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EFFECTS OF AGGREGATE RATING ON EWOM ACCEPTANCE: AN ATTRIBUTION THEORY PERSPECTIVE

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Abstract

Online shoppers are increasingly relying on electronic word-of-mouth (eWOM), which refers to Internet-mediated opinions and recommendations on products and services from experienced consumers, to optimize their purchase decisions and reduce purchase risks. Anchored on the attribution theories, this research investigates how consumers would process and respond to the rich information provided by a eWOM system. More specifically, it examines the potential interactions between two eWOM components, namely aggregate rating and individual review, on consumers' recommendation acceptance. The results from a laboratory experiments revealed that when a positive customer review is accompanied with negative aggregate rating, consumers are more likely to attribute the review to non-product-related factors rather than product-related factors. However, this effect is not significant when the customer review is negative. In addition, product-related attributions have positive impacts on a review's perceived diagnosticity and credibility, both of which could increase the likelihood of consumer acceptance.

Keywords: eWOM, attribution, perceived diagnosticity, information credibility, negativity bias.

1 INTRODUCTION

Internet is creating an opportunity for consumers to communicate and share their consumption experiences with worldwide others. The growing popularity of electronic word-of-mouth (eWOM), which refers to Internet-mediated opinions and recommendations on products and services from experienced consumers (Dellarocas 2003), has important implications for electronic commerce, as prospective consumers can use eWOM to optimize their purchase decisions and reduce purchase risks due to the lack of contact in online transactions (Pavlou & Dimoka 2006).

Along with the wide penetration and significant influences of eWOM, an increasing number of online retailers have deployed eWOM systems, which are Web-based information systems that allow consumers to exchange consumption information and express opinions on the Internet (Dellarocas 2003). eWOM systems often consist of three major components: (1) aggregate information that indicates the total amount of reviews, average user rating, and on some websites rating distributions; (2) abstract and/or full texts of individual customer reviews; and (3) complementary information such as reviewers' status and level of expertise, as well as comments and helpfulness ratings about the reviews. These communication elements together contribute to an Internet-based persuasive environment, which plays an important role in influencing consumer attitudes and decision making patterns.

Despite the extensive application of eWOM systems by online retailers, how consumers process and respond to various components of a eWOM system has yet been thoroughly understood. For example, will consumers attend to all information and weigh them equally in judgment? How will the information from various components from a eWOM system, especially when they are incongruent with each other, aggregately affect consumer acceptance of others' recommendations? So far, the extant literatures did not provide explicit answers to these questions.

To address this void, the present research examines the interactions between two eWOM components, namely aggregate rating and individual review, on consumers' recommendation acceptance. A specific customer review can be either consistent or incongruent with the aggregate information in valence. While it is of little doubt that consistent aggregate information can enhance the persuasiveness of an individual customer review (Kelley 1973), little is known when aggregate information of opposite valence is present. This paper focuses on such scenarios of information conflicts and aims to answer the following research question: how will the aggregate information affect consumer acceptance of a particular customer review when they are opposite in valence? Anchored on the attribution theories, this study attempts to explain the influence mechanism with a laboratory experiment in which the presence of incongruent aggregate information was manipulated so as to compare its effects on consumers' perceptions towards a particular customer review.

2 THEORIES OF ATTRIBUTION

Attribution is considered to be a motivational, perceptual, and cognitive process, in which people use prior knowledge and present information to infer causes of objects, events, and outcomes (Kelley & Michela 1980). This activity is spontaneous and is more likely to occur when the outcome is negative or unexpected (Hastie 1984). Due to various motivations, perceptions, and information utilization across individuals, a number of different causes can be inferred from identical event. However, researchers find that people usually organize their attributional thinking along a few key dimensions. For example, Kelley (1967) proposes that for many problems in social psychology, the relevant causal factors are stimuli, persons, and times, and modalities of interaction with stimuli. Focusing on achievement-related contexts, Weiner (1985) postulates three common dimensions of causes: locus, stability, and controllability. Specifically, causal locus indicates whether the cause is inside or outside the person; stability describes the temporal character of the cause, that is, whether it remains constant or vary over time; controllability characterizes whether the cause is under the person's volitional control or not.

According to Kelley (1967), three types of information matter for attributing a person's response to a certain stimuli on a particular occasion: consensus (i.e., how similar is the person's responses to others' responses?), consistency (i.e., how consistent is the person's response at other time?), and distinctiveness (i.e., how distinct is the person's response from his responses to other stimuli?). Empirical studies have confirmed that low consensus, high consistency, and high distinctiveness result in attributions to the person; while high consensus, high consistency, and high distinctiveness lead to attributions to the stimuli (Lacznia et al. 2001).

