Association for Information Systems
AIS Electronic Library (AISeL)

AMCIS 2007 Proceedings

Americas Conference on Information Systems (AMCIS)

December 2007

Antecedent factors influencing customer decision support satisfaction from e-WOM systems

Chul Yoo
Seoul National University

Junghoon Moon
Information and Communications University

Youngchan Choe
Seoul National University

Antecedent factors influencing customer decision support satisfaction from e-WOM systems

Chul Woo Yoo
Seoul National University
userid7@snu.ac.kr

Junghoon Moon[a]
Information and Communications University
jmoon@icu.ac.kr

Young Chan Choe
Seoul National University
aggi@snu.ac.kr

Yong Jin Kim
Sogang University
yongjkim@sogang.ac.kr

ABSTRACT

The main goal of this study is to investigate the factors influencing customer decision support satisfaction with the e-commerce site, including e-WOM (electronic word of mouth) system interactivity and EQ (e-Quality). We also identify the antecedents to e-WOM system interactivity and EQ, as well as the outcome of decision support satisfaction. Most leading e-commerce companies have developed their own e-WOM systems on their web sites. The e-WOM system is designed to help customers' purchase decision making on the web site. Compared with conventional WOM based on verbal words, e-WOM is shared with other customers through text, image, video clips, sound and so forth. What is more, each e-commerce site supplies various technical supports for customers through e-WOM systems.
We propose a structural model based on EQ and Interactivity theories. We hypothesize that consumers reach a high level of decision support satisfaction when they feel a high level of Interactivity between an e-WOM system and e-Quality on an e-commerce site. Decision support satisfaction is, then, hypothesized to boost customer e-Loyalty.
The findings presented here are from a pilot study and implications are further discussed.

Keywords

e-WOM, e-Quality, interactivity, decision support satisfaction, e-loyalty

INTRODUCTION

[a] Corresponding author

The advent of the Internet has brought about a word of mouth revolution (Dellarocas 2003). Now, e-WOM has a tremendous impact on online purchases. As we have seen, especially from e-Bay, e-WOM system works as a huge factor leading to the success of an e-business (Grant 2002).The objective of this study is to investigate how an e-WOM system affects customers' decision making, and to demonstrate how decision support satisfaction affects e-Loyalty. To accomplish the goal of this study, Interactivity theory and an EQ (e-Quality) model are used. Survey research is conducted to demonstrate the proposed model for this study.

LITERATURE REVIEW AND HYPOTHESES

E-WOM

Word of mouth is defined as "all informal communications directed at other consumers about the ownership, usage, or characteristics of particular goods and services or their sellers (Westbrook 1987)." Traditional word of mouth has been shown to play an important role in a customer's purchase decision (Richins and Root-Shaffer 1998).
Appearing with the advent of the Internet, e-WOM became both a source and outlet of communication to consumers (Hennig-Thurau et al. 2004). Bickart and Schindler (2001) argued that e-WOM may have higher credibility, empathy and relevance to customers than marketer created sources of information on the Web. Wang (2005) found that e-satisfaction ratings affect customers' decision making process. In this sense, many previous studies have focused on the importance of e-WOM on a customers' attitude and behavior (Chatterjee 2001, Gruen et al. 2006, Chevalier and Mayzlin 2005). However, to date no studies have explained the structural and behavioral component of e-WOM systems and their impact on a customer's decision making. This study will identify factors of e-WOM systems in terms of Interactivity and their impact on e-Quality, which help a customer's decision making on e-commerce sites.

Interactivity Theory

The definition of 'interaction' is referred to as communication, reciprocal or mutual action through mutual feedback (Goffman 1967). Interaction is regarded as one of the important advantages of the Internet. Through diverse web features, the Internet allows users to mutually interact, invalidating the restrictions of space, time and relationships (Churchill et al. 2004). e-WOM has especially become an open space for the allowance of sharing objective or subjective information among customers.
Johnson et al. (2006) found that customers' attitudes towards an e-commerce site are improved when the interactivity of the web site is high. They pointed out that the core of Interactivity is composed of 'Reciprocity,' 'Responsiveness,' 'Nonverbal information,' and 'Speed of response,' as illustrated in Figure 1.
Johnson et al. (2006) argued that the concept of interactivity is a formative construct constituted by these four facets. That is, interactivity is a second-order formative construct to reciprocity, responsiveness, nonverbal information, and speed of response. Reflective measurement is a common approach in empirical studies where a latent variable explains the variation in its indicators (Bollen and Lennox 1991). On the other hand, under a formative perspective, indicators are assumed to cause a latent variable (Bollen 1989). The variation of the latent variable is explained by its indicators, a change in the latent variable is not necessarily accompanied by a change in all of its indicators; rather if any one of the indicators changes, then the latent variable would also change (Diamantopoulos 1999). In this sense, the four first-order factors cause variation in the second-order construct, of interactivity, as shown in Figure 1.
The original concept of reciprocity is consumers' opportunity to participate jointly in conversing with firms as opposed to hearing a monologue from them. Although an e-WOM system has customers' participation as its foundation, each e-WOM system has a different level of participation authority for user to access the Internet forum so that reciprocity may not be

guaranteed in the case of arbitrary deletion of users' opinions. Thus, e-WOM system interactivity is used as a concept for a system that guarantees e-WOM's preservation and that customers can easily approach to the Internet forum.
Responsiveness is a reply that is directly related, and relevant, to the query. In e-WOM system interactivity, e-WOM provided by the website has been altered to e-WOM that fulfills customers' requirements. For example, e-WOM from recent websites lacks relevant information, rather provides insincere, simple, and repetitive pieces of information, which is ineffective for customers, resulting in low e-WOM responsiveness.

