therefore keeping sellers dedicated to an online marketplace — that is, to make sellers committed and subsequently willing to return to and sell on the marketplace in the future — is extremely important for the service provider that maintains this marketplace.

Antecedents of Relationship Quality:

To conceptualize the attributes of the e-commerce system, this study refers to DeLone and McLean's E-commerce Success Model [2004]. Based on a comprehensive review of studies on their original IS Success Model [1992], DeLone and McLean offered a revised IS Success model [2003]. One of the key revisions is the inclusion of service quality [Petter and McLean 2009]. Service quality was added because —the changing nature of IS required the need to assess service quality when evaluating IS success! [Petter and McLean 2009 p.160]. They [2004] later tailored the revised IS Success Model to the e-commerce context, resulting in the E-commerce Success Model. According to the E-commerce Success Model, there are three types of attributes of the e-commerce system, whose qualities can be labelled as information quality, system quality, and service quality. It is noteworthy that information quality and system quality were believed sufficient to capture the essential attributes of information systems until recently, when service quality began to be perceived as important with the advent of e-commerce and the customer's demand for support from e-commerce service providers [Molla and Licker 2001; Pitt et al. 1995]. Below are brief descriptions of these three attributes, mostly from DeLone and McLean's [2004] and Wixom and Todd's [2005] work.

III. Survey Conducted By Clavis E-Commerce Information Quality Insight 2013:

Clavis Technology has undertaken a comprehensive analysis of the quality of information for more than 150 leading brands, across 17 of the largest consumer goods online stores in North America. This is the second year of the study which involved analyzing the content for more than 2,000 products on more than 12,000 web pages. The research shows significant gaps in the quality of product information across all the online stores analyzed using Clavis e-Commerce Insight.

Survey Administration:

To test the research model, an online survey was conducted. An online questionnaire was designed using Active Server Pages (ASP) and Microsoft Access. The questionnaire was reviewed by experienced researchers and practitioners at uBid.com, an online auction service provider, who provided suggestions on the content and wording of the items and the overall design of the questionnaire. Their suggestions were integrated and the questionnaire was revised accordingly. With approval from top managers in the company, a contact person at uBid.com sent a recruitment letter with the hyperlink to the online questionnaire to 1500 randomly selected uBid.com sellers. Three gift cards of \$100 each were raffled off as incentives. To enhance the response rate, a reminder email was sent one week later. Among all the responses, thirty-six had at least one third of all the questions unanswered and thus were dropped, resulting in a final sample of 140 responses. Table 1 shows the demographic characteristics of the sample.

A wave analysis was conducted to assess the non-response bias. Specifically, using SPSS, the early responses (the first 10% of the sample) with the late responses (the last 10% of the sample) were compared in terms of their demographic data. None of the demographic characteristics were different between these two groups at the .05 significance level. Therefore, the non-response bias should not be a significant issue for this study.

| Variables | Sample Composition |
|--|--|
| Age | Mean=41; std.dev=13; range 22-75 |
| Gender | Female 27% Male 73% |
| Highest Education Level Attained | Highest Education Level Attained Graduate Degree 18% Some Graduate Work 6% University or College Degree 37% Some University of College 25% Secondary School or Less 13 |
| Number of Previous Bids 1-3 8% | 1-3 8% 3-10 18% More than 10 74% |
| Number of Anticipated Future Bids within a Month | 1-3 22% 3-10 28% More than 10 50% |

Conclusion:

1. Over two third of online product information pages fail to meet expectation.
2. Product Name: Five Percent of product names were incomplete, inaccurate or badly presented.
3. Product Details: Problem such as missing information were identified in 27% of product pages.
4. Warnings and directions: An issue for more than half of product page

IV. Conclusion:

The Clavis e-Commerce Information Quality Insight 2013 Study uncovered significant gaps in the quality and presentation of online product information on leading e-Commerce sites. If e-Commerce is to continue to grow at the rates predicted by the analysts, consumers need access to accurate, complete and reliable information online. Without it buyers won't be able to find your products, fully understand their features and benefits, and make the right buying decisions. Of course information about your products on the internet impacts more than just online store sales. E-commerce accounts for only a little more than five percent of the overall retail market today (and even less in terms of online grocery sales), but online data influences a much greater share of transactions - over 80 percent in some categories.

In the bricks and mortar world your sales teams invest a lot of time and effort into managing their shelf placement with top retailers and the visibility of your products in leading stores. Similar effort needs to be invested by brand owners when it comes to managing product listings and product information across online and mobile channels.

