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ASSESSING THE HELPFULNESS OF ONLINE PRODUCT REVIEWS: A PROGRESSIVE EXPERIMENTAL APPROACH

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Abstract

The online product review has been advocated as an important determinant of a consumer's purchase decision. Although prior research has been instrumental in articulating the benefits of the online product review, there remains a dearth of investigation on what kind of product review will be perceived to be helpful to a consumer. Through two sequential experiments, we investigate the endogenous features of a product review that influence the helpfulness of the perceived product review. Product review helpfulness is manifested by the review's source credibility and the review's diagnosticity. Results from the first experiment reveal that a consumer review is more credible than the expert review. Leading from this, we conduct the second experiment and focus on examining the influence of the type of consumer review (reflected the level of review abstractness). The results indicate that subjects perceive the concrete consumer review (i.e., of low abstractness) as more diagnostic than the abstract consumer review. Examining the two experimental results holistically, we deduce that consumer reviews with low levels of abstractness (i.e., are highly concrete) could yield higher degrees of perceived helpfulness compared with highly abstract consumer reviews and expert reviews. The theoretical and practical implications are discussed.

Keywords: Product Review Helpfulness, Source Credibility, Product Review Diagnosticity.

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1   INTRODUCTION

Product reviews are now prevalent in the online marketplace. Prior to making purchase decisions, consumers often have the inclination to read product reviews to seek information on a product (Kumar & Benbasat 2006). Faced with a plethora of freely accessible product reviews, it is imperative that shopping and discussion websites determine the type of product reviews that are helpful to consumers. The helpfulness of an online product review is measured in terms of the degree to which the product review can facilitate consumers' purchase decisions. It is manifested by the source credibility of the product review and its diagnosticity (Chen et al. 2007; Chen & Xie 2008). Previous studies have suggested that a product review is perceived to be helpful when either the source of the review is credible (Hu et al. 2008; Li & Hitt 2008) or when the product review facilitates the consumer's diagnosticity (Jiang & Benbasat 2007; Pavlou & Fygenson 2006; Pavlou et al. 2007).

Investigating the helpfulness of a product review in the online B2C websites is imperative for three reasons. First, our review of the extant literature has suggested that most of the studies have mainly focused on understanding the impacts and the consequences of online product reviews; but such studies devote scant attention to how a consumer perceives the product review to be helpful (Chevalier & Mayzlin 2006; Liu 2006; Reinstein & Snyder 2005). To remain competitive, it is necessary for online shopping websites to provide a platform that more than providing product reviews, are seen as posting helpful reviews as well (Mudambi & Schuff 2010). For example, Amazon.com highlights certain product reviews that inform consumers that: "XX of YY people found the following review helpful", while newegg.com highlights the helpful product reviews by according them prominent display.

Second, another significant academic stream of research on product reviews has focused on two dimensions of online product reviews: the volume and the valence (Bansal & Voyer 2000; Duan et al. 2008; East et al. 2008). However, when consumers have access to thousands of reviews on a single product, they typically fail to process the information systematically. In fact, consumers are inclined to process the information heuristically and selectively (Forman et al. 2008). In this regard, the investigation of the volume or the valence of the product review might not accurately convey the intended effects of the product reviews. Moreover, due to limited resources such as time and effort, consumers are most likely disinclined to devote an equal amount of attention to every product review. Therefore, there is a need to consider other pertinent features such as the helpfulness of online product reviews, and to study the impact of such features in addition to volume and valence.

Third, a study on the helpfulness of the product review is considerably relevant to ICT (Information Communication Technology) in the online environment. In fact, most B2C websites (e.g. Amazon.com) are beginning to include a "helpful" tag to facilitate the identifying of the helpful product reviews. However, there remains little understanding of the kind of product review that would prove to be helpful. Our findings will guide practitioners in finding and formulating helpful online product reviews that will positively influence consumers' purchase behavior.

