Effects of Online Product Review Characteristics on Information Adoption

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Abstract. As online product reviews (eWOM) become increasingly important in affecting online consumer decisions, it is critical to develop insights into consumer behavior of using eWOM. This paper examines how eWOM characteristics impact consumers' use of online product reviews for purchase decisions. We develop a theoretical model drawing on the information adoption model and the information systems success model. We conduct a lab experiment to collect data and carry out our PLS-SEM analysis with Smart PLS. We find that eWOM characteristics influence consumer decisions via diagnosticity and ease of use. This research enhances our understandings on how eWOM characteristics influence consumer decisions. In addition, we apply the information adoption model and the information systems success model to the context of eWOM.

Keywords: EWOM adoption · EWOM diagnosticity · Ease of use

1 Introduction

With the development of information technology and availability of Internet access, ecommerce becomes increasingly important for consumers. As a result, both ecommerce companies and academic researchers consider it essential to develop insights on how consumers make purchase decisions in online environment. In recent years, online product reviews, or electronic-word-of-mouth (eWOM), are a thriving force in ecommerce. The reason is that, with eWOM, online consumers are capable of sharing and learning information on products as well as services [1]. To an increasing extent, consumers rely on eWOM to make purchase decisions [2].

Given the growing significance of online product reviews in ecommerce, it is important to investigate how eWOM influences online consumer purchase decisions. However, effects of eWOM on consumers can only be generated when online consumers believe the eWOM is useful and apply it for decision-making [3]. The acceptance of information as being valid and applying that information to purchase decisions is defined as information adoption [4]. Therefore, it is essential to investigate how online consumer are influenced when making decisions on adopting eWOM.

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To date, research related to eWOM adoption mainly concentrates of effects of eWOM on consumers as information users [5]. When reading eWOM for decision-making, online consumers are not only information users but also system users. Nevertheless, theoretical research has yet to develop insight into factors driving consumers, as both information users and system users, to adopt eWOM for decisions.

Viewing consumers as both information users and system users, we carry out this research to build a model of effects of eWOM characteristics on consumers' adoption of eWOM. In addition, we examine how the heterogeneity in consumer information processing motivation would impact the suggested propositions.

2 Theoretical Development

EWOM has two distinctive characteristics in comparison to traditional WOM. First, format of eWOM can be structured or unstructured. One widely-used structured format is table, which puts different parts of individual reviews in to different columns. Unstructured format puts all parts of individual reviews together without any delimiters. Helpfulness indicator, reflecting the information helpfulness based on other consumers' evaluations, is the other characteristic. In this paper, we examine how these two characteristics impact consumers' eWOM adoption by drawing on the information adoption model [6] and the information systems success model [7]. Figure 1 presents our research model.

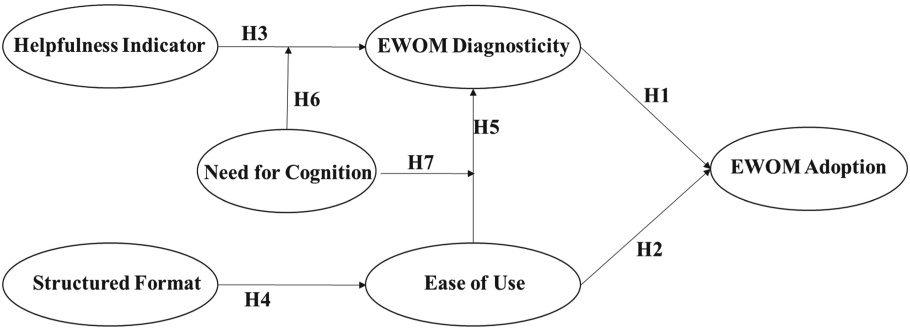

Fig. 1. Research model

The information adoption model posits that adoption of information is determined by information usefulness. In the context of eWOM, information diagnosticity is a widely studied construct that measures the perceived ability of communicated product information to predict actual product performance. Therefore, this study concentrates on information diagnosticity. If eWOM is high in diagnosticity, consumers are likely to believe the eWOM can help them make correct decisions. As a result, they tend to adopt eWOM for their evaluations of products. Therefore, we propose:

