Effects of attribute and valence of e-WOM on message adoption: Moderating roles of subjective knowledge and regulatory focus

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1. Introduction

Word-of-mouth communication (WOM), in which peer consumers share information about products/services, is one of the most influential communication media in delivering product/service information provided by consumers (Alreck & Settle, 1995; Arndt, 1967). WOM communication overcomes shortcomings of seller-centric marketing communication messages in that it provides useful information by peer consumers, who have purchased and experienced products/services (Mahajan, Muller, & Kerin, 1984). Consumers trust peer consumers more than they trust advertisers or marketers (Lee & Youn, 2009; Sen & Lerman, 2007) and evaluate products/services using information that other people provide (Bone, 1992; Burnkrant & Cousineau, 1975; Herr, Kardes, & Kim, 1991; Lacznia, DeCarlo, & Ramaswami, 2001). Previous studies show that WOM communication affects evaluations of, attitudes towards, and intentions to purchase products/services (Bone, 1992; Harrison-Walker, 2001; Herr et al., 1991). Development of network technology and ubiquitous distribution of the Internet have transformed traditional face-to-face WOM communication into computer-mediated WOM (e-WOM) communication. Consumers now use the Internet to share experiences and opinions. Consumers can write their product experiences and read peer consumers’ product evaluation on different platforms such as retailers’ websites, brand community, independent websites, consumer blogs, and other platforms (Herr et al., 1991; Lee & Youn, 2009). While some consumers provide experience-based product information (review posters), others read product information provided by peer consumers (reviewers). There are several differences between traditional WOM and e-WOM. First, unlike face-to-face WOM, e-WOM arises from an unlimited number of unknown consumers, which produces vast amounts of unfiltered products/services information. This anonymous nature of the posted reviews about products in online environments makes it difficult for consumers to determine the quality and credibility of the e-WOM (Lee & Youn, 2009). Second, e-WOM contains both positive and negative product information from experienced peer consumers (Lee, Rodgers, & Kim, 2009). Even though posted negative reviews are infrequent (Chiou & Cheng, 2003), they are viewed as more influential (Herr et al., 1991; Lee & Youn, 2009). Consumers tend to perceive negative product information as more diagnostic than that of a positive one (Herr et al., 1991). Third, consumers’ reviews are easily read and observed in an online environment. Online consumers’ reviews are normally provided in text formats, the quality and contents of which are thus easily retrieved, read, and evaluated. Accordingly, e-WOM studies should consider all of these characteristics.

Previous research on e-WOM has studied how online reviews have influenced message credibility and acceptance. Review valence (positive vs. negative message) has been the most frequently investigated topic. However, results from this stream of previous studies are inconsistent. These inconsistent results may imply further research is needed. In addition to review valence, attributes of online reviews such as contents and quality should also be investigated to better understand the impact online reviews have on message credibility. However, this stream of research is relatively
scarce and results are mixed (Klein & Ford, 2003; Park & Kim, 2008). Building on this prior tradition of research, the current study aims (1) to investigate the effects of review valence and attributes on e-WOM credibility, which has a subsequent impact on review acceptance, and (2) to investigate the moderating impact of reviewer characteristics including regulatory focus and subjective knowledge on the links between review valence/attributes and e-WOM credibility.

Following this introduction, Section 2 provides a review of previous research related to e-WOM and related constructs. Section 3 describes the research model and proposes the hypotheses to be tested. Section 4 describes the research methodology of the empirical study. Section 5 reports on the testing of the hypotheses and presents a discussion. Section 6 presents implications, limitations, and suggestions for future research.

2. Literature review

2.1. Previous research toward e-WOM

Online review studies can be classified into three categories: review quantity, review valence, and review attribute. First, the number of online reviews, whether they are positive or negative, is an important factor influencing consumers’ evaluations of online reviews (Chen, Wu, & Yoon, 2004; Duan, Gu, & Whinston, 2008). The number of reviews posted by consumers may be a signal of product popularity. In addition, an increase in the number of reviews relates to an increase in the amount of information. When consumers lack knowledge on a product or on the outcomes of using that product, they may engage in uncertainty reduction efforts to mitigate and eliminate the risk associated with it and to maximize the outcome value. Consumers can reduce the uncertainty by gathering more information about the product. Thus, the number of reviews influences review message processing. Previous studies have suggested that the number of reviews has a positive impact on the review effect, no matter whether they are positive or negative. Chen et al. (2004) confirmed that an increase in information sources leads to more credibility. Duan et al. (2008) showed that the number of online reviews positively influences box office sales.

