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The Contrasting Attitudes of Reviewer and Seller in Electronic Word-of-Mouth: A Communicative Action Theory Perspective

Jung Lee*, Jae-Nam Lee**, Bernard C.Y. Tan***

This study draws important factors in electronic Word-of-Mouth (eWOM) and examines how these influence the building of customer loyalty. eWOM is viewed as social communication between customers and sellers, and thus the communicative action theory is applied. With the theory, we identify reviewer and seller as influential players on customers, and derive important factors such as correctness and veracity of reviews from the reviewers' action, and information compactness and adequacy from the seller's action. We propose these constructs as antecedents of customer loyalty and further hypothesize their curvilinear impacts as follows: the marginal impacts of veracity and correctness will decrease as veracity and correctness increase, and the marginal impacts of compactness and adequacy will increase as compactness and adequacy increase. The result indicates that only the seller's action has a curvilinear impact, whereas the reviewer has proportional positive impact on customer loyalty. This study indentifies important factors in eWOM from a critical social theory perspective and validates them using the positivistic approach. For practitioners, it discusses the important factors in eWOM with the identification of the individuals who are responsible for these factors.

Keywords : Information Systems, Electronic Word-of-Mouth (Ewom), Communicative Action Theory, Review Correctness, Review Veracity, Information Compactness, Information Adequacy

* Bang College of Business, KIMEP University
** Korea University Business School, Corresponding Author
*** Department of Information Systems, National University of Singapore

Ⅰ. Introduction

For the last decade and a half, the electronic word of mouth (eWOM) system has become one important part in online business. It has shown a significant influence on customer decision making because of its advantages in recency, abundance, and objectivity [Ghose *et al*., 2007]. More than 90% of customers are referring to online customer reviews before making a purchase decision, and more than 80% have answered that are willing to change their buying decisions based on the opinions they read in the reviews [Promomagazine, 2009].

One of the unique features of online review systems, compared with offline ones, is the active role of the seller. In offline systems, word-of-mouth communication is limited among customers only [Buttle, 1998]. Customers share candid opinions without the seller's presence. In online systems, however, the seller controls how various reviews are presented to customers. Although major online shopping malls such as Amazon.com and eBay.com have their own review display policies (e.g., helpfulness for Amazon.com and relevance for eBay.com), they all have the authority and responsibility to effectively manage review display systems. Even though the reviews are created by the customers, the display and delivery of these reviews are all determined by the seller, not the customers.

These seller's review 'display' policies significantly impact consumer decision as more and more reviews are accumulated. For example, as of 1 July 2010, Harry Potter and the Deathly Hallows at Amazon.com has accumulated more than 3000 customer reviews. Considering that this is a large number for the customers to read, the reviews are sorted by date, helpfulness, rating, and so on such that the customers can read a 'part' of the reviews. The purchase decision is formed not based on the entire reviews but only on a 'part' of the reviews. Clearly, Amazon.com's online review display design largely influences the reviews that the customers actually read and use as basis for their decisions. Another example is the relevance-based review display of eBay.com, where customers can choose other sorting options, such as date and popularity. Nevertheless, when there are more reviews than a customer can manage to read at once, the administration of the review sorting systems of online shopping malls will make a significant difference on the selection of reviews the customers will read as basis of their purchase decisions.

Despite the growing importance of the seller's role in eWOM systems, most research on eWOM has focused on the content of the reviews or the reviewers, not the sellers. Researchers found that a favorable review may increase purchase intention [Ba and Pavlou, 2002], and that diversity of feedback may have a positive effect on sales [Clemons *et al*., 2006]. These studies also analyzed reviewer motivation [Gruen *et al*., 2006] and customer attitude [Ghose and Ipeirotis, 2011]. All these studies provide valuable insight on eWOM, but they do not consider the ongoing role of the seller whose input is becoming increasingly important in the context of feedback systems.

This study aims to investigate the behaviors of both reviewers and sellers and to examine how these behaviors affect customer loyalty. Specifically, we view eWOM as an ongoing communication tool among reviewers and sellers. Thus, the communicative action theory (CAT)

is applied as a theoretical lens. The CAT is a theory that provides profound understanding of human action by analyzing an individual's social action in detail. We use CAT, which interprets and ramifies eWOM activities in terms of social action, to derive factors that are important to sellers and reviewers and to explore how these factors influence customer behavior. Then, we develop an eWOM research model to hypothesize the impact of the seller and the reviewer on customer loyalty. This model is then validated using data collected from 326 online shoppers in Korea.

The study is organized as follows. First, we review CAT with its taxonomy of social action types. Then, we derive important constructs in eWOM based on the CAT and formulate a research model using customer loyalty as the dependent variable. Next, we introduce the research methodology, and then present our analysis and results. The discussion highlights the implications, as well as possible useful future research directions. Finally, we summarize the study's overall contributions, both practically and theoretically.

Ⅱ. Theoretical Background

2.1 Communicative Action Theory

As an extended branch of critical social theory, the communicative action theory was first proposed by Habermas [1981]. This theory inherited all the core assumptions of critical social theories but has differentiated itself by suggesting that the miscommunication among people is the main cause of all the distortions and contradictions in our society. Critical researchers aim to critique the status quo [e.g., Orlikowski and Baroudi, 1991]. They assume that social reality is produced and reproduced by people [Myers, 1997] and has many contradictions and conflicts that may be inherent within their structures [Orlikowski and Baroudi, 1991]. Critical researchers believe that they can help to overcome oppressive social relations and their main task is bringing the restrictive and alienating conditions of the status quo to light [Myers, 1997]. Therefore, their research method was mostly a dialectical analysis, which attempted to reveal the historical, ideological, and contradictory nature of existing social practices [Orlikowski and Baroudi, 1991].

The CAT has differentiated itself from other critical theories by seeing that the *miscommunication among people* is the main cause of all the distortions and contradictions in our society. Habermas [1981] argued, if people had communicated properly, our society would not have been so distorted because people act rationally. Therefore, as a key instrument for solving those social problems, he made an in-depth investigation into the rationalities in human actions and provided the taxonomy of the social actions to gain a more refined understanding of the nature of social action [Lyytinen, 1992].

Originally, four types of social actions are proposed by Habermas [1981]. *Purposive rational action* is an action directed at attaining rational objectives; that is, "achieving of success" [Lyytinen, 1992]. It is different from other social actions in its success orientation because other social actions aim at mutual understanding rather than achieving goals. *Dramaturgical action* is a voluntary expression of one's self to an audience on stage [Habermas, 1981]. In this action, style and

aesthetic aspects are important attributes [Jones and Basden, 2003]. *Normatively regulated action* is the action obligated by social norms. Since the norms are formed based on the social culture, this action type is classified as very cultural. *Communicative action* is the action with a desire to understand a communicating partner. It pursues a common agreement and mutual understanding of social norms and values and seeks to maintain social relationships. Thus, it necessarily brings negotiations between people in order to achieve a consensus [Lyytinen, 1992].