H1. eWOM diagnosticity positively impacts eWOM adoption.
When reading product reviews, online consumers are also information system users. According to the information systems success model [7], information system users develop two different categories of reactions when they are interacting with an information system. One is information quality. Research suggests that information quality may be assessed abstractly based on the usefulness of the information in helping consumers' decision-making. In other words, this reaction has been discussed in our research model by the eWOM diagnosticity. The other reaction is system quality, measuring the quality of the processing system itself. It is represented in empirical studies by ease of use [8], the degree to which a system is "user friendly". We include this reaction into our research model. Studies show that ease of use leads to users' intention to use a specific information system for fulfilling their goals [8]. In the context of eWOM, ease of use may cause consumers to rely on information systems for eWOM to make their decisions. Therefore, we propose,

H2. Ease of use positively influences eWOM adoption.
Studies on halo effect show that evaluations of one attribute of a person or a product influences evaluations of other attributes [9]. In the MIS domain, research replicates these findings. For instance, studies show that a system's attractiveness has positive effects on its perceived usefulness [8]. For online consumers, the ease of using information systems that provide eWOM should have a positive influence the perception of product reviews in them. Therefore, we propose,

H3. Ease of use positively impacts eWOM diagnosticity.
Studies show that audience response, which predicts that information endorsed by others has strong persuasion power, is an important cue that influences individuals peripherally [10]. In online environment, helpfulness indicators are an important tool for displaying other consumers' responses to individual reviews. The indicator may act as a cue and make consumers thinks that "as the product review is useful to other consumers, it must be useful to me." Thus, eWOM that is rated as useful by other consumers would be likely perceived as high in diagnosticity by the consumer. Therefore, we propose,

H4. Helpfulness indicator has positive impacts on eWOM diagnosticity.
According to our observation, several eWOM websites, such as Macys.com and Ikea.com, use structured format to display product reviews. One widely-used format is table, in which parts of eWOM are put into different columns. When reading eWOM with such structured format, consumer can easily find their interested parts. In other words, structured format makes it easy for consumers to process eWOM. Therefore, we propose,

H5. Structured format positively influences ease of use.

Previous studies suggest that for consumers with limited cognitive resources, they tend to use less efforts and rely on cues associated with eWOM for decisions [11]. Such a phenomenon can be explained by the Elaboration Likelihood Model (ELM) [11]. The major premise of ELM is that information can impact individuals' attitude and behavior via two different routes: central route and peripheral route. In the central route, the argument quality of the information plays the major role. In contrast, in the peripheral route, information cues, such as issues that are indirectly related to the subject of the information, take their turn in impacting attitude and behavior. When individuals are highly motivated, they tend to take the central route. Otherwise, they are likely to use the peripheral route and depend on cues for decisions. Research indicates that need for cognition (NFC), individuals' proclivity to engage in effortful thinking, is an important motivation factor.

In our paper, consumers following a central route develop their perception of diagnosticity by carefully scrutinizing the eWOM based on its merit and quality. Therefore, both helpfulness indicator and ease of use act as peripheral cues for eWOM diagnosticity. When NFC is low, consumers tend to evaluate eWOM diagnosticity based on helpfulness indicators and ease of use. Therefore, we propose,

H6. The effects of helpfulness indicator on eWOM diagnosticity are greater when NFC is low than when it is high.

H7. The effects of ease of use on eWOM diagnosticity are greater when NFC is low than when it is high.

3 Research Method

We carried out a two (helpfulness indicator) by two (structured format) full factorial experiment to collect data for hypothesis tests. We used a between-subject design and subjects were randomly assigned to each treatment. We used a book on time management as the product since time management was relevant to our subjects, college students.

In the experiment, subjects were told that the experiment were to understand online consumers' searching and browsing behavior. The investigation focus of our study was not mentioned to the subjects. By so doing, we aim to minimize the demand effect to increase the validity of our study. Subjects were asked to conduct a search for the book. After clicking on the link, they proceeded to read the reviews on the book. The reviews were adapted from real online book reviews. Then, subjects were asked to finish a questionnaire that collected demographic data, background information, dependent variables and manipulation checks. Measurements for eWOM diagnosticity, ease of use, need for cognition, and eWOM adoption are developed by adapting existing valid and reliable scales from prior research.

4 Analysis and Results

We conduct chi-square tests and ANOVA tests to check randomness of assignment and success of manipulations. Test results show that the assignment is random and manipulations are successful.