Second, the most frequently researched topic in consumers’ online reviews is review valence. Online reviews are classified as positive or negative reviews in terms of their directionality (Lee et al., 2009). Although this topic has been studied extensively, the results have failed to produce a consistent conclusion. Most previous research showed that negative information generally has a stronger influence than either neutral or positive information (Herr et al., 1991; Lee et al., 2009; Xue & Zhou, 2010; Yang & Mai, 2010). This tendency has been referred to as negativity bias or the negativity effect. According to this theory, when people form impressions of an object, they are more affected by negative characteristics than positive ones. This negativity effect occurs since negative information is scarcer than positive information (Chou & Cheng, 2003). Accordingly, individuals pay more attention to negative than positive information, and negative cues are given more weight (Fiske, 1980). Herr et al. (1991) showed that a negative WOM has a stronger impact than a positive WOM. This result is explained by prospect theory, which implies that losses loom larger than gains (Lee, Park, & Han, 2008).

In contrast to these findings, positivity effects have also been found in previous studies (Clemens, Gao, & Hitt, 2006; Gershoff, Mukherjee, & Mukhopadhyay, 2003; Lee et al., 2005; Skowronski & Carlston, 1989), although they are less frequently studied than negativity effects. Gershoff et al. (2003) showed that positive reviews have a stronger impact than negative ones. Doh and Hwang (2009) showed that positive reviews have a positive significant effect on attitudes and purchase intention. A positivity effect occurs where positive information is considered more diagnostic than negative information. Accordingly, research attesting negativity effects ignore the possibility that opposite effects could occur. In other words, previous research of negativity effects did not expect positivity effects to occur when people rely more on positive information (Skowronski & Carlston, 1989). According to a cue-diagnosticity model, negativity effect does not always occur (Skowronski & Carlston, 1989). Rather, positivity effect is more likely to occur when positive cues are more diagnostic than negative cues. This suggests that when people rely more on positive cues than negative ones, the positivity effect is more likely to occur. Different from negativity or positivity effects, Cheung, Luo, Sia, and Chen (2009) demonstrated that message valence has no impact on message credibility.

The third characteristic of online review research is related to information attributes contained in online reviews. Review attributes is related to classifying reviews based on their nature: objective vs. subjective and/or attribute-centric vs. benefit-centric. A customer’s decision-making is determined by his or her estimated value of the product. In estimating product value, a customer must carefully examine the specific attributes; some customers have specific standards for their evaluation, while others do not (Lee & Lee, 2009). Information gathered and used to evaluate product/service can be classified as objective and subjective information. Objective information is characterized as factual search-type information such as prices and product specifications, whereas subjective information tends to be more personal, experience-based, and subject to personal interpretations of product/service such as wine, restaurants, and travel experiences. Previous research (Klein & Ford, 2003; Ratchford, Lee, & Talukdar, 2003; Yoon & Kim, 2001) has shown that consumers have a distinct preference for objective information when they search for information online, and a distinct preference for subjective information when dealing with off-line information sources. Petty and Cacioppo (1984) suggested that objective and easily understood messages have a stronger effect than subjective and/or affective messages. However, Klein and Ford (2003) found no differential effect produced by review attributes. Online consumer reviews offer more consumer-oriented information and describe experience-based product attributes in terms of use situations (Bickart & Schindler, 2001). Accordingly, subjective information, rather than standardized and objective information, has a more profound effect, and the effect of subjective information may differ between consumers with different levels of knowledge. However, sellers offer more product-oriented information, such as product attributes, technical specifications, and performance results in relation to technical standards. Similarly, Park and Kim (2008) categorized review contents into two different types: the attribute-centric review and the benefit-centric review. In attribute-centric reviews, arguments supporting reviewers’ evaluations are based on technical attributes such as numbers representing attribute levels. By contrast, in benefit-centric reviews, supporting arguments convey subjective interpretations about such technical attributes. Park and Kim (2008) showed that consumers with expertise tend to prefer attribute-centric reviews to benefit-centric ones. Consumers with no expertise prefer benefit-centric reviews to attribute-centric ones. However, previous studies have rarely investigated the effects produced by different types of information among consumers with different levels of knowledge. With respect to empirical studies, Petty and Cacioppo (1984) suggested that objective and easily understood messages have a stronger effect than subjective and/or affective messages. Meanwhile, Klein and Ford (2003) found no differential effect produced by review attributes. This stream of research is another topic adopted in the current study.
The inconsistent results found between review valence/attribute suggest more research for this topic and imply a potential impact of moderating variables. A moderator is defined as one that systematically modifies either the form and/or the strength of the relationship between a predictor and a criterion variable (Sharma, Durand, & Gur-Arie, 1981). Personality and situational factors are frequently introduced as moderators (Barron & Kenny, 1986). The current study builds on this tradition of research to explain the inconsistent results between review valence/attribute and message credibility found in previous studies.

The present study extends extant knowledge by combining the second and third streams of prior research. More specifically, the aims of the current study are to investigate (1) the effects of review valence on review credibility, which have produced inconsistent results, and (2) the effects of review attribute such as objective vs. subjective online reviews, which have rarely been studied. In addition, the current study (3) investigates the moderating impact of reviewer characteristics including regulatory focus and subjective knowledge on the links between review valence/attributes and e-WOM credibility. The first objective may confirm whether the negativity effect is valid. The second objective may extend our knowledge on the effect produced by online review attributes. The third objective may contribute to explaining the inconsistent results found in the relationship between review characteristics and review credibility. Previous studies on e-WOM are summarized in Table 1.