On the internet information is the key to success. For brands to win online they must ensure that the information available about their products is more

Complete, more widely available, better presented and more accurate, than that of their competitors.

Given the current state of play there is a real opportunity for forward thinking brand owners to increase market share by proactively tracking and managing their online portfolio and the presentation of their products on top e Commerce websites.

Online shoppers may be keen to buy, but because they don't physically see or hold products, manufacturers need to work with their retail partners to make sure their product information is complete, accurate and properly presented in order to improve online sales performance, and more importantly protect brand integrity and grow market share across all channels.

References:

- [1]. Bagozzi, R.P., and Yi, Y. "On the Evaluation of Structural Equation Models," *Journal of the Academy of Marketing Science* (16:1), 1988.
- [2]. Barclay, D., Higgins, C.A., and Thompson, R.L. "The Partial Least Squares (PLS) Approach to Causal Modelling: Personal Computer Adoption and Use as an Illustration," *Technology Studies* (2:2), 285-309 1995.
- [3]. Bearden, W.O., Netemeyer, R.G., and Mobley, M.F. *Handbook of Marketing Scales: Multi-Item Measures for Marketing and Consumer Behavior Research* Sage Publications, Newbury Park, CA1993.
- [4]. Benbasat, I., and Barki, H. "Quo vadis, TAM?," *Journal of the Association for Information Systems* (8:4), 211-218 April 2007.
- [5]. Bhattacharjee, A. "Understanding information systems continuance: An expectation-confirmation model," *MIS Quarterly* (25:3), 351-370 2001.
- [6]. Bhattacharjee, A., and Premkumar, G. "Understanding changes in belief and attitude toward information technology usage: A theoretical model and longitudinal test," *MIS Quarterly* (28:2), 229-254 2004.
- [7]. Carr, C.L. "Reciprocity: The golden rule of IS-user service relationship quality and cooperation," *Communication of the ACM* (49:6), 77-83 2006.
- [8]. Chin, W.W., Marcolin, B.L., and Newsted, P.R. "A partial least squares latent variable modelling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study," *Information Systems Research* (14:2), 189-217 2003.
- [9]. Compeau, D.R., Higgins, C.A., and Huff, S. "Social cognitive theory and individual reactions to computing technology: A longitudinal study," *MIS Quarterly* (23:2), 145-158 June 1999.
- [10]. Crosby, L.A., Evans, K.A., and Cowles, D. "Relationship quality in services selling: An interpersonal influence perspective," *Journal of Marketing* (54:3), 68-81 1990.
- [11]. Cyr, D. "Modelling web site design across cultures: relationships to trust, satisfaction, and e-loyalty," *Journal of Management Information Systems* (24:4), 47-72 2008.
- [12]. Cyr, D., Head, M., and Ivanov, A. "Design Aesthetics Leading to m-Loyalty in Mobile Commerce," *Information & Management* (43:8), 950-963 2006.
- [13]. Davis, F.D. "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS Quarterly* (13:3), 319-342 September 1989.
- [14]. De Wulf, K., Odekerken-Schroder, G., and Lacobucci, D. "Investments in consumer relationships: A cross-country and cross-industry exploration," *Journal of Marketing* (65:4), 33-50 2001.
- [15]. De Wulf, K., Schillewaert, N., Muylle, S., and Rangarajan, D. "The role of pleasure in Web site success," *Information and Management* (43:4), 434-446 2006.
- [16]. DeLone, W.H., and McLean, E.R. "Measuring e-commerce success: Applying the DeLone & McLean information systems success model," *International Journal of Electronic Commerce* (9:1), 31-47 Fal 2004.
- [17]. Diamantopoulos, A., and Winklhofer, H.M. "Index construction with formative indicators: An alternative to scale development," *Journal of Marketing Research* (38:2), 269-277 2001.
- [18]. Dorsch, M.J., Swanson, S.R., and Kelley, S.W. "The role of relationship quality in the stratification of vendors as perceived by customers," *Journal of the Academy of Marketing Science* (26:2), 128-142 1998.
- [19]. Dwyer, F.R., Schurr, P.H., and Oh, S. "Developing Buyer-Seller Relationships," *Journal of Marketing* (51), 11-27 1987.
- [20]. Evanschitzky, H., Iyer, G.R., Hesse, J., and Ahlert, D. "E-satisfaction: A re-examination," *Journal of Retailing* (80), 239-247 2004. Flavian, C., Guinaliu.