3 HYPOTHESES DEVELOPMENT

Based on the internal-external distinction, a particular customer review can be ascribed to two plausible causal loci: the product and others (Folkes 1998). For example, a negative customer review may be caused by factors related to the customer, such as unreasonable expectations, incorrect operations, or intentional defamation.

In eWOM systems, the aggregate rating information consists of the total number of customer ratings, the average score of all ratings, and sometimes, the subtotal of each rating category. Different from individual reviews that are usually expressed in the form of textual paragraphs, aggregate information is normally shown with statistical data suggesting a general evaluation of a product based on a group of contributing consumers. Due to its aggregate nature, such information can reflect the review target's overall popularity (through the number of ratings), average likability (through the mean score of all ratings), as well as the degree of consensus among users in terms of their responses to the product (from the relative proportions of distinct rating scores).

In the attribution literature, the role and impact of consensus in attributional phenomena has been controversial (Harvey & Weary 1984; Kelley & Michela 1980). Advocators suggest that high consensus is associated with attributions to the stimuli, while low consensus is more likely to induce attributions to the person (Kelley 1973; McArthur 1972). However, a body of empirical studies show that consensus information has little effect on attributions (Nisbett & Borgida 1975). To reconcile these conflicting views, Kassin (1979) reviews extensive literatures and concludes that consensus effects depend upon a number of moderating factors, such as the strength of magnitude of the base rate information, the salience of the information, the ease with which it can be applied, and the perceived representativeness of the base rate sample.

Based on these findings, we propose that the aggregate information in a eWOM system will influence consumers' causal inferences of individual customer reviews. The reasons are threefold. First of all, the prominent location of the aggregate information in the system increases its salience, which implies that it will attract enough attention and cognitive elaboration. Secondly, the aggregate information is clear and straightforward in terms of both representation format and content. Therefore, it can be easily understood and employed for judgment. Finally, the aggregate information is based on a representative and relevant sample, as it is comprised by experienced consumers who have used a specific product. As a result, for a particular customer review, consumers can infer the degree of consensus from its consistency or conflict with the aggregate information, which in turn, will affects their causal perceptions of the review. Thus, we hypothesize

H1: When presented with an incongruent aggregate rating, a particular customer review would induce fewer product-related attributions than the situation when no aggregate rating is present.

In the research on information processing, diagnosticity is defined as the sufficiency of the information alone to arrive at a solution for the judgment task at hand (Feldman & Lynch 1988; Kempf & Smith 1998). Diagnosticity is a subjective perception and has task-specific and goal-specific indicators. For inference making in particular, diagnosticity has been operationalized in terms of the perceived correlation between an observable cue and an unobserved property (Dick et al. 1990; Skowronski & Carlston 1987).

Applied to the eWOM context, a customer review will be perceived as diagnostic if it provides relevant information and is able to facilitate quality judgment prior to purchase. Product-related

attributions enable consumers to expect similar product performance in the future, which is helpful for them to make judgment and purchase decisions. In contrast, non-product-related attributions provide little useful information about the product per se; therefore, the review will be perceived as less diagnostic. Based on this discussion, we hypothesize that:

H2: Product-related attributions will lead to higher level of perceived diagnosticity of a review than non-product-related attributions.

Distinct from traditional offline WOM, eWOM is characterized by virtual identities and remote many-to-many communications, implying that information credibility becomes a critical determinant of the persuasiveness of eWOM (Wang & Wei 2006). The communication literature documents that information credibility is affected by source characteristics (e.g., expertise and trustworthiness), message characteristics (e.g., content and quality), and receiver characteristics (e.g., prior beliefs and knowledge) (Self 1996). When a consumer is making non-product-related attributions of a negative customer review while the aggregate rating is favorable, she may interpret such incongruence as that the reviewer did not use the product properly or even intentional badmouth for self benefits (e.g., paid by a competitor). In such case, the trustworthiness of the reviewer decreases with the result of lower perceived credibility of his/her review. Similarly, when the aggregate rating is unfavorable, consumers making non-product-related attributions may attribute a positive customer review to the person's inability to identify the product's deficiencies or undercover motivations to advertise, which is also negatively related to perceived credibility of the review. Therefore, we hypothesize that:

H3: Product-related attributions will lead to higher level of perceived credibility of a review than non-product-related attributions.

According to the diagnosticity theory (Feldman & Lynch 1988), information diagnosticity has a positive impact on the likelihood of information utilization. Empirically, Lynch et al. (1988) show that when both prior overall evaluation and brand attribute information are accessible in memory, consumers use attribution information to make a choice as it is perceived to be more diagnostic than overall evaluation. In the online context, Wang and Wei (2006) demonstrate that perceived diagnosticity of eWOM communications will positively affect consumers' recommendation acceptance. Therefore, we hypothesize that:

H4: Higher level of perceived diagnosticity of a customer review will result in increased acceptance of the review.