### 2.2. Review credibility

Credibility is defined as the extent to which one perceives sources of information provided as unbiased, believable, true, or factual (Hass, 1981). If the source of reviews in an online context is perceived as having bias or providing messages with purposes other than consumer experiences and recommendation, the credibility of the source is degraded (Hass, 1981). If receivers perceive and judge that the credibility of the message is not high enough, they resist the persuasive intent of the messages. Thus, the consumer’s judgment on message credibility is considered important. Levels of message credibility ultimately determine the levels of message acceptance and learning of an individual. This is especially true for an online context.

A unique characteristic of e-WOM is that the communication often occurs among people who have little or no prior relationship with one another and thus consumers who read the reviews do not know who wrote the online reviews that were posted. Meanwhile, this anonymity allows consumers to share their opinions more comfortably without revealing their identities (Goldsmith & Horowitz, 2006), thus increasing the volume of e-WOM (Chatterjee, 2001). However, this anonymous nature of e-WOM also makes it difficult for consumers to determine the quality and credibility of the e-WOM (Chatterjee, 2001). Review posters may use nicknames instead of real identification, or sometimes, even when review posters use an identity, consumers may not be certain that the identity is real. In addition, consumers may think that companies and/or marketers can influence the activities of the consumers’ online review posting and reading without revealing their identities online. Marketers have attempted to influence e-WOM compensating consumers to review products, and even going so far as to post their own reviews about their products (Lee & Yoon, 2009). Accordingly, this makes it difficult for consumers to judge the message credibility, which plays an important role in consumer acceptance of online reviews.

### 2.3. Review adoption

Message adoption is defined as the extent to which an individual accepts the messages after he or she carefully evaluates information in the message and considers it meaningful and beneficial.

### Table 1

Previous studies of e-WOM.

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Data</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lee et al. (2009)</td>
<td>Survey</td>
<td>Extremely positive reviews increase attitude toward the brand and moderate negative reviews produce same effect. In addition, extremely negative reviews has a stronger impact on attitude toward the brand than either moderately negative reviews or extremely positive reviews.</td>
</tr>
<tr>
<td>Yang and Mai (2010)</td>
<td>Gamespot.com, May 2003–March 2007</td>
<td>Consumers tend to pay more attention to negative e-WOM than positive e-WOM.</td>
</tr>
<tr>
<td>Gershoff et al. (2003)</td>
<td>Survey</td>
<td>Positive extreme agreement is more influential than negative extreme agreement when advice valence is positive.</td>
</tr>
<tr>
<td>Clemons et al. (2006)</td>
<td>Craft beer industry, ratebeer.com, April 2000–July 2004</td>
<td>Variance of ratings and the strength of the most positive quartile of reviews play a significant role in determining which new products grow fastest in the marketplace. Strongly positive ratings can positively influence the growth of product sales.</td>
</tr>
<tr>
<td>Cheung et al. (2009)</td>
<td>Online survey</td>
<td>Message valence has no effect on credibility of e-WOM reviews.</td>
</tr>
<tr>
<td>Doh and Hwang (2009)</td>
<td>Survey</td>
<td>More positive reviews have a positive impact on attitudes towards the website, product, and purchase intention, but no effect on e-WOM credibility.</td>
</tr>
<tr>
<td>Xue and Zhou (2010)</td>
<td>Survey</td>
<td>Consumers tend to trust negative reviews more than positive messages, but consumers express more interests for products with positive reviews than products with negative reviews; positive reviews have a much stronger influence on purchase intention than negative reviews.</td>
</tr>
<tr>
<td>Klein and Ford (2003)</td>
<td>Online survey</td>
<td>There is no significant relation between the importance of different attribute types and the proportion of search conducted on the Internet.</td>
</tr>
<tr>
<td>Park and Kim (2008)</td>
<td>Survey, Experimental study</td>
<td>For consumers with high expertise, reviews framed as attribute-centric have a better fit than reviews framed as benefit-centric, but for consumers with low expertise, reviews framed as benefit-centric have a better fit than reviews framed as attribute-centric.</td>
</tr>
<tr>
<td>Duan et al. (2008)</td>
<td>Yahoo! Movies, Variety.com, and BoxOfficeMojo.com</td>
<td>Number of user postings has a positive impact on box office revenues.</td>
</tr>
<tr>
<td>Chen et al. (2004)</td>
<td>Amazon.com</td>
<td>An increase in information sources could lead to more trust. And review recommendations are positively associated with sales, while consumer ratings are not found to be related to sales.</td>
</tr>
</tbody>
</table>
Consumers’ evaluation of online reviews may change according to the levels of credibility consumers perceive from the online reviews or recommendations. The message with useful solutions is considered important and valuable information. Previous studies of message credibility show that high message credibility is positively associated with positive evaluation and acceptance (Cheung et al., 2009; Nabi & Hendrinks, 2003; Zhang & Watts, 2008).