This paper presents two empirical, progressive investigations that focus on understanding product reviews from the perspective of helpfulness (Figure 1). In Study 1, we examine the relationship between different sources of product reviews, namely consumer and expert reviews, and the consumers' perceived source credibility. Prior studies relating to the product reviews from different sources and their impact on source credibility are reviewed. A controlled laboratory experiment is subsequently conducted. Study 2 builds on the results of Study 1 with a more in-depth investigation of the effects that the abstractness of product review content will have on perceived product review diagnosticity. A laboratory experiment is then conducted. The paper concludes with a general discussion of the findings.
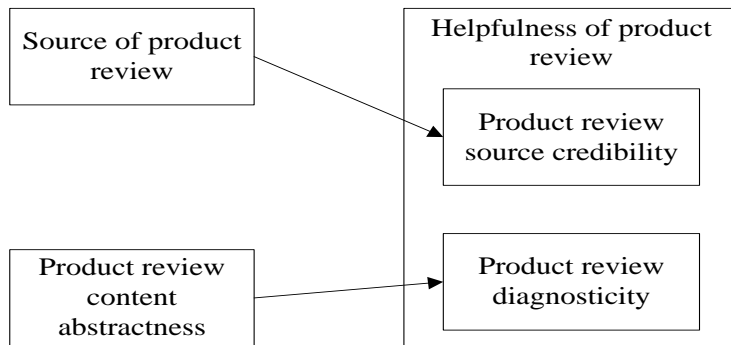
Figure 1.   Research Framework

2   STUDY 1

In the first study, we focus on the investigation of the source credibility of the online product review. Specifically, we examine the impact of the different sources (consumer or expert) of the online product review on the perceived source credibility.

2.1   Theoretical Foundation and Hypotheses

When consumers seek information from the product reviews, the source credibility of the product reviews serves as an important assessment outcome. Several studies have examined the effects of source characteristics on helpfulness, persuasion, or purchase intentions (Mudambi & Schuff 2010). Among the source characteristics, the origin of the product reviews is of importance in that it influences consumers' perceived source credibility (Forman et al. 2008).

Product reviews in the current shopping websites largely originate from consumers and experts (Stern 1994). The expert product reviews are generally written by expert reviewers who are often hired by popular e-commerce vendors or portals. In a prior study (Amblee & Bui 2007) it was observed that the expert product reviews are often in-depth and unbiased in the evaluation of a product. Furthermore, expert reviews are typically product-oriented, and contain extensive product information. Compared with an expert product review, the consumer product review refers to the evaluations posted by consumers based on their personal experiences and viewpoints. It includes consumers' experiences, evaluations, and opinions. Park et al. (2007) argued that consumer product reviews provide user experience-oriented product information. Hence, consumers would perceive the consumer reviews as representing the previous consumers' usage experience, and hence render them more understandable and credible than the expert product reviews (Park et al. 2007).

Indeed, the information provided by these reviews could assist a consumer in the making of an informed decision as well as reinforcing it. Consumers are likely to be inclined to rely on the consumer review when selecting a new product or service (Riegner 2007). The consumer product review could provide the personal usage experience and the assessment of the products, positively or negatively. For consumers, this information facilitates their assessment of the available product alternatives and draws their attention to the focused products (Chevalier & Mayzlin 2006). Comparing the two sources of product reviews, the consumer product reviews represent the previous consumers' usage experience. Moreover, consumers can voluntarily post their reviews on the websites and these reviews will be regarded as endorsements of the product (Dean & Biswas 2001; Sen & Lerman 2007). Accordingly, the consumer product reviews are perceived to be more credible (Chen & Xie 2008). Thus we posit:

Hypothesis 1: *Compared with an expert product review, the consumer product review in the online shopping environment will be perceived by consumers to be more credible.*

2.2 Method

A laboratory experiment was conducted to test Hypothesis 1. Taking a similar approach to Kumar and Benbasat (2006), we studied the commercial implementations and extracted the product content of commercial websites to manipulate the furnished product review (Kumar & Benbasat 2006). Actual commercial websites were referred to for product review content. In this experiment, we manipulated the source of the product reviews. The recruited experimental subjects were randomly assigned to either the consumer product review provision treatment group or the expert product review provision treatment group. We only provided expert reviews for the subjects of the expert product review treatment group. Conversely, only consumer reviews were provided in the experiment for the consumer product review treatment group, In order to minimize the distraction from image-based cues from the product reviews, all consumer and expert reviews were text-based.