Later, Habermas [1981] divided purposive- rational action into *instrumental action* and *strategic action* [Klein and Huyne, 2004], the difference of which lies on whether the action is directed towards agents (objects) or against rational actors (opponents) [Lyytinen, 1992]. If the action is dependent upon other actors' actions and influenced by them, it is strategic action; if the action is solely conducted within the environment and assumed to be controllable, it is instrumental action. Afterwards, Lyytinen [1992] adds *discursive action* as one of the prominent action types

<Table 1> Social Action Typology

<table>
<tr><th colspan="2" rowspan="2">Action types</th><th colspan="2" rowspan="2">Description</th><th colspan="2">Literatures Reviews on Validity Claims</th></tr>
<tr><th>Validity Claimed</th><th>Reference</th></tr>
<tr><td rowspan="2">Purposive-Rational (teleological) Action</td><td>Instrumental action</td><td rowspan="2">To achieve success which is objectively measurable</td><td>Directed towards objects</td><td>Contextuality (rightness, appropriateness), Effectiveness, Efficiency, Power, Truth.</td><td rowspan="5">Cukier et al. [2004]; Janson et al. [1993]; Jones and Basden [2002]; Klein and Huynh [1999]; Lyytinen [1992]; Lyytinen and Hirschheim [1988]; Ngwenyama and Lee [1997]; Reijswoud et al. [1999].</td></tr>
<tr><td>Strategic Action</td><td>Directed against rational actors</td><td>Contextuality (rightness, appropriateness), Effectiveness, Efficiency, Power, Sincerity, Suitability, Truth.</td></tr>
<tr><td rowspan="4">Social Action</td><td>Communicative action</td><td colspan="2">- Desire to understand communicating partner
- Purpose of achieving mutual understanding
- Assume a shared background</td><td>Accuracy, Completeness, Comprehensibility (clarity), Contextuality (rightness, appropriateness), Truth, Truthfulness (veracity).</td></tr>
<tr><td>Discursive action</td><td colspan="2">- No shared background
- Towards the co-operative search for truth, clarification of unclear messages etc</td><td>Comprehensibility (clarity), Contextuality (rightness, appropriateness), Truthfulness (veracity), Sincerity.</td></tr>
<tr><td>Dramaturgical (expressive) action</td><td colspan="2">- The way an actor wishes to express himself to an audience when putting himself on stage</td><td>Sincerity, Truth, Veracity.</td></tr>
<tr><td>Normatively regulated action</td><td colspan="2">- Fulfilling a generalized expectation of behaviors
- Pursuing common values or norms of the group</td><td>Accuracy, Justice, Truth.</td></tr>
</table>

in Habermas theory. Discursive action is an expression of the consensus that gives force to argumentative speech. Unlike in communicative action, shared background is considered in discursive action, and thus, the action is oriented more likely towards the clarification of unclear message, etc. [Lyytinen, 1992]. Finally, Lyytinen proposes four prominent types of social actions by detaching dramaturgical and normatively regulated actions. Since then, his topology of four types of actions has been referred by many IS researchers [e.g., Ngwenyama and Lee, 1997].

CAT posits that when an actor performs a specific social action type, he or she should be able to defend the validity claims associated with it [Ngwenyama and Lee, 1997]. When people perform social actions, each social action requires different types of standards or criteria (i.e., validity) for it to be fully understood by others and for it to become fully functional. If these validities are not assured, miscommunication is likely to occur. For example, when a person conducts a normatively regulated action like obeying the traffic flow, the principle of justice should be validated. Many studies generally agree with principal validity claims in each action type [Cukier *et al*., 2004; Lyytinen and Hirschheim, 1988], but some offer different stresses depending on their research perspectives, scope, and context [Janson *et al*., 1993; Reijswoud *et al*., 1999]. <Table 1> integrates all types of social actions discussed above.

2.2 eWOM and Communicative Action Theory

The current study applies CAT because we view eWOM as a combination of social actions conducted by multiple actors in mutual communication. CAT is one of the critical social theories that contend a miscommunication among individuals is the main cause of all distortions and contradictions in our society, thus rational human actions should be key factors to solving social problems.

By emphasizing on social action, CAT presents the following advantages when applied in the eWOM context. First, the theoretical implication of the study is highly consistent. Most of prior eWOM research put their efforts on analyzing the contents of reviews. For example, numerous studies investigated the impact of positive rating or extreme rating on sales [Hu *et al*., 2006; Melnik and Alm, 2002]. Some researchers use the mining technique to measure the informative level of reviews [Ghose and Ipeirotis, 2011]. However, while these studies are helpful in identifying a specific eWOM impact, they are not adequate to analyze its long-term effect. One reason is that ratings and review contents vary with time. If contents change, its theoretical implication may change as well; in contrast, the action of reviewers and sellers (i.e., reviewing and displaying) continues over time. Reviewers and sellers repeatedly review the product and display them. Hence, if we analyze their behaviors with CAT, its theoretical implication would be highly consistent.

Second, inasmuch as the unit of analysis of CAT is on social action and not actors, the elaborated theoretical lens in this study can present a more refined and ramified perspective. CAT provides an excellent taxonomy of social action with validity claims, and thus, we can ramify and interpret eWOM activities into one or more social actions. Once we interpret the

activities using CAT, we can then discuss the implications drawn at the social action level. CAT is one of several excellent theories that are especially effective for analyzing social action [Lyytinen, 1992], but which is relatively not often applied to the information system (IS) field. Therefore, the current study has clear potential for obtaining new insights when analyzing eWOM activities.

Ⅲ. Research Model and Hypotheses

Our research model describes what characteristics of reviewers and seller influence the building of customer loyalty through eWOM. Customer loyalty is a favorable attitude toward the brand (i.e., product or seller) resulting in consistent purchases over time [Srinivasan *et al.*, 2002]. Loyal customers will not only spend more, but also act as enthusiastic advocates, for the firm [Harris and Goode, 2004]. They thus are considered a critical factor for businesses. For the current study, we define customer loyalty as the "overall attachment with [a] favorable attitude manifested by repeated purchasing" and propose this aspect as a online business objective. The subsequent sections shall explain in detail the specific factors deemed important by reviewers and sellers, and how these factors influence customer loyalty.