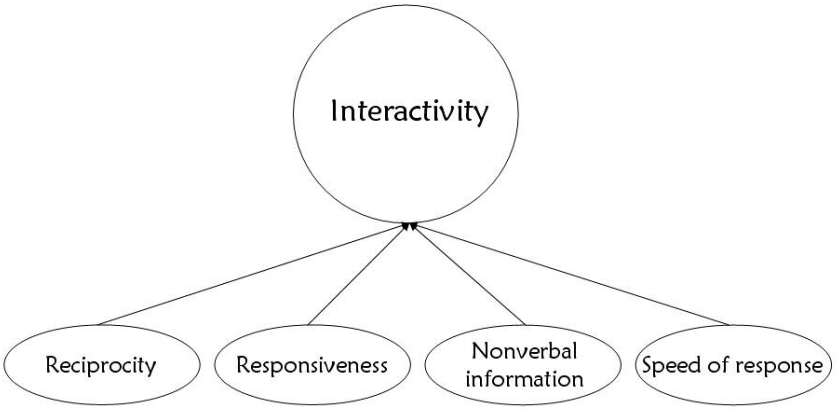

Figure 1. Interactivity model (Johnson et al. 2006)

In recent years there has been an explosion of research interest in the role of nonverbal information in communication (Buck & VanLear 2002). Nonverbal information refers to the use of multiple channels for communicating information. An example is to use not only text but images, video clips, or sound to deliver information. Images or video clips may add richness to the established text, resulting in greater information. This is especially true for products of e-commerce sites which are heterogeneous or require direct experience. Nonverbal information may have a considerable impact on consumer decision support satisfaction. Ramirez Jr. and Burgoon (2004) stated that increases in interactivity richness will result in reduced uncertainty. Another reason for the importance of nonverbal information is that in the context of e-commerce, the nature of any particular product has an important impact on consumer tasks including the processes of searching for and acquiring information, as well as making decisions about purchases (Levin et al. 2003, McCabe and Nowlis 2001). E-commerce sites achieve better performance when interfaces correspond to the nature of particular tasks to be accomplished (Goodhue and Thompson 1995, Vessey 1991). These results can be equally applied to the e-WOM system. Recently, more websites allow customer ratings extended to the text, video clips filmed by customers, uploading photographs taken by customers, and so on. Measuring nonverbal information means to evaluate a part of e-WOM system's support for interactivity.
Speed of response refers to how fast the response is. Interactivity is achieved when users are provided with immediate feedback and perceive that a mediated environment is modified based on their input (Klein 2003). When a customer has reflected a complement or dissatisfaction of a product or service on the e-WOM system, the speed of their response is high when replies from other customers are added quickly. The above four factors constitute e-WOM system interactivity.
Thorson & Rodgers (2006) has asserted a high correlation between high interactivity of e-WOM within the website and positive attitude of the customers. Ballantine (2005) also supported the idea that customers may feel greater satisfaction from high interactivity of the website. Fiore (2005) demonstrates that systems that utilize images for interactions induce higher purchases decision than systems without images. In addition, many previous studies (Ballantine 2005, Kim et al. 2007) verified that high interactivity of websites induces high customer satisfaction. Thus, this study posits that the interactivity level of an e-WOM system on the e-commerce site influences the customer's decision making satisfaction in shopping. Hypothesis 1 is developed based on the position of this study, as stated above.

H-1: e-WOM system interactivity will have a positive effect on decision making satisfaction of the customers using the website.

EQ Model

There exist several studies dealing with the quality of e-business website. Palmer's (2002) website usability model introduced several features, such as quality content, more navigable sites, lower download delay, responsiveness, and interactivity. Doll and Torkzadeh (1988) produced a comprehensive model which contains content, accuracy, format, reliability. Zhang et al.(1999) included such concepts as access restriction and privacy, the importance of a system's first impression, high quality of basic functions. Although all of these models provide prominent insights into the construction of a successful e-business system, none of them encompass all of the characteristics appropriate to current e-business environments.

The current e-business environments are different from the past data processing environments in that the Internet, web, and hypermedia technologies are highly dynamic and interactive. Such dynamic and interactive nature of the environment calls for a different set of success factors for the new e-business, including improved information accuracy, information relevance, and information completeness, along with the user-friendly interface, overall design of the web, and history maintenance (Thuring et al. 1995, Mithas et al. 2006).

Kim et al. (2005) argued that the structure of success factors of e-business must be different from traditional IS success models because of the completely different environment of the Internet. They pointed out, "traditional approaches to DQ (Data Quality) fall short in the context of e-business systems." Accordingly, they proposed E-quality (hereafter EQ) model (Kim et al. 2005) in order to provide a better understanding of web-based information system success. EQ offers the solutions for the web usability problem which could not be resolved by the traditional Data Quality model, including irrelevant information, disorientation, and cognitive overhead. Considering both production and delivery aspect of information, they set up the EQ model with information content, information form, and information time as its structure to address the usability problem. Table 1 illustrates the framework of the EQ model

Table 1. The EQ framework adapted from Kim et al. (2005)