We use Smart-PLS to analyze the research model. By checking outer-loadings of items on their corresponding constructs, we test the item reliability. All measurement items have satisfactory loadings (>.7). Both Cronbach's alpha and composite reliability are for all constructs have scores higher than .70, demonstrating that the internal consistency is satisfactory.

For the discriminant validity, we examine the cross loadings of indicators. The data of our study show that cross loadings are lower than the outer-loading. Therefore, the discriminant validity is satisfactory. We then compare correlations between latent variables with the square roots of Average Variance Extracted (AVEs). The square root of AVE of all the constructs are higher than their correlations with other constructs, showing that the discriminant validity is satisfactory.

The PLS-SEM testing results for the model are shown in Fig. 2. This study signifies that eWOM diagnosticity has significant effects on eWOM adoption ($\beta = .38$, $p < .001$). The effect size f^2 is .16, suggesting a medium effect. Thus, H1 is supported. In addition, our study finds that ease of use impacts adoption significantly ($\beta = .27$, $p < .001$). It has an effect size f^2 of 0.09, very close to a medium effect. Thus, H2 is supported. The research further shows that ease of use impacts diagnosticity significantly ($\beta = .14$, $p < .05$). It has an effect size f^2 of .02, a small effect. Therefore, H3 is supported. This research finds that the helpfulness indicators have significant effects on EWOM diagnosticity ($\beta = .23$, $p < .001$). The effect size f^2 is .06, close to a medium effect. Thus, H4 is supported. Our results also reveal that the structured format have significant effects on ease of use ($\beta = .38$, $p < .001$). It has an effect size f^2 of .16, a medium effect. Thus, H5 is supported. Our research shows that interaction of need for cognition with helpfulness indicators does not have significant effects on eWOM diagnosticity ($\beta = .08$, $p > .05$). Thus, H6 is not supported. Last, the results of our study demonstrate that interaction of need for cognition with ease of use does not have significant effects on eWOM diagnosticity ($\beta = .10$, $p > .05$). Therefore, H7 is not supported.

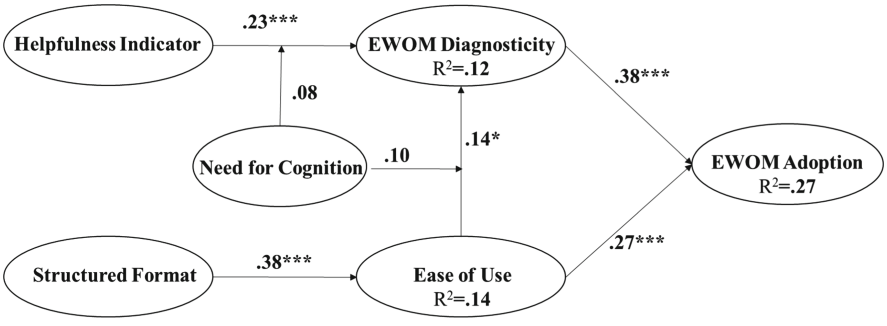

Fig. 2. PLS testing results for the research model

5 Discussion and Conclusion

The results of the study illustrate that eWOM characteristics impact consumer adoption decisions. Specifically, helpfulness indicators have significant effects on eWOM diagnosticity. Therefore, eWOM with helpfulness indicators increase consumers' perception of EWOM diagnosticity. Our results reveals that the structured format has significant effects on ease of use. EWOM using a structured format enhances consumers' perception of ease of use. Additionally, the results demonstrate that ease of use significantly influences diagnosticity. Therefore, higher level of ease of use results in higher perception of diagnosticity. Our research further shows no significant effects of the interaction of need for cognition with helpfulness indicators or ease of use on diagnosticity. Another finding is that eWOM diagnosticity has significant effects on eWOM adoption. EWOM with high diagnosticity increases consumers' adoption of the eWOM. Last, our study shows that ease of use has significant positive effects on adoption. Therefore, higher ease of use results in higher rate of adoption.

This research has three contributions to the eWOM literature. First, we develop a theoretical model on how eWOM characteristics influence consumers' eWOM adoption, viewing consumers as both information users and system users. Second, we apply the information adoption model to the context of eWOM by using eWOM diagnosticity rather than information usefulness as the predictor of adoption. Third, our research applies the information systems success model to the eWOM context and find that ease of use, a major aspect of system quality, has significant effects on both adoption and diagnosticity. As to practical implications, ecommerce companies can learn how improve eWOM characteristics to influence consumer decisions.

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