3.1 Reviewer's Communicative and Dramaturgical Action

To understand the reviewers' behavior, we apply the communicative action theory focusing on the customers' motivation and action purpose. First, we interpret reviewer's action as a *communicative action*. When a reviewer posts a review on the website, he or she hopes that the review is read, understood, and eventually agreed to by other customers who visit the website [Gruen *et al.*, 2006]. They desire to be clear and rational in their opinion so that more customers read and agree with their reviews. Also, reviewers and readers have the same background, such that they seek quality product and decide on making purchases. This circumstance of pursuing mutual understanding and sharing of background enables us to interpret the reviewer's action as a form of *communicative action*, based on the taxonomy of the social actions proposed in CAT.

We also interpret reviewer's behavior as a *dramaturgical action* based on its motivation of self-presentation. Most of times, reviewers post their opinions without monetary incentives, but with a desire to express their thoughts and feelings on a product to other customers. Their reviews are directed to an unspecified audience visiting the website, and reviewers expect their reviews to be read by a large number of the public. This self-presenting characteristic qualifies the reviewers' action as a dramaturgical social action.

From the reviewers' communicative and dramaturgical actions, the *correctness* and *veracity* of the reviews are derived as critical factors among the major validities claimed for communicative and dramaturgical actions. *Correctness*, originally referred to in CAT as truth or truthfulness, is "the level of closeness to the objective fact" [Cukier *et al.*, 2004]. In eWOM, the correctness of a review is determined based on how closely the review describes the objective facts

on a product. Correctness deals with the integrity of product information in the reviews. However, the correctness of a review is not always satisfied. Sometimes, reviewers are incompetent to write correctly; sometimes, they intentionally provide wrong information. For example, when a customer reviews HDTV, an individual may post that it does not work well if he or she lacks knowledge on TV operations and misunderstands the features. Similarly, individuals may write that a product does not work well if the primary intent is to lie. In both cases, correctness of reviews is not satisfied.

Veracity, originally referred to in CAT as sincerity, is "the level of intention to be honest to others." It measures the intrinsic motivation and intention of the social actor [Lyytinen, 1992; Lyytinen and Hirschheim, 1988]. In the eWOM context, veracity measures whether the reviewer writes on products with good intention. The veracity of a reviewer is important because it helps customers trust the contents of the reviews. If reviewers have other motivations, such as working as an advocate of firms, the customers might not trust the reviews because it is likely to be biased. We summarize the interpretation of reviewer social action and its critical factors in <Table 2>.

For this study, some validities in communicative and dramaturgical action are not selected because they may lessen their importance in eWOM context. For example, eWOM systems call on customers to complete their actions properly (i.e., reviewing) by making their systems user-friendly. Systems notify the customers of the product chosen for review and the options he or she has during the review. Blank replies are not allowed for some fields in an eWOM system. In effect, sellers help customers easily understand the process of reviewing (i.e., context) and ask them to complete it. With these systems, the importance of contextuality and appropriateness can be lessened in eWOM.

According to CAT, the veracity and correctness are claimed to be valid for ideal communication. Hence, it is not difficult to expect a positive impact of veracity and correctness of the reviews on building customer loyalty. However, their marginal impacts (i.e. unit impact) would decrease as veracity and correctness increase. This is because reviews are accumulated repeatedly, and thus, the impact of one single review decreases as the total number of reviews increases. For example, when there are few reviews available, the impact of one truthful (or correct) review is considerable to customers. However, if there

<Table 2> Interpretation of Reviewer's Action

Action Description	Purpose of Action	Theoretical Interpretation	Variables Derived from Action	Impact on Customer Loyalty
Customer posts review on website.	- Knowledge sharing - Informing other customers and achieve mutual understanding	Communicative action	- Correctness of review: How closely the reviews describe the objective facts about the product. - Veracity of review: how honestly reviewers describe about the product.	Marginal (i.e. unit) impacts decrease as veracity and correctness of a review increases.
	- Self-Presentation - Toward an unspecified audience	Dramaturgical action		

are multiple reviews, the impact of one review will not be as significant to customers.

This concave quadratic impact (i.e. diminishing marginal return) of an independent variable or input has been observed frequently in businesses, including in finance, marketing, and IS. For example, Cavusoglu *et al*. [2008] have shown that investment in information technology (IT) security exhibits a diminishing marginal return for reducing vulnerability. Also, Ratchford *et al*. [2003] found that consumers with less initial product information will benefit more from an online search compared with consumers who started off with more information. Rust and Chung [2006] further support this finding that the benefit of online searches still suffers from a diminishing marginal return effect. From these, we present the following hypotheses.

H1: As the veracity of a review increases, its marginal impact on customer loyalty decreases.

H2: As the correctness of a review increases, its marginal impact on customer loyalty decreases.

3.2 Seller's Instrumental Action

In eWOM, the seller manages the website while reviewers and customers share their opinions and knowledge through the web. It is the seller who determines the specific features of eWOM systems (i.e., how they input reviews and how the reviews are displayed). For example, *Amazon.com* divides its customer review page into two columns, one with positive reviews and the other with negative reviews, so that customers can compare all the different opinions from the reviewers. Sellers provided sorting options to customers, such as date, rating and etc., so customers can selectively read the reviews based on their needs and interests.

According to CAT, a seller's action in eWOM is an *instrumental action*. Sellers have straightforward objectives (i.e., they should deliver the reviews timely without manipulation) [Dellarocas, 2006]. When the objective is clear, performance can be measured and assessed objectively as well. Also, sellers do not strategically consider each reviewer's different reaction. They provide the same services to all customers. This feature explains why seller's action is an instrumental action rather than a strategic action. These unidirectional purposiveness and measurability can support the instrumental characteristics of sellers' activities.

From the seller's instrumental action, two constructs, information *compactness* and *adequacy*, are derived for their contextual importance. Information *compactness* of eWOM systems originally refers to the efficiency of social action in CAT. It is a measure of output compared with input while using of eWOM [Clark, 2000]. In the eWOM context, the information compactness of a website is determined by the amount of product information that a customer can acquire relative to the time and effort the customer spend. When information compactness is high, a customer can easily scan the reviews and acquire sufficient product information from the website. Since the main objective of customers who read the reviews is product information acquisition, information compactness is considered highly important.