EQDimension	Meaning	EQ Constructs
Content (Product) Aspect of Information Quality		
Content	This EQ dimension deals with the intrinsic information content issues that are geared toward providing users with accurate, relevant, and complete information, thereby addressing primarily the problem of irrelevant information in e-business systems.	**Information Accuracy**: Freedom from mistakes in the information content and hyperlinks provided within Web pages.
		Information Relevance: Pertinence to users' interests of the information content and hyperlinks provided within Web pages.
		Information Completeness: Availability as needed of the information content and hyperlinks within Web pages for users to complete specific tasks in an effective manner.
Presentation and Delivery (Service) Aspects of Information Quality		
Form	This EQ dimension deals with information presentation* issues that are geared toward enhancing users' cognition, thereby primarily addressing the problem of cognitive overhead.	**Interface Structural Quality**: Primarily comprises interface consistency and structural awareness. Interface consistency implies consistency in the structural arrangement and style of information content and hyperlinks within an e-business application. Structural awareness implies that the interface makes the user aware of the larger structure of the information content in the Web pages in the e-business application.
		Information Packaging Quality: Refers to how effectively a variety of information in various media types is packaged within the Web interface for presentation to end users. Includes the amount and cohesiveness of information content and hyperlinks presented within the interface, and semantic relationships among them.
		Information Accessibility: Refers to the ease and efficiency with which a user can navigate within an e-business application to access and retrieve desired information.
Time	This EQ dimension deals with information delivery** issues that are geared toward providing users' better control over temporal	**History Maintenance Quality**: Refers to the flexibility and comprehensiveness of features that an e-business application provides to its users for specifying and maintaining history of user actions and data and system states of the application.

	aspects of their actions thereby providing them with a sense of temporal orientation and, thus, addressing primarily the problem of disorientation in e-business systems. This dimension also deals with providing temporally accurate, or current, information to users of e-business systems.	**Information Delivery Quality**: Refers to the flexibility and comprehensiveness of features that an e-business application provides to its users for specifying and controlling the temporal relationships among the various hypermedia components for effective delivery of integrated hypermedia information to users.
		Information Currency: Refers to the temporal accuracy of information content and links on Web pages. This construct also captures the notion of age of information on Web pages which can be measured by the amount of time that has passed since the information on the pages was last updated.

The EQ content dimension deals with the intrinsic information content issues that are geared toward providing users with accurate, relevant, and complete information. In other words, content influences whether or not visitors to the website achieve their purposes from the accurate, relevant, and complete information that the website provides. Information accuracy means that the information from the website is based on truth and is flawless. Information relevance refers to the relationship between the visitors' interest area and the information obtained from the website, and whether that information is related to the visitors' task. Finally, Information completeness relates to providing the whole-range of information that the visitors require to efficiently complete their work.

The EQ form dimension addresses the issues related to information presentation that the website provides. It includes interface structure quality, information packaging quality, and information accessibility quality. Interface structure quality is evaluated through the consistency of the website's interface and how user-friendly it is structure-wise. If the website's interface is too complicated for easy use, then that website's interface structure quality will be evaluated as low. The extent to which the website package content based on similar characteristics affects information packaging quality. Information accessibility quality represents how easily and efficiently users can access the information they want.

The EQ time dimension deals with the time related issues of information presentation that visitors make sense of their position and the information within a time frame when surfing the web. It is rated by history maintenance quality, information delivery quality and information currency. History maintenance quality refers to the history of user action within a website's application. If this is high, users will not lose their way while surfing the website. Information delivery quality refers to the flexibility and comprehensiveness of features that an application provides to its users for specifying and controlling the temporal relationships among the various hypermedia components for effective delivery of integrated hypermedia information. Effective management of the order of hypermedia component presentation is also a key aspect of information delivery quality. Information currency refers to the contents' temporal accuracy or information that is up-to-date for various links. All of the factors discussed above are used to evaluate the EQ.

The difference between e-WOM and traditional WOM results from its different environment: the Internet. Sicilia et al. (2005) showed that interactivity leads to higher favorability toward the website. Thus, it is assumed that e-WOM system interactivity has a relationship with the EQ that represents the general quality of the website because higher e-WOM system interactivity positively influences the attitude towards the website. Based on this argument, this study establishes the second hypothesis:

H-2: e-WOM system interactivity will positively influence EQ of the web site.

Zviran et al. (2006) demonstrate that a higher degree of web design and usability is associated with greater perceived user satisfaction. In this sense, when the customer feels high EQ from the web site, he/she will more likely to be satisfied with diverse purchase decision supports from the site. The third hypothesis is suggested as the following:

H-3: EQ will positively influence the customer's decision support satisfaction in shopping on the web site.

Based on the three hypotheses established earlier, it is assumed that EQ works as a mediator between e-WOM system interactivity and purchase decision support satisfaction.

E-Loyalty

E-Loyalty refers to the customer's favorable attitude towards an electronic business, resulting in repeat visiting and buying

behavior (Anderson and Srinivasan 2003). Gommans et al. (2001) pointed out that basically, the concept of e-Loyalty extends the idea of traditional brand loyalty to online consumer behavior; however, there are unique aspects in the area of internet based marketing and buying behavior. Shankar et al. (2003) emphasized the importance of building prior e-Loyalty, showing that, whereas the level of customer satisfaction for a service chosen online is the same as when it is chosen offline, e-Loyalty to the service provider is higher than offline brand loyalty. They also found that the relationship between overall satisfaction and e-Loyalty is further strengthened compared to brand loyalty. Garrity et al. (2005) demonstrated that decision support satisfaction plays an important role in decision making and web-based information system, and is related to customer e-Loyalty. Accordingly, another hypothesis is established based on the literature review.

H-4: The customer's Decision Support Satisfaction will positively influence their e-Loyalty level.