We measured the dependent variable by using a questionnaire in the experiment. Three items were adopted from prior literature to question the subjects on how credible they perceived the product review to be (Jain & Posavac 2001). Subjects evaluated the source credibility of the product reviews on three 7-point Likert scales. These ratings were averaged to form a single source credibility of product review index (Cronbach's alpha = .903, p < .001).

Pre-test: Ten subjects voluntarily ranked their levels of product knowledge and their willingness to purchase on 20 product categories. We selected the top two product categories for which subjects indicated the greatest willingness to purchase and those for which they had a modest amount of prior product knowledge for our experiment. To further ensure subjects had modest prior product knowledge, they were asked to rate their levels of product knowledge on a 7-point Likert scale. The results confirmed that the subjects were neither too familiar nor unfamiliar with the product categories (mean=4.38, δ =1.37). This setup was consistent with most experimental studies on information seeking and decision-making behavior (Haubl & Trifts 2000).

Subjects: In total, 112 subjects were recruited from a public university in the Asia-Pacific region and randomly arranged into two groups with each group comprising of 56 subjects. Among them, 25(22.3%) were females and 87(77.7%) were males. Their average age was 22 years. All the subjects were recruited by e-mail and advertisements. In order to ensure experimental realism, the subjects were given monetary incentives consisting of USD5.00 individually.

Experimental procedures: The experiment was conducted in the following sequence. When subjects came to the laboratory, they were assigned to one computer terminal and logged in by using a designated account (which differentiated the treatment groups). Next, the subjects were asked to fill in demographic information. Following this, the subjects listened to pre-recorded instructions and viewed the introduction of the experiment system, which illustrated the features of the experiment system to subjects as well as provided instructions on how to shop in the system. Subjects were given the scenario of purchasing products for themselves. They were provided with two product categories: a mobile phone and a laptop computer. Subjects were asked to purchase one product from each of the product categories. This setup was consistent with most experimental studies on consumer decision-making behavior (Haubl & Trifts 2000). In each treatment group, only one type of product review was available. In the experiment, we manipulated all other control variables in the two treatment groups. The only difference between treatment groups was the source of the product review that we provided (from a consumer or from an expert). The experiment system interfaces for all subjects were the same. There were no time constraints.

2.3 Results and Findings

The subjects' demographic data such as age, gender, computer and online shopping experiences were randomized in order to minimize the contingent effect. Further checks indicated there was no significant difference for subjects in all two treatment groups regarding the age (F=5.587, p>.10) and

online shopping experience (F=1.530, p>.10). There was no significant difference across the treatment groups in terms of gender ratio, with the Kruskal-Wallis test (χ^2=.459, p>.10).

The manipulation check was conducted to ensure that our manipulation of the product review types and subjects' involvement was successful. The manipulation of subjects' involvement was assessed by asking all the subjects to rate on a 7-point Likert scale how much they were involved during the experiment. A one-way ANOVA test (F=1.145, p>.05) indicated that there was no significant difference between the two treatment groups. All the subjects reported they were involved in the experiment (Involvement$_{consumer}$=5.566, Involvement$_{expert}$=5.430). We also asked the subjects to name the type of product review they had read (i.e., consumer product review or expert product review) and all the subjects reported correctly. We found the manipulation check on the level of subject involvement to be in line with some prior studies (Sundar & Kim 2005) that had reported a correlation between media presentation and involvement. The results of the manipulation checks appeared to indicate that the experimental manipulation was successful.