2.4. Subjective knowledge

Consumer knowledge is an important construct in understanding consumer information search and processing (Alba & Hutchinson, 1987). Researchers identified three categories of knowledge: subjective knowledge, objective knowledge, and usage knowledge (Brucks, 1985). Among them, subjective knowledge has shown to be a stronger predictor for behaviors and perceptions than other types of knowledge (Flynn & Goldsmith, 1999; Selnes & Gronhaug, 1986). Subjective knowledge is defined as the extent to which individuals perceive that they know (Brucks, 1985). Previous studies showed that subjective knowledge is related to information search (Brucks, 1985), information processing (Alba & Hutchinson, 1987), and decision processes (Moorman, Diehl, Brinberg, & Kidwell, 2004). Punj and Staelin (1983) assumed that prior knowledge about product category makes it easier for consumers to comprehend new information.

This is especially true for consumers who deal with message content. According to Petty and Cacioppo (1981), there are two different routes of persuasion: central and peripheral routes. The central route occurs when recipients carefully consider the issues presented by the message. Thus, attitude changes are determined by the issue-related arguments of the message claims. The peripheral route is adopted when recipients do not carefully consider the issues presented by the message. If the arguments are weak, heuristics will have a more profound impact in changing beliefs and attitudes (Tam & Ho, 2005). In the present study, people high in subjective knowledge are proposed to perceive the credibility of the message as high when they deal with objective information.

2.5. Regulatory focus theory

Regulatory focus posits two motivational orientations including a promotion focus and a prevention focus (Higgins, 1997). Promotion-focused individuals emphasize aspirations and achievements and focus on the presence and absence of positive outcomes. Prevention-focused individuals are concerned with responsibilities and safety and focus on the presence and absence of negative outcomes. Thus, promotion-focused individuals emphasize the prevalence of positive outcomes and minimizing errors of omission, whereas prevention-focused individuals favor the absence of negative outcomes and the minimization of errors (Haws, Dholakia, & Bearden, 2010). These two distinct goals can be served by different strategic means; that is, promotion focus uses an approach strategy to goal attainment, whereas prevention focus uses an avoidance strategy to goal attainment (Higgins, 2002). Regulatory focus theory has gained influence in psychology, marketing, and other areas because of its ability to explain and predict a variety of psychological processes and behaviors. In the present study, it is proposed that while promotion focus customers will perceive positive online reviews more credible, prevention focus customers will perceive negative online reviews more credible.

3. Research model and hypotheses

The research model proposed in the present study is shown in Fig. 1. Five different hypotheses are proposed. The first hypothesis proposes the relationship between review credibility and review adoption. The credibility of e-WOM is defined as the extent to which one perceives a review as believable, true, or factual (Cheung et al., 2009; Nabi & Hendrinks, 2003). Wathen and Burkell (2002) pointed out that when consumers are reading online reviews, they make evaluations of the message’s credibility, which determines how much an individual learns from and adopts the received message (Sussman & Siegal, 2003). Thus, a reader who thinks the received review is credible will have more confidence in adopting and using the e-WOM comments for making purchase decisions (Nabi & Hendrinks, 2003). In an empirical study, Cheung et al. (2009) showed that perceived e-WOM credibility has a positive effect on e-WOM review adoption. Accordingly, following hypothesis is proposed. This H1 may reaffirm the consistent results found in previous studies.

H1. The higher the credibility of online reviews, the more likely the online reviews will be adopted.

As we have seen in the literature review, information gathered and used to evaluate product/service is classified into subjective and objective information. There have been two competing theories. One theory shows that consumers have a distinct preference for objective information when they search for information online, and a distinct preference for subjective information when dealing with offline information sources (Klein & Ford, 2003; Ratchford et al., 2003; Yoon & Kim, 2001). Another theory demonstrates that online consumer reviews offer more consumer-oriented information and describe experience-based product attributes in terms of usage situations (Bickart & Schindler, 2001). However, the present study assumes that if the attribute information is all objectively measurable, there is a low possibility of misunderstanding, or bias, in the evaluation process. In addition, searching and purchasing products online carries relatively higher risk than offline purchasing, since online product search and purchasing does not permit physical observation and touch. Accordingly, consumers tend to use objective information more when they search for information online. Thus, consumers tend to perceive objective information more credible than subjective information. In addition, this topic is relatively under-studied. With respect to empirical findings, the results are not consistent. While Petty and Cacioppo (1984) suggested that objective and easily understood messages have a stronger effect than subjective and/or affective messages, Klein and Ford (2003) found no differential effect produced by review attributes. Thus, the following hypothesis is proposed. This hypothesis may contribute to extending our knowledge by investigating a rather under-studied topic.

H2. The credibility of online reviews with objective information will be higher than that of online reviews with subjective information.