Information *adequacy* of eWOM system deals with whether the product information can satisfies customer needs for product information. Originally, information adequacy refers to effectiveness of social action in CAT; it is achieved

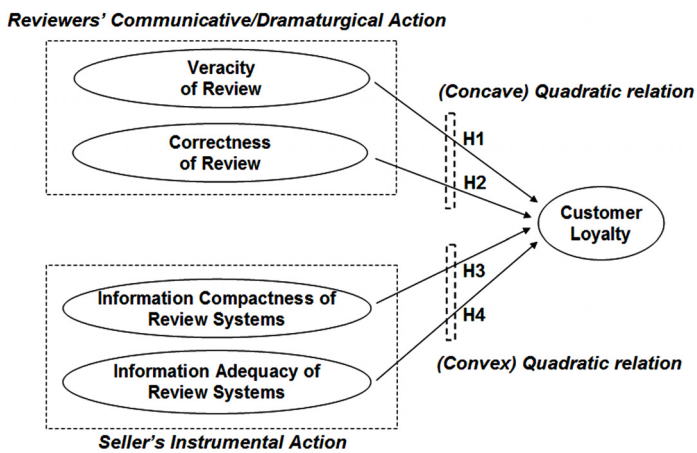
<Table 3> Interpretation of Seller's Action

Action Description	Purpose of Action	Theoretical Interpretation	Variables Derived from Action	Impact on Customer Loyalty
Seller design and maintain eWOM system.	- Deliver reviews to customers	Instrumental Action	- Information Compactness: The amount of product information that a customer can acquire relative to time and effort he spend. - Information Adequacy: The fit between product information in the review and the information sought by customers	Marginal (i.e. unit) impacts increase as compactness and adequacy of information increase.

when performance meets or exceeds the goal of an organization [Bonoma and Clark, 1988]. In the eWOM context, information adequacy corresponds to the fit between product information in the review and the information sought by customers, as the objective of review scanning is to find the "right" product information. We summarize the interpretation of seller's social action and its critical factors in <Table 3>.

Both Information compactness and adequacy of eWOM systems have positive impacts on customer loyalty. They help customers find the adequate information with minimal efforts. However, these relationships are not proportional, but rather convex quadratic (i.e. increasing marginal return) for IT-specific characteristics of eWOM. The more the information is compact and adequate, the faster the loyalty will be established.

This convex quadratic impact of information system is frequently observed in businesses [Wu *et al.*, 2005] when the actual outcome exceeds expected outcome. For example, the Otis elevator dramatically improved its product delivery cycle by intelligently using IT to replace a paper-based tacking and fulfillment system [Nolan and McFarlan, 2005]. In addition, a study on a medical imaging informatics im-



<Figure 1> Research Model

plementation project has experienced dramatic change in customer satisfaction after IT implementation [Ayal and Seidman, 2009].

As one of information systems, eWOM also can have more extensive impact than what we expect. It has dramatically changed consumer decision-making, and in fact has produced much impact on customer behavior in the recent years [Hennig-Thurau and Walsh, 2004]. Therefore, we hypothesize that the unit impact of information adequacy and compactness would increase as they (i.e. adequacy and compactness) increase. From this, we have following hypotheses:

H3: As the informative compactness of review systems increases, its marginal impact on customer loyalty also increases.

H4: As the informative adequacy of review systems increases, its marginal impact on customer loyalty also increases.

Ⅳ. Research Methodology and Analysis

4.1 Instrument Development

Instrument development was carried out in three stages. In the first stage, we created pools of items for each construct. For veracity, correctness, compactness, and adequacy, since there are no existing scales developed with the same concepts and view as our study, we developed new scales based on relevant literature. We abstracted key words from major studies [Bonoma and Clark, 1988; Clark, 2000], to ensure content validity, and transformed them into complete sentences. For customer loyalty, we adopt and refine the existing scales from major studies [Flavián and Guinalí, 2006; Srinivasan *et al*., 2002]. In total, 29 items were developed.

In the second stage, we refined the items by conducting two pilot tests. One was the card-sorting method adapted from Moore and Benbasat's work [1991] to ensure content validity. With each card containing one item, we asked 10 post-graduate students in the IS area to sort the cards in the order of the meaning closest to the construct. From this, we obtained the rankings of items for each construct. We then computed the average ranks, variance, and coefficient of variance of each item to examine the relative agreement level of each item to the constructs (i.e., average ranking) and its reliability (i.e., variance). The other pilot test was implemented to ensure construct validity. We conducted a small-scale survey using the items among 52 undergraduate students who regularly shop online, and then analyzed the data through factor analysis, reliability test, and correlation test to check convergent and discriminant validities.

Item refinement was performed based on the results of the two pilot tests. Although loyalty showed adequate levels of validities, few items were dropped based on resultant rankings and values. The newly developed items on veracity, correctness, compactness, and adequacy showed rather unstable construct validities, and thus, we refined them more carefully. For example, we modified compactness items such that they more explicitly reflect the functional aspect of the systems; veracity items were modified to reflect the intention of the reviewers, not the contents of the reviews, by adding the word intention to the sentences. In sum, we designed 25 items after dropping four, modifying four, and refining four items.

In the third stage, with the 25 refined items, we conducted a large-scale pilot test on 150 MBA students who had online shopping experience. Based on collected data, items were finalized through iterative exploratory and confirmatory factor analyses, reliability test, and correlation test. The results of the pilot tests are summarized in <Table A1> and the final measurement items are listed in <Table A2> in the Appendix (detailed analyses results of the pilot tests are available upon request).

4.2 Data Collection

We designed and conducted an experimental online survey. We showed the participants various online reviews about a particular product and asked them to answer questions. In designing the webpage, to avoid respondent bias and preconception, the layout of the webpage was simply and based on the typical user-interface used by many Internet shopping malls in Korea without specifying any real name of the company. A cellular phone was selected as a sample product for its large coverage of target customers (see screenshot in <Figure A1> in Appendix). Subjects who had not experienced online shopping were excluded in the survey. After being shown various reviews about a particular cellular phone, respondents were asked to answer all questions about the product from the next page. All these processes were carried out by Embrain Co. (www.embrain.com), a professional online survey company in Asia.

Finally, after 49 outliers were eliminated, 326 datasets were used for final analysis. <Table 5> summarizes the profile of the respondents. There is no significant bias for gender and age. The respondents' average monthly shopping frequency and purchasing amount were around 4 times per month and US$113, respectively, indicating that most of them were familiar with online shopping activities. Furthermore, more than 90% of the respondents experienced online reviewing. All these descriptive statistics show that the respondents can understand the context of the survey, and respond to questions regarding Internet shopping and customer reviews.

<Table 4> Descriptive Statistics of Respondents

Gender		Internet Shopping History		Monthly Shopping Amount	
Male	163(50.0%)	Less than 2 yrs	82(25.2%)	Less than US$30	66(20.2%)
Female	163(50.0%)	2~5 yrs	82(25.2%)	US$31~50	67(20.5%)
Total	326(100%)	6~9 yrs	129(39.6%)	US$51~100	106(32.4%)
		More than 9 yrs	33(10.1%)	US$101~1000	87(26.6%)
		Total	326(100%)	Total	326(100%)
Age		Monthly Shopping Frequency		Online Review Experience	
20-29	88(27.0%)	1~2 times	164(50.3%)	None	29(8.9%)
30-39	90(27.6%)	3~5 times	117(35.9%)	1~2 times	100(30.7%)
40-49	91(27.9%)	6~10 times	28(8.6%)	3~10 times	94(28.9%)
50-	57(17.5%)	More than 10 times	17(%5.2)	More than 10 times	103(31.6%)
Total	326(100%)	Total	326(100%)	Total	326(100%)

4.3 Factor Analysis

We performed exploratory factor analysis (EFA) to ensure the unidimensionality (i.e. convergent and discriminant validities) of the scales. EFA is useful as a preliminary analysis when the theoretical foundation is relatively new and not often validated. As in <Table 5>, the fit to a five-factor model is reasonably good. All except two items presented loading values higher than 0.7 [Bagozzi and Yi, 1988], and the two exceptions still presented higher than 0.6 values [Hair *et al.*, 2006]. Reliability was tested using Cronbach's alpha <Table 5>. For an exploratory study, a minimum threshold alpha value of 0.6 is recommended [Nunnally, 1994].