Dependent Variable	Source Credibility of Product Review
Consumer product review	5.030 (.900)
Expert product review	4.791 (.932)

Table 1.   Means (Standard Deviations) of Dependent Variable

The hypothesis testing was conducted at a five-per cent level significance (Table 1). To control for the possible influence of the product type and product knowledge on the dependent variables, a univariate test using the ANCOVA was conducted by controlling for product type and product knowledge. A significant main effect of the source of product review was observed for the dependent variable (Table 2).

Source	Source Credibility of the Product Review
Manipulated variable	
Source of product review (from a consumer or from an expert)	**F = 7.269****
Controlled variable	
Product type (laptop)	F = .001
Product type (mobile phone)	F = .085
Level of product knowledge	F = .871

Table 2.   Univariate (ANCOVA) Tests

The Levene test result indicated that our hypothesis testing didn't violate the key assumption of the T-test (p>.05). We deployed the independent samples T-test in this study. We selected this method because it enabled us to compare the mean scores of the two groups on a given variable, and thus the independent sample T-test was performed to validate the hypothesis. Hypothesis 1 posits that the consumers would perceive the consumer product review as more credible than the expert product review. The results of the hypothesis testing indicate that there is a significant difference in the perceived source credibility between the consumer product review and the expert product review (t=2.683, p<.01). Subjects perceived the consumer product review to be more credible than the expert product review (5.03$_{consumer\ review}$>4.79$_{expert\ review}$). Hence, Hypothesis 1 is supported (Figure 2).
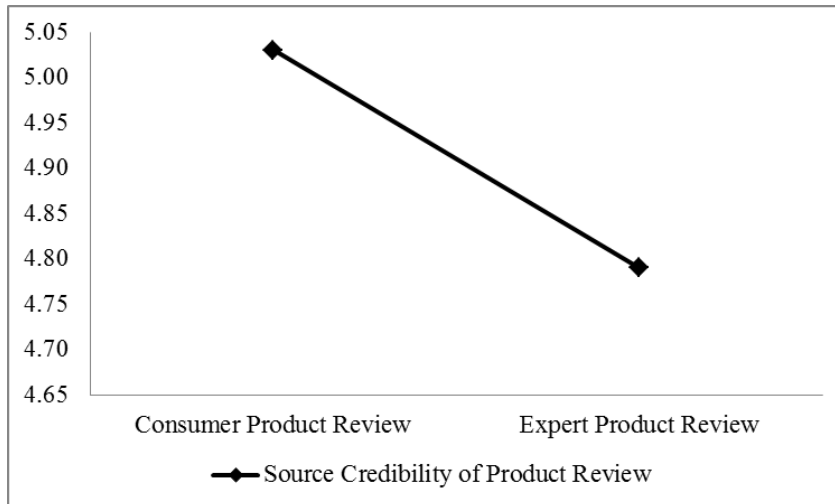
Figure 2. *The Source Credibility of Product Review*

2.4 Analysis and Discussion

The results of Study 1 indicate that product reviews of different sources do impact source credibility. Specifically, consumers perceive the consumer product reviews to be more credible than the expert product reviews. This result is in line with prior research on the source credibility of the product reviews (Chen & Xie 2008; Li & Hitt 2008). To summarize, the results of Study 1 suggest that product review sources of different origins influence the source credibility of a product review. Study 2 was designed to extend this finding by investigating the impact of the different levels of abstractness of the consumer product review (abstract or concrete) on the diagnosticity of the perceived product review.

3 STUDY 2

Study 1 demonstrated that online consumers are more inclined to refer to consumer reviews than expert reviews (Li & Hitt 2008). Building on this, our next question is: Which type of consumer review will be helpful to a consumer? To answer this question, we anchored on the accessibility-diagnosticity theory.