As we have seen in the literature review, previous research on traditional WOM communication showed an inconsistent relationship between expertise and WOM behavior (Punj & Staelin, 1983). These inconsistencies may imply that the levels of knowledge consumers have may play as a moderating variable. Park and Kim (2008) suggested that experts view attribute-centric reviews as more informative, useful, and helpful than reviews framed as being benefit centric. By contrast, novices state that reviews framed as being benefit centric are more informative, useful, and helpful. Thus, the following hypothesis is proposed. This hypothesis may contribute to explaining the under-studied and inconsistent results found for review attributes.
H3. While the credibility of objective online reviews will be higher for consumers with high subjective knowledge than that of subjective online reviews, the credibility of subjective online reviews will be higher for consumers with low subjective knowledge than that of objective online reviews.

As we have seen in the literature review, the numbers of online reviews, the number of lines in a review, the credibility of negative online reviews, the positivity effect of online reviews, the presence or absence of a negative outcome, and the numbers of online reviews are important factors affecting the credibility of online reviews. Based on these observations of the online reviews, seven different and important attributes of digital cameras were noticed. In addition, previous studies often refer to online reviews describing digital cameras. In addition, the tradition of winning a lottery is quite prevalent for research companies in Korea. In terms of all test variables, the t-test results showed that the respondents who won the lottery were not different from the respondents who did not win (t(317) = .13, p = .28).

H4. The credibility of negative online reviews will be higher than that of positive online reviews.

As we saw in the literature review, while promotion focused consumers tend to adopt an approach strategy and value attainment decisions more highly than avoidance decisions, prevention focused consumers tend to adopt an avoidance strategy and value avoiding losses. According to Idson, Liberman, and Higgins (2000), while promotion focused people display greater eagerness in striving toward a positive outcome than away from its absence, prevention focused individuals are concerned about the presence of a negative outcome more intensely than they are concerned with its absence. Accordingly, it is predicted that positive online reviews may be favored by promotion-focused consumers, whereas negative reviews may be preferred by prevention-focused consumers. Based on these discussions, the following hypothesis is proposed. This last hypothesis may explain the inconsistent results found between review valence and credibility in previous research.

H5. While the credibility of positive online reviews will be higher for promotion-focused consumers than that of negative online reviews, the credibility of negative online reviews will be higher for prevention-focused consumers than that of positive online reviews.

4. Method

4.1. Research design

The present study used experiments with 2 (positive vs. negative review valence) by 2 (objective vs. subjective review attributes) between subject designs. A total of 319 university students were randomly assigned to one of the four conditions; in order to motivate the respondents to participate in the present online survey, researchers told the respondents that about 20% of them may win a lottery worth approximately $20 when they complete the survey. Each respondent was identified with an individual number. A week after the survey was completed, the lottery was drawn. Only 20% of the respondents were invited to win a lottery because of the limited budget for the survey. In addition, this tradition of winning a lottery is quite prevalent for research companies in Korea. University students are qualified because they tend to search for information using computers and purchase products online more frequently than that of other people in different social groups.

4.2. Stimuli

4.2.1. Experimental product

Products as experimental stimuli were chosen based on two criteria. First, products had to appeal to respondents and thus be easily accessed and purchased. Second, respondents had to show interest in knowing the opinions of other consumers regarding the products. Accordingly, the present study selected a digital camera, which satisfied these two conditions. The penetration rate of digital cameras in Korea is the highest in the world, and thus, consumers frequently use and purchase the product (Lee et al., 2008). In addition, previous studies often refer to online reviews describing digital cameras (Mackiewicz, 2010; Mudambi & Schuff, 2010), which are considered as a relevant stimulus product.

4.2.2. Online consumer review

Before constructing online shopping malls to be tested, the authors observed various online review comments on digital cameras. Based on these observations of the online reviews, seven different and important attributes of digital cameras were noticed. In addition, the numbers of online reviews, the number of lines in a
review, and the letters found on a regular webpage were also identified. Through these observations and analyses, 40 different attributes and benefits of digital cameras were developed and put into a pilot test for 160 subjects. The pilot test asked about the valences and attributes of online reviews. With respect to online review valences, respondents in the pilot test rated online reviews as positive, negative, or neutral. With respect to review attributes, respondents described the reviews as subjective, objective, or neutral. Online reviews that more than 60% of the respondents in the pilot test rated as positive, and less than 20% rated as negative were classified into a positive review category. Meanwhile, online reviews that more than 60% of the respondents rated as negative, and less than 20% rated as positive were classified into a negative review. Review attributes were also classified using similar procedures. Based on these classifications, reviews were classified into one of four different conditions (positive and objective, positive and negative, negative and objective, and negative and subjective), and each condition contained 10 different descriptions. Positive reviews, for example, consisted of eight positive descriptions and two negative descriptions, while negative reviews contained eight negative descriptions and two positive descriptions. With respect to review attributes, while subjective reviews consisted of eight subjective descriptions and two objective descriptions, objective reviews consisted of eight objective statements and two subjective statements.