RESEARCH MODEL DEVELOPMENT & DATA COLLECTION

This study develops a research model based on Interactivity theory and the EQ model. It includes four hypotheses, as proposed above. Survey research will be conducted to identify the relationships between e-Quality, e-WOM system interactivity, decision support satisfaction and e-Loyalty. The research model of the current study is presented in Figure.2

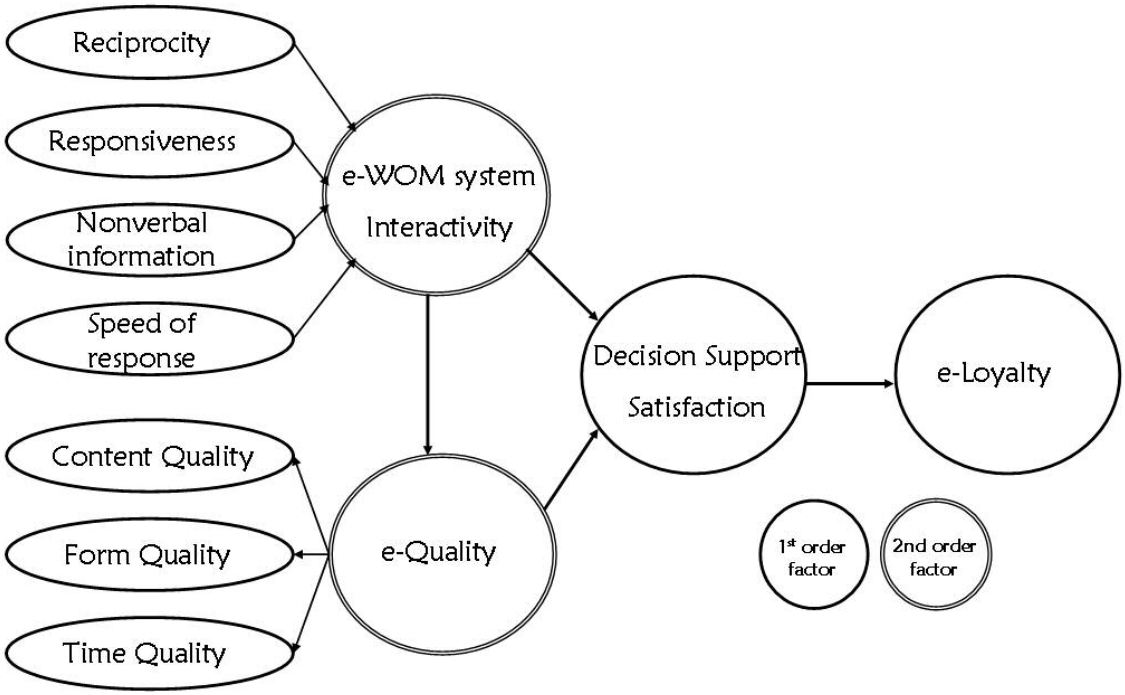

Figure 2. Research model

EQ, as a second-order factor, is explained in terms of content, form and time aspect (Kim et al. 2005). Appendix A shows the details of the survey questionnaire. Next, we modified Johnson et al.'s (2006) measurement model for this study, and a total of 14 measurement items were selected for e-WOM systems Interactivity. Based on the interactivity theory, the items were allocated into e-WOM system's reciprocity, responsiveness, nonverbal information, and speed of response (see Appendix A for details).

Decision support satisfaction was measured with the questions as to whether or not e-WOM system was of great help when

shopping, which consequently let a website sit on top of the primary order. We modified the measure items for decision support satisfaction from Garrity et al. (2005). As for e-Loyalty, we utilized the concept from Anderson and Srinivasan (2003) and Zeithaml et al. (1996).

Data was collected using both a paper-based survey and a web-based survey system. A total of 120 responses were collected. All participants were residents of South Korea. All of them had visited e-commerce sites and purchased goods at least 1~2 times a week. The average was 1.59 times. 41.6% of subjects were male and 58.4% were female. The age of respondents ranged from 20 to 40 years old, and most respondents ranged from 26 to 30 years old. Most of them (54.1%) were undergraduate and graduate students. Half of respondents (55.0%) were customers of three leading e-commerce companies, gmarket.co.kr, auction.co.kr, and interpark.com. The e-WOM systems of these three e-commerce sites are very active. In addition, they support advanced e-WOM systems, such as premium e-WOM system including images.

DATA ANALYSIS AND RESULTS

Assessment of Measurement Model

Data analysis was performed using the Partial Least Squares (PLS) method, as well as several other statistical methods for the assessment of the measurement model and the structural model. PLS has the advantage that it is quite robust with regard to several statistical inadequacies (e.g. skewness or multicollinearity of the indicators, misspecification of the structural model) and that the latent variable scores always conform to the true values (Haenlein and Kaplan 2004).

We computed the composite reliability, cross-loadings, and AVE (Average Variance Extracted) and investigated the internal reliability, convergent validity, and discriminant validity. There are no overall model fit statistics produced by PLS. It provides t-values for the loadings and R^2 values for overall fit utilizing either a jackknife or bootstrap technique. Cross-loadings need to be calculated as the correlation of each standardized item with its factor scores on the constructs. Assessing the confirmatory factor analysis in PLS is then done by verifying that the AVE of each construct is larger than its correlations with the other constructs and that each item loading in the factor analysis is much higher on its assigned construct than on the other constructs. Good model fit is established with significant path coefficients, acceptably high R^2 and internal consistency being above .70 for each construct (Thompson et al. 1995). Convergent and discriminant validity are assessed by checking that the AVE of each construct is larger than its correlation with the other constructs, and that each item has a higher loading on its assigned construct than on the other constructs (Gefen et al. 2000). The composite reliability and AVE of each latent variable used in this study are provided in Appendix A.