3.1 Theoretical Foundation and Hypotheses

Online consumer reviews vary in their levels of abstractness, on the one hand denoting concrete consumer reviews, while representing abstract consumer reviews on the other hand. Concrete consumer reviews on their part provide concrete attribute information (e.g., "the CPU of this computer is Intel Core 3"). Abstract consumer reviews are typically more related to a reviewer's personal experiences or feelings (e.g., "this computer uses very well, it is great!"). We argue that both concrete and abstract reviews can respectively lead to a consumer acquiring varied perceptions of a product. Moreover, how a consumer perceives reviews can be explained by the accessibility and diagnosticity theory (Binder et al. 2005; Kisielius & Sternthal 1986).

The Accessibility-Diagnosticity theory (Feldman & Lynch 1988; Menon & Raghubir 2003) positively expounds how people make judgments through accessing and diagnosing their brain-based knowledge. Accessibility is defined as the degree to which a piece of information can be retrieved from memory for input into a judgment; while diagnosticity refers to the degree to which that piece of information is relevant for that particular judgment, and how easily this piece of information can be categorized. The Accessibility-Diagnosticity theory proposes that people would link the accessible brain-based knowledge to the physically presented information and by processing such information makes a

judgment about the relationship between accessible knowledge and problems presented to format a final decision judgment. More specifically, it posits that when the accessed knowledge is perceived diagnostically, it will be used in the final judgment; whereas when the accessible knowledge is not diagnostic, it would not be used in the final judgment. Significantly, the knowledge accessibility also significantly impacts the diagnosticity of brain stored knowledge (Lynch 2005; Menon & Raghubir 2003).

Information accessibility is significantly decided by the cognitive elaboration with which people process the information (Nisbett & Ross 1980). In relation to our context, indeed, consumers have to expend considerable cognitive effort in processing attributes related to concrete information of a product when they want to formulate their judgment (Petrova & Cialdini 2005). However, in the face of relatively abstract information which expresses the overall evaluation of a product, such as "good" or "expensive", consumers could process this information without expending enormous effort in comprehending the details because an abstract trait concept or an attribute with no clear objective boundaries lacks the distinctness to be used as a comparison standard (Wyer & Srull 1989, see page 134). Hence it is very difficult for consumers to get a relatively clear concept of the product. Leading from this, we can deduce that concrete reviews are more accessible than abstract reviews in a consumer's judgment process.

Review diagnosticity is not only influenced by the accessibility of the information but is also closely related to the relevance of the information. For instance, when a consumer reads concrete reviews (e.g., the CPU of this computer is Intel Core 3), the information affords easier access to a product that has been previously stored in memory (Kisielius & Sternthal 1986). However, when consumers read an abstract review, they are unable to make a judgment easily on the quality of the product, because the abstract review would transmit relatively unclear information. Moreover, it is also difficult for consumers to categorize this abstract information with their prior experiences. It would inhibit consumers from accepting such information (Stapel et al. 1998) and lead to relatively low diagnosticity. Thus, we hypothesize:

> **Hypothesis 2**: *Compared with an abstract consumer product review, a concrete consumer product review is perceived to entail a higher degree of diagnosticity in an online shopping environment.*

3.2 Method

A laboratory experiment was conducted to test Hypothesis 2. College students were recruited because they represent the main cohort of online consumers between the ages of 18 and 34 (CNNIC 2009, 2010). All the consumer reviews were downloaded from online websites, namely www.amazon.com.cn and www.taobao.com.

Perceived diagnosticity is used to measure how consumers diagnose the product reviews. All the items to measure this dependent variable were adopted from previous literature to ensure content validity. All the items are reflective indicators of respective underlying constructs. They are measured on a 7-point Likert scale. These ratings were averaged to form a single review diagnosticity index (Cronbach's alpha = .901, p < .001).

Pre-test: We conducted a pre-test by asking 15 other subjects (who did not attend the main experiments) to indicate the number of reviews they read in a typical shopping task. Their responses yielded a reported mean of 20 reviews. Thus, we had 20 consumer reviews with each treatment in the experiment. The concrete reviews contained product relevant attribute information while the abstract reviews consisted of subjective opinions, which presented subjective feelings (e.g., "Great! This is the best I have come across"). In order to identify the abstractness of the product reviews, 15 student helpers were recruited to sort the downloaded reviews into three categories, i.e., abstract reviews, concrete reviews and reviews that fell between the two categories. We dropped those reviews that were neither definitely abstract nor concrete.