4.3. Procedures and participants

Respondents participating in the experiments were students enrolled in courses such as advertising and management. Participants received a letter that contained a URL address and were asked to participate in an experiment related to various consumer reviews of digital cameras. If a respondent logged into the experimental website, one of four different conditions was assigned randomly. The experimental websites were constructed by a contracted professional website design firm and looked similar to professional websites frequently found in Korea. Participants were requested to observe the first page of the experimental website and were guided to the next page, which contained survey questions. The first page of the experimental website described basic information, such as price and functions in the upper section, and various review comments posted by experienced consumers of the product. After reading the first page, participants rated questions of regulatory focus, online review credibility, intention to accept the reviews, and items for manipulation check. Lastly, respondents were asked to answer what was the purpose of the experiment and were thanked. The results showed that no respondents knew the purpose of the research. Participants who did not answer all of the questions were re-directed to the beginning part of the experimental website.

Three hundred nineteen university students participated in the survey. Among them, 97.2% of the respondents had experienced online purchasing. The use of university students was considered appropriate for this study since they actively engage in e-WOM when they search for information before purchases [Lee & Youn, 2009]. Approximately 48% of the respondents were females. Most of the respondents were aged between 21 and 25; their average age was 23.4. Among the respondents, 57.7% had engaged in online purchasing one to two times, and 41.4% of the respondents had four to 6 years of online shopping experiences. Table 2 shows the demographics of the respondents.

4.4. Measurement

All measurement scales used in the present study were measured using a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree). Review credibility was measured with two items adopted from Cheung et al. (2009). Review acceptance was measured with two items used in previous studies by Cheung et al. (2009) and Zhang and Watts (2008). Subjective knowledge was measured using three items employed by Brucks (1985) and Flynn and Goldsmith (1999). Scale items to measure regulatory focus were adopted from Lockwood, Jordon, and Kunda (2002), who proposed promotion- and prevention-centric regulatory focus constructs, each consisting of four items. Average values of promotion- and prevention-centric regulatory focus were used to split the participants into high and low groups in terms of promotion- and prevention-centric regulatory focus. All measurement items used in the present study with their sources and their descriptive statistics such as item mean, concept mean, and Cronbach’s alpha are found in Table 3. As we can see in Table 3, all constructs had average values between 3.33 and 5.41. Among them, the average score for subjective knowledge was lowest. All concepts used had alpha values greater than .79, all of which demonstrate that the reliabilities of the measured scales are adequate.

5. Results

5.1. Manipulation checks

In order to check the levels of the respondents’ perceptions of review valences and attributes, several items asked the respondents whether the online reviews were positive or negative, objective or subjective at the end of the questionnaire. To check the manipulation for review valence, respondents were asked “how positive or negative the previous online reviews were” on a seven-point Likert scale. Results from the t-test showed that the group exposed to positive reviews rated higher than the group exposed to negative reviews ($M_{positive} = 5.05$, $M_{negative} = 2.15$, $p < 0.00$). To check the manipulation for review attribute, respondents were asked “how objective or subjective the previous online reviews were” on a seven-point Likert scale. Results from the t-test showed that the group exposed to the objective reviews rated higher than the group exposed to the subjective reviews ($M_{objective} = 5.35$, $M_{subjective} = 3.80$, $p < 0.00$). These results suggest that the manipulations were successful.

5.2. Hypotheses testing

Regression and ANOVA were used to test the proposed hypotheses. Regression analysis was used to test H1, which predicted that
Tables 5 and 6 present the ANOVA results. The results show that objective information was higher than that of online reviews with subjective knowledge. The results in Table 4 show that review credibility had a significant positive impact on acceptance ($\beta = .52$, $p < .001$). The results support H1.

H2 proposed that the credibility of online reviews with objective information will be higher than that of online reviews with subjective information. Tables 5 and 6 present the ANOVA results and show that the credibility of online reviews with objective information was higher than that of the online reviews with subjective information ($M_{\text{objective}} = 4.20, M_{\text{subjective}} = 3.89, F(1,315) = 7.94, p < .01$). This result supports H2.

H3 predicted that while the credibility of objective online reviews will be higher for consumers with high subjective knowledge that that of subjective online reviews, the credibility of subjective online reviews will be higher for consumers with low subjective knowledge than that of objective online reviews. The results in Table 5 show that the interactional impacts of subjective knowledge and online reviews were positive and significant ($F(1,315) = 4.39, p < .05$). As seen in Table 6, these results imply that the credibility of objective online reviews is higher for consumers with high subjective knowledge ($M_{\text{objective}} = 4.57$) than that of subjective online reviews ($M_{\text{subjective}} = 3.92$). However, the credibility of subjective online reviews is not different from that of objective online reviews for consumers with low subjective knowledge ($M_{\text{objective}} = 3.96$ vs. $M_{\text{subjective}} = 3.87$). Accordingly, H3 is partially supported by these results seen in Fig. 2.