Multicollinearity among variables is checked using correlation analysis and variance inflation factor (VIF) values. As shown in <Table 6>, most of the constructs show correlation coefficients less than 0.7 except for Compactness - Adequacy (0.73). However, the VIF values less than 2 (veracity = 1.89; correctness = 1.87; compactness = 1.98; adequacy = 1.63) verifies that multicollinearity is not a potentially serious problem in our dataset [Bagozzi *et al.*, 1991].

Lastly, common method bias is checked with Harman's single factor test [Podsakoff, 1986].

<Table 5> Results of Exploratory Factor Analysis

	C1	C2	C3	C4	C5	Cronbach's alpha
Veracity 1	0.048	0.409	0.153	0.261	**0.631**	0.822
Veracity 2	0.173	0.261	0.148	0.133	**0.830**	
Veracity 3	0.159	0.353	0.299	0.156	**0.704**	
Correctness 1	0.095	**0.828**	0.081	0.121	0.051	0.882
Correctness 2	0.156	**0.852**	0.033	0.140	0.189	
Correctness 3	0.130	**0.824**	0.138	0.135	0.208	
Correctness 4	0.167	**0.723**	0.053	0.047	0.165	
Correctness 5	0.099	**0.682**	0.192	0.039	0.228	
Compactness 1	0.160	0.178	0.258	**0.726**	0.153	0.846
Compactness 2	0.228	0.099	0.263	**0.813**	0.127	
Compactness 3	0.233	0.151	0.338	**0.758**	0.179	
Adequacy 1	0.152	0.176	**0.707**	0.369	0.114	0.889
Adequacy 2	0.215	0.120	**0.772**	0.308	0.171	
Adequacy 3	0.195	0.099	**0.832**	0.196	0.185	
Adequacy 4	0.236	0.103	**0.804**	0.131	0.100	
Loyalty 1	**0.756**	0.104	0.046	0.045	0.165	0.918
Loyalty 2	**0.831**	0.116	0.176	0.173	0.098	
Loyalty 3	**0.835**	0.163	0.275	0.163	0.000	
Loyalty 4	**0.858**	0.143	0.173	0.161	0.032	
Loyalty 5	**0.839**	0.156	0.191	0.166	0.118	

Note) *Principal Component Analysis; Varimax with Kaiser Normalization; a Rotation converged in 7 iterations.*

<Table 6> Correlation Analysis

	Veracity	Correctness	Compactness	Adequacy	Loyalty
Veracity	1.00				
Correctness	0.69**	1.00			
Compactness	0.58**	0.41**	1.00		
Adequacy	0.59**	0.37**	0.73**	1.00	
Loyalty	0.42**	0.37**	0.53**	0.53**	1.00

Note) *A correlation table in the item level is available upon request*; **: $p < 0.01$.

EFA of our scale shows five factors explaining 74% of the total variance, with the first factor explaining 41.8%. We found no dominant factor emerging from the factor analysis, implying that our data sample was likely not contaminated by common method bias. In sum, the scales used in this study are deemed to be reliable.

4.4 Hypotheses Testing

To capture the curvilinear aspects of the hypotheses, we first formulated the quadratic model as follows:

$$Loyalty = \beta_0 + \beta_1 \cdot x + \beta_2 \cdot x^2$$

where x equals veracity, correctness, compactness, and adequacy.

Then, we conducted quadratic regression analysis using PASW 17. For hypotheses that need to be supported, the coefficients of quadratic terms in H1 and H2 (i.e., veracity and correctness) should be negative, while the coefficients of quadratic terms in H3 and H4 (i.e., compactness and adequacy) should be positive.

We first tested H1. Its quadratic regression coefficient was -0.029 with a significance level of 0.4. Even though its linear regression coefficient was 0.366 with a significance level of 0.000, since its quadratic effect is not significant (b = -0.029, sig = 0.400), H1 was not supported. We then tested H2, and its quadratic impact was not significant (b = -9.5E-005, sig = 0.998). As with H1, its linear impact was strong and significant (b = 0.365, sig = 0.000), but not quadratic. Thus, H2 was not supported. As for H3 testing, its quadratic regression coefficient was 0.087 at the significance level of 95% (sig = 0.018). Its linear regression impact was also strong and significant (b = 0.510, sig = 0.000). Hence, H3 was supported. H4 was tested and results support this hypothesis. Its quadratic regression coefficient was 0.078 at the significance level of 95% (sig = 0.038). Its linear regression impact was also strong and significant (b = 0.500, sig = 0.000).

One possible explanation for the unsupported hypotheses is that the review content quality is not easily distinguished from the system quality. For example, when reviews created by numerous customers, inasmuch as these reviewers are unspecified to anonymous customers, it is hard to differentiate the quality of each review individually. However, customers would still focus on the feature of the systems they use, as systems capability is highly differentiable in terms of seller characteristics. Each online shopping mall provides different customer serv-

<Table 7> Quadratic Regression Analysis

x	R^2	B_0				B_1				B_2			
		beta	Std.err	t	Sig	beta	Std.err	t	Sig	beta	Std.err	t	Sig
Veracity	0.131	0.029	0.062	0.468	0.640	0.366	0.052	6.975	0.000	-0.029	0.035	-0.843	0.400
Correctness	0.133	9.47E-005	0.065	0.001	0.999	0.365	0.052	7.051	0.000	-9.5E-005	0.039	-0.002	0.998
Compactness	0.240	-0.087	0.061	-1.428	0.154	0.510	0.051	10.077	0.000	0.087	0.037	2.374	0.018
Adequacy	0.246	-0.078	0.061	-1.275	0.203	0.500	0.049	10.244	0.000	0.078	0.037	2.088	0.038

<Table 8> Hypotheses Test Result

Social Action	Hypotheses		Result
Reviewers' Communicative/ Dramaturgical actions	H1	As Veracity of review increases, its marginal impact on customer loyalty decreases.	Not Supported
	H2	As Correctness of review increases, its marginal impact on customer loyalty decreases.	Not supported
Seller's Instrumental Action	H3	As information compactness of review systems increases, its marginal impact on customer loyalty increases.	Supported
	H4	As information adequacy of review systems increases, its marginal impact on customer loyalty increases.	Supported

ice levels that can directly influence customer loyalty. Unlike to review quality, customers would be very sensitive to system quality when building customer loyalty.