With respect to information credibility, consumers tend to rely on information that is perceived as believable and reliable. For example, Wang and Wei (2006) find that in addition to information diagnosticity, information credibility also has a positive impact on consumer acceptance of eWOM. Cheung et al. (2009) reveal a positive relationship between perceived eWOM review credibility and review adoption. Likewise, Park and Lee (2009) discover that a website's reputation contributes to eWOM's effectiveness because it indicates high credibility. Based on these findings, we hypothesize that:

H5: Higher level of perceived credibility of a customer review will result in increased acceptance of the review.

The research model is summarized in Figure 1.

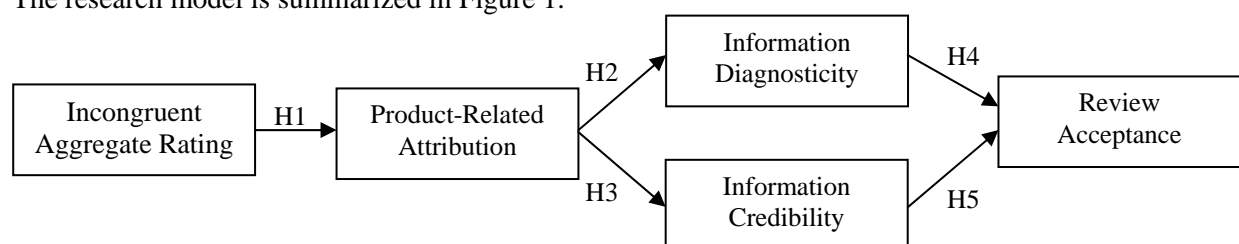


Figure 1. Research Framework and Hypotheses

4 RESEARCH METHOD

4.1 Experimental Design

A 2×2 factorial experimental design (i.e., review valence \times presence of aggregate rating information) was employed for the study, which produced four conditions. Specifically, review valence was manipulated with two configurations: 1) positive customer review along with negative aggregate rating and 2) negative customer review along with positive aggregate rating. Aggregate rating was operationalized by two levels: with or without. The aggregate rating information consists of three parts: the total number of customer reviews, the average score, and the rating distribution.

4.2 The Webpage

Four images were designed as simulated screen captures from a eWOM system. The screen layout of the images was designed to resemble commercial websites. To avoid distractions and possible confounds due to information other than the selected customer review and aggregate rating, such as brand name, price, etc., we intentionally blurred other zones with Adobe Photoshop filter-glass tools so that only one specific customer review and the aggregate information (when applicable) are clearly visible. In the control conditions, the aggregate rating zone was replaced with a blurred banner advertisement so as to keep the layout identical across all conditions (as shown in Figure 2).



Figure 2: Screenshots of the “With Aggregate Rating” and “Without Aggregate Rating” conditions

4.3 Participants and Experimental Procedures

Through campus advertisement, 84 undergraduate and graduates students at a major public university were recruited in exchange for a cash reward. The experiment was conducted in a computer lab with ten 30-minute sessions (with no more than 15 subjects per session). Subjects were instructed to read some online product reviews on multimedia speakers for a fictitious shopping task. They were told that a screenshot captured from a real-world eWOM system would be presented to them and they would each read a randomly-selected customer review (as well as the aggregate rating information where applicable). To prevent unnecessary distractions, they only need attend to the information zones that have not been blurred. After reading the review, subjects were asked to complete a questionnaire. The self-administered survey system was programmed in such a way that 1) subjects need to confirm that they have read the stimulus image before beginning the questionnaire, and 2) once starting the questionnaire, they could not get back and browse the stimulus image again. Upon the completion of the questionnaire, subjects were debriefed and dismissed.

5 RESULTS

We first checked the manipulation of valence. Results indicated that participants in the positive-review conditions perceived the review as favorable whereas those in the negative-review conditions as opposite (-4.10 vs. 4.37 in a -7/+7 scale, $p < 0.001$). The reliability and construct validity were then examined. Cronbach's alpha reliability coefficients of all dependent variables exceed the threshold value of 0.7 (all measurement scale are available upon request).

ANCOVA was used to test hypotheses. After controlling for participants' general attitude toward eWOM and product knowledge, the presence of incongruent aggregate information still generated a main effect on attribution ($F(1, 78) = 11.82, p < 0.01$). Moreover, we found a significant interaction between valence and aggregate information ($F(1, 78) = 23.88, p < 0.001$), which implied that the aggregate information had differential effects on attribution across positive and negative customer reviews. Specifically, when the customer review is positive, the presence of a negative aggregate rating had significant effect on attribution ($F(1, 38) = 42.87, p < 0.001$). When the customer review is negative, however, the influence of positive aggregate rating on attribution is not significant ($F(1, 38) = 0.916, p = .346$). Descriptive analysis showed that all participants inferred that the negative review was caused by product-related factors (means ranged from 6.10 to 6.52), regardless of the presence or absence of the aggregate information. As a result, H1 was partially supported.