Subjects: A total of 128 subjects were recruited from a public university in the Asia-Pacific region and randomly formed into two groups, with 64 subjects in each treatment group. Among them, 76 (59.4%) were females and 52 (40.6%) were males. Their average age was 22 years. All the subjects were recruited by advertisements and announcements made by teachers. The instructions were for the subjects to procure products in two product categories. In order to ensure experimental realism, the subjects were given monetary incentives consisting of USD5.00 individually.

Experimental procedure: The experiment was conducted in an electronic commercial laboratory. Subjects were randomly assigned to one computer terminal. Next, they were asked to read the instructions. They were given time to ask questions on any instructions they did not understand. After all explanations on the procedures were given, the subjects were asked to log on to the system. Next, they were given a scenario in which they were required to buy a mobile phone and a laptop for their friends as birthday gifts the next day. Furthermore, they were told that they had only that chance to make the purchases. We created this scenario in order to enhance their interest in the experiment. Then the experiment began in earnest. At the end of the experiment, the subjects completed a post session questionnaire regarding their perceptions of the given reviews. All the experimental sessions were administered by two experimenters who followed a standard procedure.

3.3   Results and Findings

Personal characteristics such as age, gender, experience and the skills of the subjects that could potentially affect the judgment process and its outcomes were controlled randomly. Further manipulation checks indicated no significant difference for subjects in the two treatments in terms of gender, age, and online buying experience. The χ-tests indicated no significant differences for subjects in all two treatments in terms of age (χ=.654, p>.05) and online buying experience (χ=.398, p>.05). There was also no significant difference in the gender ratio of subjects (χ=.879, p>.05). Random control over subject characteristics appeared successful.

Manipulation checks were also conducted to ensure that our manipulation of the review abstractness was successful. Manipulation of review abstractness was verified by asking the subjects if the product reviews they read were indeed describing the details of the products. A non-parametric Mann Whiteney U test comparing the mean ratings obtained for providing concrete (Mean=3.83, SD=1.58) and abstract (Mean=.50, SD=.50) reviews yielded a significant result (Z=-8.03, p<.001).

Analyses of the dependent variables were conducted using SPSS for Windows Version 16.0 at the 5% level of significance. To control for the possible influences of the product experience and product knowledge on dependent variables, we included these variables in all the statistical tests including the Analysis of Covariance (ANCOVA) that was used to assess the effects of manipulated variables (i.e., review abstractness) on the dependent variable.

We performed additional tests before conducting the ANCOVA test in order to meet its statistical analysis requirements. First, we examined the normality of this dependent variable, namely perceived diagnosticity. Normality tests included the skewness and kurtosis tests. Our tests suggested that perceived diagnosticity (Skewness SE=.152; Kurtosis SE=0.303) met the normality thresholds (Hair et al. 1998). In the light of these findings, the univariate analysis of covariance (ANCOVA) was applied in order to control for the experiment wide error rate and the possible influence of control variables on dependent variables. The results revealed the effects for review abstractness (F = 64.208, p < .001), with product knowledge (F = 0.298, p > 0.1), and product experience (F = 2.018, p > 0.1), as insignificant covariates (Table 3). As no significant effects were detected for product knowledge or product experience, they were omitted from subsequent statistical tests involving the dependent variables. A further T-test was run to analyze the impact of product review abstractness on perceived diagnosticity.