Table 2. Correlations of the Latent Variables and the Square Root of the AVE*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)DSS	(.884)								
(2)e-Loyalty	.415	(.890)							
(3)Reciprocity	.367	.267	(.784)						
(4)Responsiveness	.623	.331	.473	(.901)					
(5)Nonverbal Info.	.150	.132	.278	.272	(.792)				
(6)Speed of Response	.351	.172	.335	.432	.318	(.796)			
(7)Content Quality	.438	.497	.306	.364	.140	.170	(.782)		
(8)Form Quality	.418	.420	.319	.394	.200	.152	.386	(.793)	
(9)Time Quality	.404	.422	.345	.457	.181	.198	.330	.602	(.731)

* Note: The number in parenthesis is the square root of AVE

* AVE was computed using the formula $\Sigma \lambda^2 / (\Sigma\lambda^2 + \Sigma \mathrm{Var}(\varepsilon))$as in Gefen et al. (2000)

All composite reliability values are higher than .80 and AVEs are higher than .50. High AVEs (in this study, .534~.812) indicate that latent variables explain over 50% of the variation in the measurement items. When AVE is greater than .50, we can say the model has a convergent validity (Gefen et al. 2000). Accordingly, these results support that the measurement model has a strong convergent validity. Next, cross-loadings of each item were explored and compared across all latent variables. The Cross-loading matrix is provided in Appendix B, which indicates that both strong convergent validity and discriminant validity exist in the measurement model. All PLS factor loadings on the constructs are quite high, greater than 0.70, and all cross-loadings are lower than 0.70.

Table 2 shows the square root of the AVE of each latent variable and the correlations of all variables. The diagonal elements in parenthesis are correlations of each construct with its own measurement items, which is the square root of AVE. Off-diagonal elements are the correlations between constructs. Each construct is more highly correlated with its own measures than with any other constructs. This indicates that strong discriminant validity exists among the constructs.

Assessment of Structural Model

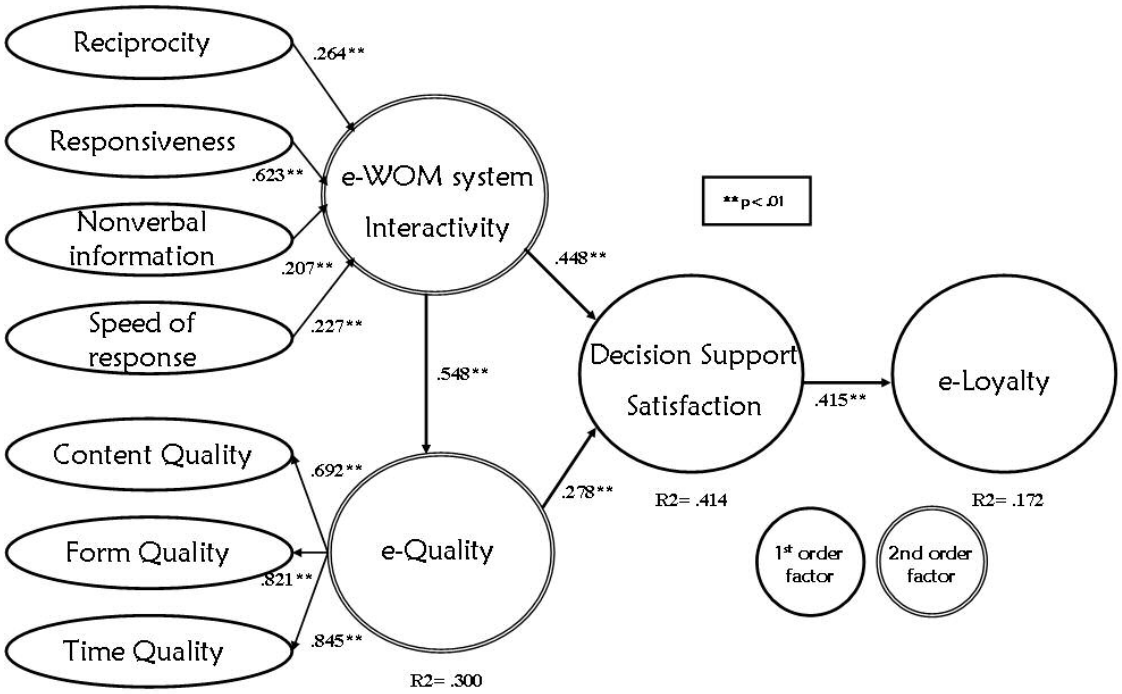

Figure 3. Data Analysis Results

After verifying the measurement model, the structural model was assessed as illustrated in Figure 3. The hypotheses H1, H2, H3 and H4 are supported. The path coefficient from "e-WOM system interactivity" to "decision support satisfaction" is .448. The path coefficient from "e-WOM system interactivity" to "e-Quality" is .548. The R^2 values of e-Quality and decision support satisfaction are high (.300 and .414, respectively). This indicates that the variance of e-Quality can be well explained by the construct "e-WOM system interactivity". Also, the variance of decision support satisfaction in the sample can be well accounted for by these two constructs, "e-WOM system interactivity" and "e-Quality." This result signifies that a customer who experiences a high level of e-WOM system interactivity tends to be more conscious of e-Quality and decision support satisfaction. In addition, a customer who experiences a high level of e-WOM system interactivity and e-Quality has more inclination to realize decision support satisfaction.