We then used regression analysis to examine the relationships between attribution, information diagnosticity and credibility, as well as recommendation acceptance. Results indicated that attribution had a significant effect on both information diagnosticity ($\beta = 0.752, p < 0.01$) and credibility ($\beta = 0.748, p < 0.01$). Product-related attributions resulted in higher stronger perceptions of information diagnosticity and credibility. As such, H2 and H3 were supported. We also found that information diagnosticity ($\beta = 0.285, p < 0.001$) and credibility ($\beta = 0.546, p < 0.001$) positively affect recommendation acceptance. Therefore, H4 and H5 are also supported. Moreover, we followed Baron and Kenny's (1986) suggestion and tested the mediating role of diagnosticity and credibility in these relationships. The results revealed that attribution had a significant effect on acceptance ($\beta = 0.585, p < 0.001$); however, this effect became non-significant ($\beta = -0.013, p = 0.883$) when information diagnosticity ($\beta = 0.291, p < 0.001$) and credibility ($\beta = 0.591, p < 0.001$) were added to the regression model. As such, our findings suggested that causal inferences affected recommendation acceptance via the mediation of information diagnosticity and credibility.

6 CONCLUSIONS

To summarize, the results of this study revealed that when consumers are interacting with a eWOM system, a negative aggregate rating can influence consumers' attribution of a positive customer review. However, this effect is not significant for a reverse configuration (i.e., positive aggregate information and negative customer review). Moreover, consumer attribution of a customer review will affect recommendation acceptance. That is, more product-related attributions are associated with stronger information diagnosticity and information credibility, which in turn, will increase the likelihood of recommendation acceptance.

Regarding the non-significant effect for the configuration of positive aggregate information and negative customer review, a plausible explanation is negativity effect. Negativity effect (a.k.a. negativity bias) is a well-proven phenomenon in both social psychology and consumer psychology. It refers to the greater weighing of negative as compared with equally extreme positive information in the formation of overall impressions and evaluations (Herr et al. 1991; Mizerski 1982). Unfavorable information is more likely caused by the stimulus than favorable information, as the latter may also be attributive to social norms due to its social desirability. Therefore, unfavorable information has a greater weight in forming judgment as it is more likely to reflect the stimulus's actual characteristics (Mizerski 1982).

6.1 Contributions

To the best of our knowledge, it is the first attempt to examine the attributional mechanism that underlies consumer responses to eWOM. Although the relevance of attribution theories for consumer behavior has been widely recognized, previous research mainly concentrates on consumers' offline activities (cf. Folkes 1998; Weiner 2000). In the present research, we took the characteristics of eWOM into account and demonstrated the role of attributional thinking in influencing recommendation acceptance.

Meanwhile, our findings are also related to the psychology literature. Cognitive psychologists have long noted a "base rate fallacy" in human cognition, which refers to the tendency to underuse base rate information and rely instead exclusively on individuating information in judgment (Borgida & Brekke 1980). This cognitive fallacy is established across various populations and judgmental tasks, and can be explained by a variety of reasons, such as sample representativeness as well as information salience and vividness (e.g., Borgida & Nisbett 1977; Tversky & Kahneman 1974). Although the "base rate fallacy" seems a robust phenomenon in the offline setting, the present research revealed the significant effect of aggregate rating (i.e., base rate information) on consumer inference and judgment in the context of eWOM. This inconsistency may be caused by the characteristics of the aggregate information in eWOM systems, such as its salient location, representative sample, and ease to understand, which warrants further investigations in future research.

6.2 Limitations and Future Research

This research also has some limitations. Firstly, although the attribution literature has suggested a number of different causal dimensions, this research focuses on causal locus only. Although it is the most fundamental dimension to distinguish attributions (Heider 1958; Weiner 1985), this focus may limit our understanding on the role of attribution in influencing consumer responses to eWOM, as other causal dimensions, such as stability, controllability, and globality, may entail differential effects. Therefore, it is worthwhile to take a more comprehensive examination on consumers' attributional thinking of eWOM and its impacts on recommendation acceptance.

Secondly, our findings may be artificially constrained by the choice of the product. In this research we selected multimedia speakers to test hypotheses due to its experiential nature and familiarity to experiment participants. According to Park and Lee (2009), however, the influence mechanism of eWOM would vary across different product categories, such as search products versus experience products. It implies that the effect of information conflict on consumers' recommendation acceptance may depend upon not only information valence but also product categories. As such, future research can employ more products to explore the moderating role of product category.

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