Source	Diagnosticity of the Product Review
Manipulated variable	
Abstractness of product review (concrete or abstract)	**F = 64.208***
Controlled variable	
Level of product knowledge	F = .298
Level of product experience	F = 2.018

Table 3.   Univariate (ANCOVA) Tests

Hypothesis 2 posits that compared with the abstract review, concrete reviews are perceived to be more diagnostic. As predicted, this result suggests that there is significantly higher perceived diagnosticity with the provision of concrete reviews (Mean=5.383; SD=.978) than with the provision of abstract reviews (Mean=4.224; SD=1.299). Moreover, there was a significant difference in the diagnosticity of the product review between the two treatment groups (t=13.580, p<.001). Thus, Hypothesis 2 is supported (Figure 3).
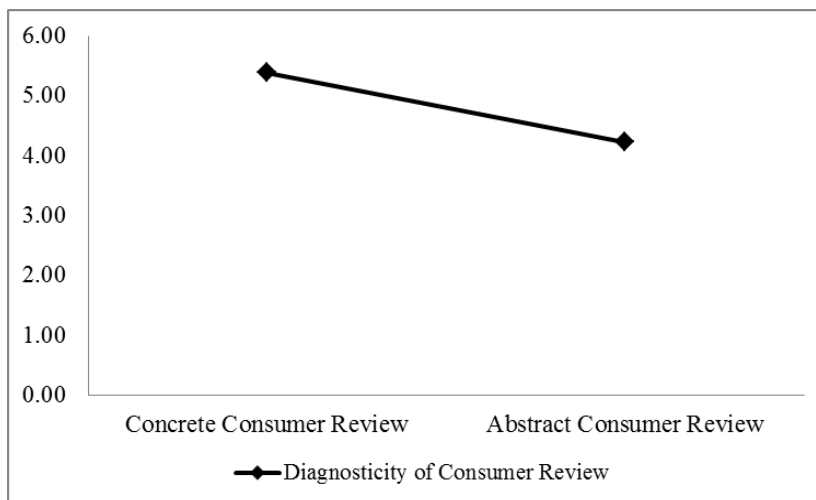

Figure 3.   The Product Review Diagnosticity of Consumer Reviews

3.4   Analysis and Discussion

Study 2 demonstrated that consumer generated concrete reviews are perceived to be more diagnostic than abstract reviews in their review judgment process. More specifically, review diagnosticity judgment is not only related to the review content itself, but its accessibility as well. Concrete reviews are more easily stored in memory because of their distinct boundaries for transmitting the information signals to consumers, while abstract reviews are more difficult to store owing to their subjective characteristics. These findings suggest that not all the consumer reviews are highly diagnostic in nature, even though previous studies have investigated the review's impact on consumers.

4   GENERAL DISCUSSION

Consumers generally assess product reviews in terms of their helpfulness. Recently, the research on the helpfulness of product reviews has attracted increasing research attention (Chen & Xie 2008; Mudambi & Schuff 2010). Our research investigates review helpfulness from two dimensions, namely, review source credibility and product review diagnosticity. Based on the results from the two

experiments, we found that consumer product reviews were perceived to be more credible than expert reviews; and furthermore demonstrated that concrete consumer reviews were perceived to be more diagnostic than abstract reviews. Results from both of the studies collectively suggest that the source of the product review and the abstractness of the product review content do have a significant impact on perceived source credibility and perceived content diagnosticity.

4.1   Theoretical Implications

This study offers two main implications for research. First, we systematically investigated the influence of online product reviews from the perspective of the helpfulness of the product reviews, rather than the conventional approach of examining their volume and valence. We argue that consumers typically fail to process the product review information systematically when confronted with thousands of reviews in the online environment (Forman et al. 2008). Therefore, the investigation of the volume or the valence of the product review may not capture the essence of product review effects precisely. The helpfulness of an online product review is measured in terms of the degree to which the product review can facilitate the consumers' purchase decisions. It represents the overall quality of the product review and is the key feature of the online product review (Mudambi & Schuff 2010). By conducting two progressive studies, we examined the impacts of the source of a product review and the abstractness of product review content on the source credibility and content diagnosticity.