In sum, two hypotheses for seller action were supported but the hypotheses for reviewers were not. The results from the quadratic regression analyses are summarized in <Table 7>. The summary of the hypotheses testing are in <Table 8>. Graphical presentations of the quadratic regression analyses are shown in <Figure A2> and <Figure A3> in Appendix.

V. Discussion

5.1 Academic Contributions

The study makes the following academic contributions. First, we derived the factors important in the eWOM context by using CAT. The most important characteristic of eWOM is that it is the social communication among reviewers, seller, and customers. While the contents of the reviews (i.e. rating, etc.) change, the action of the individuals continues. Hence, we can expect that focusing on customers' behavior (i.e., not the review itself) will lead to strengthened and applicable implications. Thus, we applied CAT framework to analyze eWOM activity. We also differentiate the influential actors between reviewers and sellers. CAT is appropriate in analyzing more than one actor's mingled social action because it provides detailed taxonomy of social actions with validity claims. We derived the cardinal factor using the validity claims proposed in CAT. In sum, by applying CAT, we can arrive at important eWOM factors from detailed sources by using reliable and consistent theoretical lenses.

Second, by showing the validation of the critical social theory using a positivistic approach, this study has extended its theoretical applicability and rigorousness. For now, critical social theories are considered impossible to "objectively" validate certain phenomena because, as discussed earlier, they assume that the society and people are inseparable [Myers, 1997]. People equate society with themselves and their views are always directed toward themselves; thus, they do not assume any objectivity in societal analysis. Previous studies deal with investigating social phenomena, which usually manifest as conflicts in the society from specific points of views, and dialectically analyze them [Orlikowski and Baroudi, 1991]. On the contrary, the positivist approach assumes that the society and its members (i.e., people) are separate concepts, and thus, people can "observe" and "investigate" the society in objectively. Statistical analysis of a large dataset is one of the typical approaches in positivist studies [Orlikowski and Baroudi, 1991] in order to ensure strong objectivity and generalizability, as prescribed by in statistics. This intrinsic difference in the basic assumption in relation to each perspective explains why there has not been any critical social theory with a positivistic approach taken as part of its research methodology. Nevertheless, this study attempts to break the preconceived idea by applying critical social theory (i.e., CAT) and assumes that constructs can be "objectively" validated. In doing so, we extracted the "variables" based on CAT "claimed to be valid," and operationalized them into objectively measurable constructs. While the operationalization technique used in this study followed the rigorous but typical procedures suggested by other positivist studies, the implication of this present work is very unique in a sense that we derived variables from "claimed" validities. We also validated the constructs "statistically" to explore whether the theory could explain well our arguments.

Third, this study theorized the curvilinear impact of factors and subsequently validated their impacts. As shown by most previous studies, linear relationships are assumed and tested for parsimonies [Au *et al*., 2008]. However, in reality, linearity is not a universally applicable situation; instead, diminishing or increasing marginal return is a common phenomenon in nature and in society [Sethi and King, 1998]. In other words, it is a widespread practice that the impact of one variable may change at its own level. Therefore, after identifying the antecedents of customer loyalty, this study attempted to capture the curvilinear feature of the relationship in quadratic terms. Not only did we find that seller impact varies with its own level, we have also theoretically supported why their impacts may not be linear and instead, curvilinear. Specifically for seller's impact, we captured the IT-specific characteristics of eWOM systems and note that such is a case wherein returns may exceed expectations. Therefore, based on this result, we suggest that sellers should put effort into eWOM systems in order to improve the qualities of compactness and adequacy.

5.2 Practical Implications

The current study offers the following implications to practitioners. First, this study shows the increasing importance of the seller's role in eWOM activities. In the past, especially in offline contexts, the role of seller in the customer referral

process is not specified. Word-of-mouth corresponds to communication between customers [Buttle, 1998], not with the seller. However in online businesses, the role of seller becomes increasingly important, as shown by the results presented in this study. How they design and manage eWOM systems therefore becomes the groundwork for building customer loyalty. These eWOM managing factors (i.e., information compactness and adequacy) have positive impacts, but also increase marginal impact. This suggests that the reward for effective eWOM management may be greater than expected. The strong involvement of sellers in the online referral process implies new business opportunities. There are many actual business cases of innovative eWOM management: *Amazon.com* provides separate customer review pages for each product with various additional services, such as "review rating" and "real name tagging," while *Bestbuy.com* provides seven types of review sorting methods so that customers can find the reviews as they want them to be. All these efforts from sellers are practical examples of effective eWOM management used to build long-term intimate relationships with customers.

Second, as for practitioners, four cardinal features were found important in eWOM management. In this study, not only have these factors been derived, these were also described in detail. Specifically, we interpreted them as adequately as possible in the eWOM context and showed examples corresponding to real business operations. Most of the prior eWOM research, as mentioned earlier, analyzes market-level parameters [Chevalier and Mayzlin, 2006], focusing on result-based facts [Duan *et al*., 2008] or analyzes the situation by focusing only customers' attitudes and motivation [Huang *et al*., 2008]. However, our study differentiates from prior literature in that it gives practical implications to practitioners by showing how reviewers and sellers should behave in real business in order to build quality relationship with customers. The four antecedents of customer loyalty (i.e., veracity, correctness, compactness, and adequacy) are all important factors, but with different impacts controlled by different actors. We identified them from a theoretical basis, but then construed them in the eWOM context, such that we can offer meaningful implications to both sellers and reviewers.

5.3 Limitations and Future Research

This study has the following limitations. First, the validities of items for veracity, correctness, compactness, and adequacy should be further refined. We conducted a series of pilot tests and a large-scale main survey; still, conceptual overlapping and redundancy between veracity and correctness, and the high correlation between compactness and adequacy, may exist. For example, people seem to perceive "good" intention and "true" intention as same even though they are under different constructs (i.e., veracity and correctness). Further discussions on these points are required. Another limitation could be the possible time gap in measuring the constructs used in this study. Inasmuch as we measured the "current" level of perceived veracity, correctness, compactness, and adequacy, as well as hypothesized them as leading to "future" level of loyalty (i.e., expected loyalty), measuring all of them within the same timeframe may still result in a time gap problem. This problem may be

solved by conducting a longitudinal study. Lastly, future research on the attributes of veracity, correctness, compactness, and adequacy of eWOM is suggested.