H4 expected that the credibility of negative online reviews will be higher than that of positive online reviews. ANOVA results shown in Tables 7 and 8 demonstrate that the credibility of negative online reviews ($M_{\text{negative}} = 4.16$) was higher than that of positive online reviews ($M_{\text{positive}} = 3.89$). An $F(1,315)$ of 4.49 was significant with a $p < .05$. The results support H4.

H5 predicted that while the credibility of positive online review will be higher for promotion-focused consumers than that of negative online reviews, the credibility of negative online reviews will be higher for prevention-focused consumers than that of positive online reviews. The results shown in Table 7 demonstrate that there was no interactional effect ($F(1,315) = .14, p = .71$). Accordingly, H5 is not supported seen in Fig. 3.
6. Conclusion and discussion

6.1. Discussion

The literature review showed that (1) there were inconsistent results between review valence and message credibility, and (2) research studying the effect produced by review attributes such as objective vs. subjective online reviews is relatively scarce and also inconsistent. The results of this study indicate that moderating variables may possibly influence the constructs such as individual and/or situational differences. The results in the present study demonstrate that negative and negative objective online reviews were more credible than positive and subjective online reviews. It was also shown that consumers with high subjective knowledge objective gave more credibility to attribute-centric online reviews. The results of this study partially explain the inconsistent results between review valence/attribute and message credibility found in previous studies by introducing subjective knowledge as a moderating variable. Globally speaking, the present study contributes to the extant research by (1) confirming that the negativity effect is more valid than the positivity effect, (2) extending our knowledge that the effect produced by objective online reviews is more important than subjective online reviews, and (3) introducing the moderating effect of subjective knowledge, which explains the inconsistent results found in the relationship between review characteristics and review credibility. A more detailed discussion of the results follows.

First, consumers who rate review credibility high tended to easily accept online messages. This result coincides with the previous study of Wathen and Burkell (2002), which showed that message credibility determines message acceptance because consumers who think the messages are credible have confidence in them and use them as informational cues in decision making.

Second, the present study shows that consumers gave more credibility to online reviews with objective information than reviews with subjective information. This result implies that consumers tend to trust information that can reduce risk associated with online purchasing. Unlike offline purchasing, online purchasing does not permit direct observation and touch; there always exist uncertainty and risk. Online review information such as product size, weight, price, and other objective information can be measured with objectivity, whereas subjective information produced by individual consumers reflects subjective judgment. Accordingly, consumers tend to rate subjective information low. Several researchers have shown that consumers have a distinct preference for online sources with objective information, and a distinct prefer-

![Fig. 2](image1.png)

**Fig. 2.** The effects of review attributes on review credibility as a function of subjective knowledge.

![Fig. 3](image2.png)

**Fig. 3.** The effects of review valence on review credibility as a function of regulatory focus.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>$\eta^2$</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review valence ($A$)</td>
<td>1</td>
<td>6.15</td>
<td>4.49</td>
<td>.01</td>
<td>Small</td>
</tr>
<tr>
<td>Regulatory focus ($B$)</td>
<td>1</td>
<td>13.06</td>
<td>9.54</td>
<td>.03</td>
<td>Small</td>
</tr>
<tr>
<td>$A \times B$</td>
<td>1</td>
<td>0.19</td>
<td>0.14</td>
<td>.00</td>
<td>No effect</td>
</tr>
<tr>
<td>Error</td>
<td>315</td>
<td>1.37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>319</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$p < .05.$

$p < .01.$
ence for offline information sources when dealing with subjective information (Klein & Ford, 2003; Ratchford et al., 2003; Yoon & Kim, 2001). A possible reason for preferred online objective information may be due to the higher perceptions of risk attached to using information from often obscure, unidentified sources, thus limiting the value derived from such online sources.

Third, the present study also investigated the interactional effects produced by review attributes and the consumers’ levels of subjective knowledge on the credibility of online review messages. The present results supported this interactional effect. When the reviews contained more objective information, people with high levels of subjective knowledge trusted the objective online reviews more than the subjective ones. According to the elaboration likelihood model, individuals with high levels of motive and capacity use central routes to process information. Information processed through central routes includes primary, objective information. An individual with expertise in the product processed is likely to possess motive and capacity to process the information. The present results confirm that when consumers have high levels of knowledge, they trust specific, objective, and attribute-centric information more than easily understood, interpreted, subjective, and benefit-centric information. These findings support previous research related to advertising messages that demonstrated factual messages are more believable and more persuasive, particularly for high involvement and knowledgeable people (Ford, Smith, & Swasy, 1990; Wells, 1989).

Fourth, the current study shows that consumers tended to give more credibility to negative online reviews more than positive reviews. This result parallels previous literature on negativity bias. Negativity bias proposed in the prospect theory suggests that individuals tend to give more weight to negative information than to positive information (Fiske, 1980; Skowronska & Carlston, 1989). The results also coincide with previous results produced in the e-WOM research (Lee et al., 2009; Park & Lee, 2009).