Second, we adopted the abstractness of product review content as the independent variable and examined its impact on consumers' comprehension. We also used the accessibility-diagnosticity theory to test our hypotheses. This theory is seldom used in the IS discipline. Drawing on the accessibility-diagnosticity theory, we posited and subsequently verified that the product review with low content abstractness (i.e., the concrete review) has a positive influence on the perceived content diagnosticity. Moreover, with the consideration of the source credibility of product reviews from different sources, our finding indicates that the concrete consumer review is more helpful than the expert product reviews.

4.2   Practical Implications

This study has valuable implications for practitioners. Most of the B2C websites provide both expert and consumer reviews, but they have rarely considered the helpfulness of reviews from different sources, and the impacts of the varied content of abstract reviews and how they affect their helpfulness. The consumer psychologists have observed that the source and content of product information provision do have significant effects on a consumer's perception and decision-making behavior (Chakravarti et al. 2006; Kleinmuntz & Schkade 1993). Hence, for the B2C website designer, it is important to understand how to identify and improve the "helpfulness" of the product review. Correspondingly, it is important that the website designer does update the website's interface and content designs to complement each other in order to enhance the consumers' "stickiness" to the B2C website.

Essentially, our study investigates the underlying mechanism of the helpfulness of a product review and explains how the concrete consumer review could be more helpful than other product reviews. The results of our study, could aid website designers in charting clearer goals and website design guidelines. No website can control the type of product reviews consumers read, or control the quality of the product reviews. We suggest that website designers design an IT artifact providing guidelines to improve the content diagnosticity of the product reviews posted by consumers. Specifically, website designers can embed such guidelines in the pages posting consumer reviews to assist consumers in selecting product reviews with concrete content. Moreover, B2C websites are advised to change their previous review systems, which rate reviews by clicking, to a new version which is ranked by review helpfulness (i.e., posting the reviews perceived to be more diagnostic in prominent positions).

4.3   Limitations

Like most studies, this study has several limitations which serve as suggestions for future research. First of all, we only controlled the source of the product reviews in Study 1. All the product reviews in the experiment were crawled from the real B2C websites. Therefore, we could not manipulate the content of the product reviews. This limitation was highlighted by some prior researchers (Gerdes et al. 2008). However, in order to strengthen the relevancy of this paper, we followed a similar approach to previous studies (Kumar & Benbasat 2006). We studied the commercial implementations and extracted the product review content of commercial websites. Future research may formulate more relevant and rigorous research settings.

Furthermore, we only considered the digital products and the product reviews. We chose digital products for the experiment because, there are numerous B2C websites selling digital products on the Internet (e.g. Amazon.com). In order to ensure that the subjects were interested in the selected digital product categories, we asked students to rank the willingness to purchase with 20 product categories in the pre-test. The selected product categories in the experiment were ranked as the Top 2 items in the pre-test. However, in order to generalize our findings, we need to investigate other product categories (e.g. clothing and cosmetics) in future research.

Next, although we verified the effects of concrete versus abstract reviews on consumers, there is a lack of research on the effects of helpful reviews that combine both characteristics of the concrete and abstract reviews (e.g., "wow, the CPU is very good, runs very quickly, I like it so much!"). Lastly, college students were the main subjects in our studies, which is a common practice with online marketplace statistical reports. However, this is also a limitation preventing us from investigating consumer behavior on more general subjects. This is a consideration for future research.

5   CONCLUSION

Electronic commerce is growing exponentially. After the world-wide financial recession of 2009, it is promising to anticipate that electronic commerce would be a new economic growth point. Hence it is important to gain an understanding of how the online product review is best utilized during the decision-making process in the online context. The helpfulness of a product review, as one of the most important indicators, reflects the degree to which the product reviews can facilitate the consumers' purchase decisions. A helpful product review will undoubtedly have a significant influence on a consumer's purchase decisions (Mudambi & Schuff 2010). This study has made a modest step towards developing a theoretically sound understanding of the helpfulness of online product reviews and the consequences. The implications will prove to be beneficial to both scholars and practitioners.

Acknowledgement

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