The result of H4 shows that about 17.2% of the variance of the customer's e-Loyalty is accounted for by decision support

satisfaction on the internet. This finding implies that a person who has a high level of decision support satisfaction tends to have more e-Loyalty toward the e-commerce site.
Accordingly, it is concluded that decision support satisfaction can be achieved through "e-WOM system interactivity" and "e-Quality" on the e-commerce site. In addition, the result of H2 shows that e-WOM system interactivity also turned out to influence e-Quality on the website.

CONCLUSION

The main goal of this study was to investigate antecedent factors influencing customer decision support satisfaction with the e-WOM system. This study empirically examined e-WOM system interactivity and its impact on e-Quality and decision support satisfaction of users. It was found that both e-WOM system interactivity and e-Quality help e-commerce site users experience decision support satisfaction. This finding extends the effectiveness of e-WOM for better marketing on e-commerce sites. When the four aspects of e-WOM system interactivity (reciprocity, responsiveness, nonverbal information and speed of response) were well managed, users are likely to experience decision support satisfaction with the e-commerce site. This result indicates that e-commerce sites are desired to provide a better e-WOM environment for reciprocity and advanced e-WOM system support which enables multiple channel communication as well as to respond properly and quickly to customers' requests. The e-Quality factors also have a significant impact on decision support satisfaction. The three aspects of e-Quality (content, form, and time) were also highly significant. This indicates that the interface of the website has to be designed to give customers high decision support satisfaction. E-commerce sites need to provide accurate and useful information in better form and at the right time.
The result of this research also explains why e-commerce companies are eager to develop effective e-WOM systems as a referencing system and knowledge sharing system among customers that allow more objective evaluations of the sites and the products sold. Recently many e-commerce companies are advancing their own e-WOM systems and encouraging their customers to write e-WOM with detailed contents. Some companies even give bonus points for doing so. This study suggests a direction in which to move for the improvement of e-WOM system, especially with the condition of Web 2.0 technologies. Web 2.0 allows a new level of interaction, in that e-commerce tries to emulate the in-store experience with technical support (Fry 2006). E-commerce sites need to organize e-WOM systems with non-arbitrary management and easy access to buyers. They need to devise systems or methods through which they can encourage customers not to make irrelevant e-WOM, respond immediately to negative e-WOM, and reply properly to after-use comments. In terms of nonverbal information, which may incur group behaviors among customers as the objective reference points and knowledge, e-commerce companies may have to develop new e-WOM systems supporting image and video clip registration. This may enable customers to participate in the valuable creating process of companies and experience more decision support satisfaction and thus e-Loyalty.
This research shows importance of Interactivity in the e-WOM system and verifies the connection of Interactivity between the e-WOM system and e-Quality of websites with respect to thorough decision support satisfaction. Since this study only contains a small amount of data, it has limitations for generalizations. A future study with more samples will contribute to the understanding of the pattern of consumer behavior and the role of e-WOM system and e-Quality in explaining customer decision making.

REFERENCE

Anderson, H. E., and Srinivasan, S. S. "E-satisfaction and e-loyalty: A contingency framework," Psychology & Marketing (20:2). 2003, pp. 123-138.
Ballantine, P. W. "Effects of interactivity and product information on consumer satisfaction in an online retail setting," International Journal of Retail & Distribution Management (33:6), 2005, pp 461-471
Bickart, B., and Schindler, R. M. "Internet forums as influential sources of consumer information," Journal of Interactive Marketing (15:3), 2001, pp. 31 –40.
Bollen, K. "Structural Equations with Latent Variables," John Wiley & Sons, New York, NY. 1989, p65.