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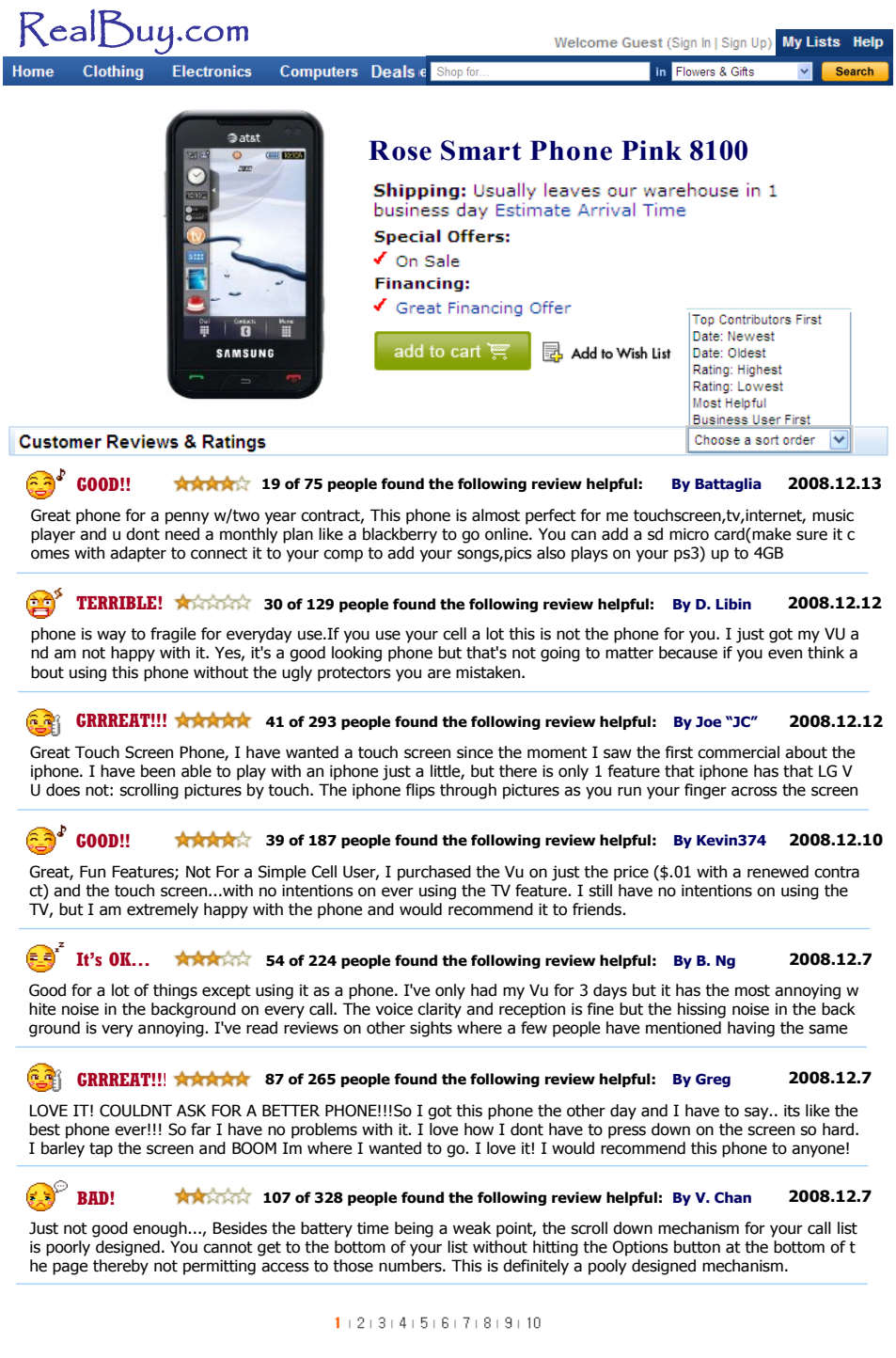
〈Appendix〉

<Table A1> Pilot Test Result

Stages\ Construct	Stage 1: Item Creation		Stage 2: Refinement				Stage 3: Finalization
	Keyword	Reference	Pilot test A		Pilot Test B	Result	Result
			Ave. rank	Var.	Item-to-total corr.		
Compactness	Faster	Bonoma and Clark [1988]; Clark [2000]	2.6	1.6	0.42	Modified	Dropped
	Compact		2.7	1.3	0.40	Modified	
	Space-saving		3.6	2.7	0.49	Refined	Dropped
	Time and effort savings		2.1	0.8	0.39		
	Convenience		4.0	2.0	0.61		
Adequacy	Information I want	Bonoma and Clark [1988]; Clark [2000]	2.3	1.3	0.58		
	Information I am looking for		3.2	1.1	0.71		Dropped
	Information I need		4.4	1.8	0.77		
	Appropriate information		2.2	1.1	0.64		
	Helpful Information		2.9	2.3	0.65		
Veracity	Good intention	Cukier *et al.* [2004]; Ngwenyama and Lee [1997]; Underwood and Ozanne [1998]	4.1	3.4	0.45		
	True intention		3.6	2.7	0.51		Move to Truthfulness
	No false assurance		3.6	1.6	0.68	Refined	
	Provide accurate info		3.2	4.8	0.60	Modified	
	Intention to be honest		2.5	1.2	0.66	Refined	Move to Truthfulness
	No information hidden		4.0	3.8	0.46	Modified	Move to Truthfulness
Correctness	No false information	Cukier *et al.* [2004]; Heng and de Moor [2003]	3.8	2.0	0.65		
	Objective facts		3.0	4.7	0.61		Dropped
	No omission and distortion		3.8	4.4	0.66		
	Factual		3.3	2.9	0.69		Dropped
	Believable		3.5	2.1	0.59	Refined	Dropped
	Accurate		3.6	2.9	0.69	Dropped	
Customer loyalty	Frequent buying	Flavián and Guinalí [2006]; Harris and Goode [2004]	5.2	2.2	0.78	Dropped	
	First choice		4.2	8.4	0.81		
	Intention to visit in near future		4.8	4.6	0.85		
	Repeat purchase		3.3	6.2	0.85		
	Recommend to others		6.3	3.1	0.76	Dropped	
	Patronize		3.4	3.2	0.88		
	Favorite site		3.9	4.5	0.94		
	Overall attachment		4.9	6.5	0.75	Dropped	