Fifth, the current results did not support the moderating effect of review valence and regulatory focus. This unexpected result could be explained by the fact that individuals with prevention focus tend to perceive more risk and uncertainty, especially when they are about to purchase a product, not when they search information, that is, risk and uncertainty may be more pronounced at the moment of online purchasing.

6.2. Implications

The results found in the current study suggest several theoretical and practical implications. First, unidentified consumers write about their experiences of products and services on an online community and numerous others read these online reviews. This anonymous nature of e-WOM can make it difficult for consumers to determine the credibility of the e-WOM (Chatterjee, 2001). Thus, it is implied that message credibility produced by online reviews plays an important role in consumer message acceptance. Previous e-WOM research has studied the effect of credibility on purchase intention (Doh & Hwang, 2009; Lee & Lee, 2009; Park & Kim, 2008) and attitudes (Doh & Hwang, 2009; Lee et al., 2009). Several studies investigated the effect produced by credibility on trust (Freeman & Spyridakis, 2009; Lee & Yi, 2010). However, the current study successfully investigated the positive association between message credibility and acceptance. The current study reaffirms the conclusion of previous studies. These results imply that message credibility should be favorably formed before any message acceptance occurs.

Second, the current study investigated the effects produced by message attributes, which have rarely been investigated. A majority of previous e-WOM research has investigated the effect produced by message valence. However, the present study included and investigated the effect produced by message attributes, such as the different effects produced by objective and subjective information. The different effects produced by subjective and objective information may contribute to extending practical implications. The present results suggest that objective information included in online reviews is more credible than subjective information by consumers. Standardized and institutionalized consumer online reviews do not exist, and consumers can describe freely what they experienced about a product. Accordingly, if an online bulletin board includes mostly subjective, experience-based information, it should be encouraged to include more objective information. For example, managers can put limits on the posting of subjective information and give more points and/or star ratings to information with objective properties, which should result in more trust towards online reviews.

Third, our results emphasize the importance of managing negative e-WOM. Since negative online reviews are perceived as more credible than positive ones and consumers believe that online reviews will be controlled by marketers or sellers, marketers or sellers need to manage negative online reviews strategically. There are some strategies to follow. Managers should manage their online review system so not to contain abusive and malicious words. It is also recommended to separate high quality positive spotlight reviews from others and put them first in the order, which are easily visible to the users. It is also useful to distinguish positive and negative reviews when they are written and display positive reviews only on the screen. Negative reviews are displayed only when users want to click them to see more diverse information. Primacy effect suggests that, when processing information, people pay more attention to the information, which has been given first. This result reaffirms that the negativity effect is more pronounced in online reviews than the positivity effect.

Forth, it was also confirmed that subjective knowledge and online review attributes have a moderating effect on online review credibility. The results imply that an individual with high levels of subjective knowledge perceive objective reviews more credible than subjective reviews. People with high levels of subjective knowledge are considered innovators, who are prone to search information and purchase products in the early stages of the product life cycle. Thus, these innovators tend to have more knowledge and use and trust objective information when they are engaged in a product purchase decision. Managers are encouraged to provide objective product information at an earlier stage and include subjective information as the market matures. This result may contribute to explaining the inconsistent relationship between review valence and review credibility found in previous research.

6.3. Limitations and further research

The present study has several limitations. First, the e-WOM reviews in the current study were classified into positive and negative reviews and were investigated according to their respective impact on review credibility. However, there might be differences in the magnitude of the effect that both positive and negative messages carry. Most reviews posted on online review boards consist of positive reviews (Mulpuru, 2007). However, most previous studies emphasized the importance of negative reviews. Accordingly, future studies should investigate review valence using more stratified levels. Second, the current study investigated the differential effects produced by characteristics of online reviews and reviewer characteristics. However, different categories of products may also produce different moderating effects. Future study should consider product categories such as tangibility vs. intangibility and searched goods vs. experienced goods as other potential moderating variables.
Third, the current study used digital cameras as an instrument product, for which consumers may write and read online reviews. Digital cameras are usually classified as a utilitarian product, which is consumed to meet functional needs and obvious in terms of its description of the features. However, hedonic products such as designer clothes, sports cars, and massages are consumed to satisfy emotional and experiential benefits such as fantasy, fun, and pleasure. Accordingly, if the present study used a product included in the hedonic category, the present study may have produced completely different results. Thus, future studies should replicate and extend the present study by including products from hedonic category. The current study used digital cameras since consumers tend to search for product information with products that have high involvement and risk.

Fourth, the present research investigated the linkage between message credibility and message acceptance. However, future studies should also include evaluation of products, purchase intention, and other variables that have direct association with purchases.

Acknowledgments

The authors would like to express a sincere gratitude to the two anonymous reviewers for their helpful comments.

References


Basuroy, S., Chatterjee, S., & Ravid, S. A. (2003). How critical are critical reviews? The impact of evaluation of products, purchase intentions, and other variables that have direct association with purchases.

Chatterjee, P. (2001). *Online reviews: Do consumers use them?*