Bollen, K., and Lennox, R. "Conventional Wisdom on measurement: A Structural Equation Perspective," Psychological Bulletin (110:2), 1991, pp. 305–314.
Buck, R., and VanLear, C. A. "Verbal and Nonverbal Communication: Distinguishing Symbolic, Spontaneous, and Pseudo-spontaneous Nonverbal behavior," Journal of Communication (52:3), 2002, pp. 522–541.
Chatterjee, P. "Online Reviews: Do Consumers Use Them," Advances in Consumer Research (28:1), 2001, pp. 129-133
Chevalier, J., and Mayzlin, D. "The Effect of Word of Mouth on Sales: Online Book Reviews," Journal of Marketing Research (43:3), 2005, pp. 345-354
Churchill, E., Girgensohn, A., Nelson, L., and Lee, A. "Blending Digital and Physical Spaces for Ubiquitous Community Participation," Communications of the ACM (47:2), 2004, pp. 38-44.
Dellarocas, C. "The Digitization of Word of Mouth: Promise and Challenges of Online Feedback Mechanisms," Management Science (49:10), 2003, pp. 1407-1424.
Diamantopoulos, A. "Viewpoint Export performance measurement: reflective versus formative indicators," International Marketing Review (16:6), 1999, pp. 444-457
Doll, W. J., and Torkzadeh, G.. "The Measurement of End-user Computing Satisfaction," MIS Quarterly (12:2), 1988, pp.259-274
Fry, D. "Web 2.0 what it really means for you," Multichannel Merchant (2:12), 2006, pp. 26
Garrity, E. J., Glassberg, B., Kim, Y. J., Sanders, G.. L., and Shin, S. K. "An experimental investigation of Web-based information systems success in the context of electronic commerce," Decision Support Systems (39:3), 2005, pp. 485-503
Gefen, D., and Straub, D., Boudreau, M. "Structural Equation Modeling and Regression: Guidelines for Research Practice," Communications of the AIS (4:7), 2000
Goffman, E. "Interaction Ritual," Chicago Aldine,1967
Gommans, M., Krishnan, K.S., and Scheffold, K.B. "From brand loyalty to e-loyalty: A conceptual framework," Journal of Economics and Social Research (3:1) 2001, pp. 43-58.
Goodhue, D. L., and Thompson, R. L. "Task-Technology Fit and Individual Performance," MIS Quarterly (19:2), 1995, pp. 213-236.
Grant, E. X. "What makes Ebay invincible," E-commerce Times, March 5, 2002, Available online at http://www.ecommercetimes.com/perl/story/ 16546.html.
Gruen, T. W., Osmonbekov, T., and Czaplewski, A. J. "eWOM: The impact of customer-to-customer online know-how exchange on customer value and loyalty," Journal of Business Research (59:4), 2006, pp. 449-456
Haenlein, M., and Kaplan, A. M. "A beginner's guide to Partial Least Squares Analysis," Understanding Statistics (3:4), 2004, pp. 283-297
Hennig-Thurau, T., Gwinner, K. P., Walsh, G.., and Gremler, D. D. "Electronic word-of-mouth via consumer-opinion platforms: what motivates consumers to articulate themselves on the Internet?" Journal of Interactive Marketing (18:1), 2004, pp. 38 – 52.
Johnson, G. J., Bruner II G.. C., and Kumar, A." Interactivity and its facets revisited theory and empirical," Journal of Advertising (35:4), 2006, pp. 35-51
Kim, J., Fiore, A. M., and Lee, H. "Influences of online store perception, shopping enjoyment, and shopping involvement on consumer patronage behavior towards an online retailer," Journal of Retailing & Consumer Services (14:2), 2007, pp. 95-107
Kim, Y. J., Kishore, R., and Sanders, G.. L. "From DQ to EQ: Understanding data quality in the context of e-business systems," Communications of the ACM (48:10), 2005, pp. 75-81
Klein, L. R. "Creating Virtual Product Experiences: The Role of Telepresence," Journal of Interactive Marketing (7:1), 2003, pp. 41-55.
Levin, A. M., Levin, I. P., and Heath, C. E. "Product Category Dependent Consumer Preferences for Online and Offline Shopping Features and Their Influence on Multi-Channel Retail Alliances," Journal of Electronic Commerce Research (4:3), 2003, pp. 85-93.
McCabe, D. B., and Nowlis, S. M. "Information Integration across Online and Offline Shopping Environments and Its Effects on Consumers' Purchase Decisions," in Proceedings of the Experiential E-commerce Conference, Frank Biocca (Ed.), East Lansing, MI, 2001.
Mithas, S., Ramasubbu, N., Krishnan, M. S., and Formell, C. "Designing Web Sites for Customer Loyalty Across Business Domains: A Multilevel Analysis," Journal of Management Information Systems (23:3), 2006/2007, pp. 97-127
Palmer, J. W. "Web Site Usability, Design, and Performance Metrics," Information System Research (13:2), 2002, pp. 151-167
Ramirez, Jr. A., and Burgoon, J. K. "The Effect of interactivity on Initial Interactions: The Influence of Information Valence and Modality and Information Richness on Computer-Mediated Interaction," Communication Monographs (71:4), 2004, pp. 422–447
Richins, M. L., and Root-Shaffer, T. "The Role of Involvement and Opinion Leadership in Consumer Word-of-Mouth: An

Implicit Model Made Explicit," Advances in Consumer Research (15:1), 1988, pp. 32–36.
Shankar, V., Smith, A. K., and Rangaswamy, A. "Customer satisfaction and loyalty in online and offline environments," International Journal of Research in Marketing (20:2), 2003, pp. 153-175.
Sicilia, M., Ruiz, S., and Munuera, J. L. "Effect of interactivity in a website the moderating effect of need for," Journal of Advertising (34:3), 2005, pp. 31-45
Thorson, K. S., and Rodgers, S. "Relationships between Blogs as eWOM and Interactivity, perceived Interactivity, and Parasocial Interaction," Journal of Interactive Advertising (6:2), 2006, pp. 39-50
Thüring, M., Hannemann, J., and Haake, J. M. "Hypermedia and cognition: Designing for comprehension," Communication of ACM (38:8), 1995, pp. 57–66.
Thompson, R., Barclay, D. W., and Higgins, C. A. "The Partial Least Squares Approach to Causal Modeling: Personal Computer Adoption and Use as an Illustration," Technology Studies: Special Issue on Research Methodology (2:2), 1995, pp. 284-324.
Vessey, I. "Cognitive Fit: A Theory-Based Analysis of the Graphs Versus Tables Literature," Decision Sciences (22:2), 1991, pp. 219-240.
Wang M. "E-Satisfaction Ratings on Merchant Reputation Systems: An Exploratory Study," E-Service Journal (4:1), 2005, pp. 29–40.
Westbrook, R.A. "Product/consumption-based affective responses and postpurchase processes," Journal of Marketing Research (24:3), 1987, pp. 258-70.
Zeithaml, V. A., Berry, L. L., and Parasuraman, A. "The behavioral consequences of service quality," Journal of Marketing (60:2), 1996, pp. 31-46.
Zhang, P., and von Dran, G. M. "User expectations and rankings of quality factors in different web site domains," International Journal of Electronic Commerce (6:2), 2002, pp. 9-33.
Zviran, M., Glezer, C., and Avni, I. "User satisfaction from commercial web sites: The effect of design and use," Information & Management (43:2), 2006, pp. 157-178