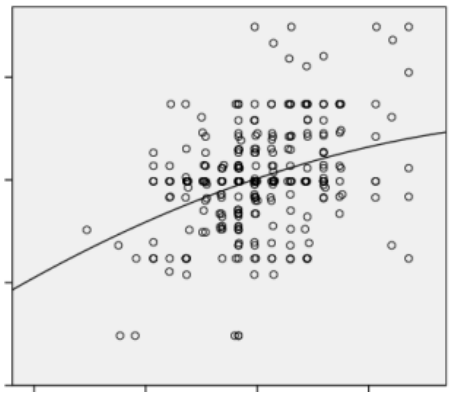
<Table A2> Measurement Items

Construct	Keywords	Sentence
Compactness	Conciseness	This Web site delivers concise customer reviews.
	Time and effort savings	This Web site delivers customer reviews that help save my time and effort to scan.
	Convenience	This Web site delivers customer reviews that I can scan conveniently.
Adequacy	Information I want	The customer reviews in this Web site provide the information I want.
	Information I need	The customer reviews in this Web site provide the information I need.
	Appropriate information	The customer reviews in this Web site provide appropriate information.
	Helpful Information	The customer reviews in this Web site provide helpful information.
Veracity	Good intention	The reviewers have good intentions.
	No false assurance	The reviewers do not give any false assurances.
	Intention to provide accurate information	The reviewers intend to provide accurate information.
Correctness	True intention	The reviewers have true intentions.
	No intention to hide info.	The reviewers do not intend to hide any information.
	Intention to be honest	The reviewers intend to be honest.
	No false information	The customer reviews do not contain any false information.
	No omission and distortion	The customer reviews do not include any omission or distortion.
Customer loyalty	First choice	This Web site would be my first choice if I shop online.
	Intention to visit in the near future	I intend to visit this Web site in the near future.
	Repeat purchase	I intend to purchase from this Web site repeatedly.
	Patronize	I intend to patronize this Web site.
	Favorite site	This Web site would be my favorite site for shopping.



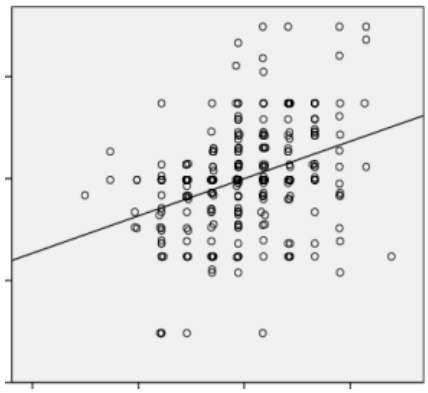
<Figure A1> The Screen Shot used in the Main Survey

H1-Not Supported



X: Customer loyalty
Y: Veracity of Review

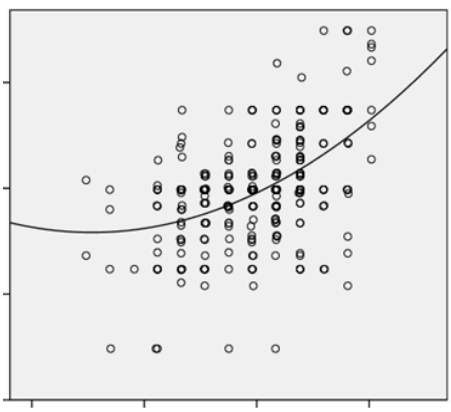
H2-Not Supported



X: Customer loyalty
Y: Correctness of Review

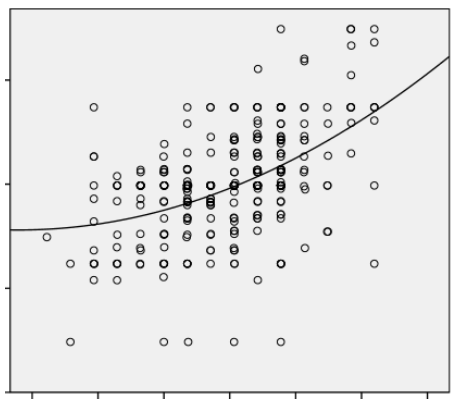
<Figure A2> Quadratic Regression Plots of H1 and H2

H3-Supported



X: Customer loyalty
Y: Information Compactness

H4-Supported



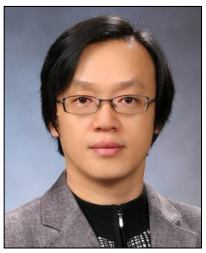
X: Customer loyalty
Y: Information Adequacy

<Figure A3> Quadratic Regression Plots of H3 and H4

◆ About the Authors ◆

Jung Lee

Jung Lee is an Assistant Professor in the Bang College of Business at KIMEP University. She was a post-doctoral research fellow in the Department of Information Systems at the National University of Singapore. She received Ph.D. degree in MIS from Korea University Business School, M.S. degree in Information Systems from the Graduate School of Information of Yonsei University, and B.S. degree in Biology from Korea Advanced Institute of Science and Technology (KAIST). Her research interests include electronic word-of-mouth, trust/distrust and social media. She has published papers in journals including Decision Support Systems, Information and Management, Information Systems Frontiers, International Journal of Electronic Commerce, and presented papers at conferences including ICIS, AMCIS, and PACIS.



Jae-Nam Lee

Jae-Nam Lee is a Professor in the Business School of the Korea University in Seoul, Korea. He was formerly on the faculty of the Department of Information Systems at the City University of Hong Kong. He holds MS and Ph.D. degrees in MIS from the Graduate School of Management of the Korea Advanced Institute of Science and Technology (KAIST). His research interests are IT outsourcing, knowledge management, information security management, e-commerce, and IT deployment and impacts on organizational performance. His published research articles appear in MIS Quarterly, Information Systems Research, Journal of MIS, Journal of the AIS, Communications of the AIS, IEEE Transactions on Engineering Management, European Journal of Information Systems, Communications of the ACM, Information and Management, and others. He is currently serving on the editorial board of Journal of the AIS, Pacific Asia Journal of the AIS, and Electronic Commerce Research and Applications.

Bernard C.Y. Tan

Bernard C.Y. Tan (http://www.comp.nus.edu.sg/~btan) is Professor of Information Systems and Vice Provost (Education) at the National University of Singapore (NUS). He received his Ph.D. in information systems from NUS. He has been a Visiting Scholar in the Graduate School of Business at Stanford University and the Terry College of Business at the University of Georgia. He has received university teaching and research awards at NUS. He is a Fellow and a past President of the Association for Information Systems (AIS). He has served on the editorial boards of MIS Quarterly (senior editor), Journal of the AIS (senior editor), IEEE Transactions on Engineering Management (department editor), Management Science (associate editor), ACM Transactions on Management Information Systems (associate editor), and Journal of Management Information Systems. His research has been published in journals such as ACM Transactions on Computer-Human Interaction, ACM Transactions on Information Systems, ACM Transactions on Management Information Systems, IEEE Transactions on Engineering Management, IEEE Transactions on Professional Communication, IEEE Transactions on Systems, Man and Cybernetics, Information Systems Research, Journal of Management Information Systems, Journal of the AIS, Journal of the American Society for Information Science and Technology, Management Science, and MIS Quarterly. His current research interests are social media, virtual communities, and knowledge management.

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