APPENDIX. A

CONTENT QULAITY (Kim et al 2005) C.R= .825 AVE= .612
The information regarding the product that the website provides is accurate.
This website provides information that I need.
This website quite provides professional information.
FORM QUALITY (Kim et al 2005) C.R= .835 AVE= .629
The overall structure of the website is easy to understand.
Of many information provided from the website, I can easily and effectively find the information I need.
The menu organization is reasonable which isn't confusing to use.
TIME QUALITY (Kim et al 2005) C.R= .818 AVE= .534
It is easy to go back to the information searched before whenever wanted.
The information provided is well listed in time sequence.
The provided information from the website has good temporal relationship.
This website provides latest information quickly.
RECIPROCITY (Johnson et al 2006) C.R= .826 AVE= .616
It is easy to leave a message related to the product directly to the Internet forum in this website.
It is easy to see other consumer's direct message to the Internet forum.
Negative after-use notes are not arbitrary deleted by the Internet forum.
RESPONSIVENESS (Johnson et al 2006) C.R= .945 AVE= .812
The after-use comments from this website about the products provide appropriate information.
The after-use comments from this website about the products provide information that I need..
The after-use comments from this website about the products provide relevant information.
The after-use comments from this website about the products are useful.
NONVERBAL INFORMATION (Johnson et al 2006) C.R= .969 AVE= .628
Many after-use comments posted on this website uses more than text, including image and video clips.
When posting an after-use comment, it is possible to use nonverbal format.

The after-use comment that has used more than words, such as images and video clips, has higher page view than those that don't have such attachments.
This website provides extra advantages when posting an after-use with images and/or video clips.
SPEED OF RESPONSE (Johnson et al 2006) C.R= .837 AVE= .633
The manager of this website replies the questioning after-use comments immediately.
This website has fast posting regarding after-use comments of new products.
This website receives fast replies from other users regarding after-use comments.
DECISION SUPPORT SATISFACTION (Garrity et al 2005) C.R= .915 AVE= .782
The various information including the after-use comments that this website provides helps for a better shopping.
The various information including the after-use comments that this website provides helps for more effective decision making.
The various information including the after-use comments that this website builds a foundation for a prioritization when making a decision.
E-LOYALTY (Zeithaml, Berry & Parasuraman 1996) C.R= .920 AVE= .793
I use this website for every purchase I want to make.
I will revisit this website for my next purchase.
This site is the top priority when I need to make a purchase.

APPENDIX. B CROSS-LOADING FOR THE MEASUREMENT MODEL

	DSS	e-loyalty	reci	response	nonv	speed	cont	form	time
sat1	**0.906**	0.413	0.320	0.599	0.165	0.309	0.410	0.390	0.349
sat2	**0.919**	0.369	0.256	0.596	0.146	0.353	0.332	0.394	0.254
sat3	**0.824**	0.308	0.156	0.438	0.075	0.265	0.432	0.317	0.206
loyalty1	0.295	**0.914**	0.204	0.258	0.163	0.127	0.443	0.421	0.347
loyalty2	0.382	**0.894**	0.243	0.333	0.096	0.198	0.443	0.383	0.377
loyalty3	0.248	**0.861**	0.265	0.284	0.098	0.128	0.442	0.317	0.288
reci1	0.204	0.223	**0.782**	0.292	0.203	0.183	0.242	0.279	0.353
reci2	0.170	0.185	**0.873**	0.474	0.250	0.192	0.266	0.234	0.184
reci3	0.164	0.235	**0.687**	0.324	0.197	0.091	0.209	0.249	0.311
response1	0.321	0.251	0.421	**0.903**	0.201	0.263	0.298	0.306	0.420
response2	0.446	0.307	0.437	**0.903**	0.350	0.313	0.344	0.361	0.422
response3	0.479	0.379	0.420	**0.919**	0.190	0.319	0.385	0.421	0.419
response4	0.493	0.255	0.339	**0.878**	0.236	0.338	0.282	0.331	0.316
nonv1	0.081	0.094	0.120	0.193	**0.718**	0.242	0.164	0.050	0.121
nonv2	0.261	0.195	0.236	0.304	**0.897**	0.321	0.151	0.281	0.209
nonv3	0.103	0.003	-0.039	-0.018	**0.649**	0.157	-0.014	0.010	-0.148
nonv4	0.152	0.057	0.254	0.235	**0.883**	0.274	0.082	0.169	0.129
speed1	0.194	0.211	0.222	0.229	0.173	**0.698**	0.220	0.002	0.107
speed2	0.318	0.119	0.221	0.424	0.368	**0.872**	0.135	0.133	0.132
speed3	0.310	0.106	0.209	0.349	0.188	**0.807**	0.075	0.200	0.162
cont1	0.196	0.400	0.182	0.208	-0.054	-0.062	**0.832**	0.314	0.255
cont2	0.217	0.378	0.252	0.235	-0.004	0.093	**0.726**	0.221	0.185
cont3	0.280	0.395	0.332	0.399	0.346	0.196	**0.788**	0.355	0.349
form1	0.207	0.387	0.160	0.249	0.099	0.064	0.196	**0.828**	0.319
form2	0.200	0.253	0.241	0.280	0.151	0.103	0.224	**0.722**	0.396
form3	0.239	0.356	0.222	0.395	0.216	0.025	0.464	**0.827**	0.402

time1	0.290	0.370	0.322	0.310	0.122	0.140	0.138	0.507	**0.712**
time2	0.221	0.222	0.239	0.366	0.109	0.091	0.210	0.470	**0.788**
time3	0.245	0.313	0.229	0.331	0.100	0.094	0.306	0.444	**0.829**
time4	0.228	0.346	0.234	0.357	0.219	0.235	0.328	0.332	**0.571**