Does the Valence of Online Consumer Reviews matter for Consumer Decision Making? The Moderating Role of Consumer Expertise

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Abstract— **The previous studies have shown inconsistent relationship between the valence (positive or negative) of online consumer reviews and consumer decision making. With accessibility/diagnosticity theory, this study attempts to explain this discrepancy through exploring consumer expertise as a moderator. Our results from a 2 * 2 experiment design indicate that the impact of online reviews valence is moderated by consumer expertise: The impact difference between negative reviews and positive reviews is greater for consumers with low expertise than for those with high expertise. Our study adds to the literature relevant with e-WOM effect. And we also provide managerial implications for e-marketers.**

Index Terms—**online consumer reviews, valence, consumer expertise, accessibility/diagnosticity theory**

I. INTRODUCTION

With the rapid development of Internet and e-commerce, online product reviews generated by users, one form of electronic word-of-mouths (e-WOMs), have become an important information source for consumer purchase decision making [1][2][3]. Communication direction (also named as Valence, positive or negative) [4] is one of the most focused dimensions of online reviews, because communication effects and WOM marketing strategies are significantly distinguished for different valences reviews. Thus, disclosing the relationship between online reviews valence and consumer decision is valuable for marketers to make WOM management strategies.

Previous researches show an inconsistent relationship between the valence of online reviews and consumers' purchase intention (or behavior). Some studies indicate the positive relationship between them [2]; while some other researches find the negative relationship between them [6]. There are also other else studies [7][8] arguing that there is no significant relationship between these two factors. Which conclusion actually reveals the fact?

From the end of WOM reception, some few researches (such as [9]) showed that the communication effect of positive e-WOMs may vary greatly due to WOM receivers' different information processing levels, which depend on consumers' acquired product knowledge (also named consumer expertise). While according to accessibility/diagnosticity theory [10], there generally exists asymmetry between the effect of positive WOMs and that of negative ones, and negative ones are usually more diagnostic than positive ones. So there comes a new question: whether the effect of negative reviews is equally impacted by consumer expertise as positive reviews? As another word, whether does the effect of review valence (positive or negative) is moderated by consumer expertise? As far as we know, there is lack of researches exploring whether the effect of online reviews valence varies depending on consumer expertise.

Therefore, in this study, based on the accessibility/diagnosticity theory, we attempt to explain the inconsistent results about the effect of online reviews valence by exploring consumer expertise as a moderator.

II. HYPOTHESIS

According to accessibility/diagnosticity theory, negative information is usually more diagnostic than positive one [10]. Because the product rated to be positive can be in high, average and low quality, prone to be more ambiguous; On the contrary, negative information strongly suggests inferior performance. In addition, this theory also points out that the diagnosticity of information may be situation dependent. When it is difficult for the consumer to judge or it is ambiguous in some situation, the diagnosticity of available information will increase. When a consumer perceives he/she lacks relevant product knowledge, perceived decision risk

increases because it is difficult for him/her to evaluate whether reviews truly indicate product quality. Since negative WOMs are relevant with potential loss or risk, consumers would rather trust negative WOMs to reduce potential purchase risk. Thus, the diagnosticity and impact of negative WOMs become much stronger when consumer expertise is low. Whereas, when the consumer with low expertise reads positive WOMs, the intrinsic vagueness of these WOMs enhances, which weakens their diagnosticity. Thus the effect of positive WOMs decreases for consumers with low expertise. On the contrary, when a consumer perceived product knowledge or expertise is high, his/her perceived decision making risk is not as high as the consumer with low expertise. Because he/she believes that the truthfulness of others' reviews can be assessed properly according to his/her product knowledge and information processing ability. Therefore, the diagnosticity and impact of negative WOMs become weaker for consumers with high expertise. In contrast, the ambiguity of positive WOMs reduces because of consumers' rich product knowledge and powerful information processing ability. So the effect of positive WOMs becomes greater for consumers with high expertise. Based on the above arguments, we propose the following hypothesis.

Hypothesis: Consumer expertise moderates the effect of online consumer review valence. In detail, the impact of review valence is stronger for low expertise consumers than for high expertise consumers.

(As another word, the impact difference between positive reviews and negative reviews is greater for low expertise consumer than high expertise consumer)

III. RESEARCH METHOD

This study tests the above hypothesis through 2 (high expertise vs. low expertise) * 2 (positive online reviews vs. negative online reviews) experiment design. Between these two variables, review valence can be manipulated in advance, while consumer's expertise usually can't be manipulated before data collection. We first design two different experiment groups and then divide these groups into four groups according to the average scores of consumer expertise.

A. Subjects Selection

According to Nelson's product taxonomy of search goods and experience goods which is commonly adopted [11], we separately choose one most representative product from several products through a focus group interview, U Flash Drive for search goods and Face Lotion for experience goods. Then we separately collect approximately the same amount of online reviews of these two products for the experiment groups.

B. Manipulations of Review Valence

We first collected several online reviews relevant with these two products on some popular online shopping mall websites in China, such as Joyo website (www.amazon.cn). Then, we separately selected some of

1-star numerical rating reviews rating and 5-star numerical rating reviews with high helpfulness rating. To control the impact of variance between positive and negative contents for each review, we only extracted completely positive (completely negative) sentences from these reviews for positive (negative) reviews. To control the effect caused by review type, according to the definition of these two types of reviews [12], three attribute-based reviews and three benefit-centric reviews are chosen from these reviews for each group of reviews. To control the effect of information volume, we further select review sentences with about the same words.

C. Dependent Variable

This study examines how some factors moderate the effect of online reviews on consumer decision making. Previous relevant studies ever adopted WOM effect, WOM helpfulness, and consumer purchase intention as dependent variable. We choose WOM effect as the dependent variable in our study, which may be suitable for experimental situation. We measure WOM effect by the three-item scale from Jeon&Park [13] on a five-point rating of agreement. (See the appendix)

D. Control of Other Variables

Several other factors may affect WOM effect of online reviews, which are not focused in this study, such as individual differences including personal cognitive style, online purchase experience, prior brand attitude, general attitude on online reviews, product type, democracy (such as gender) and so on. According to Park&Lee [12], we try to control the effect of individual cognitive style through randomly assigning the participants to the experimental groups. We control the brand effect through hiding brand names of products. The individual differences in online purchase experience, general attitude on online reviews, product type and gender may also have effect on the dependent variable. If differences exist among experimental groups in these factors, we will include them into our model as covariate variables. Among them, one item about whether the respondent has online purchasing experience is asked to investigate personal online purchase experience. Besides, consumer general attitude on reviews are measured by four items with a 5 points rating of agreement according to Park&Lee's scale [12] (see the appendix).

E. The Experimental Procedure

We mainly sample university students as respondents for the following reasons: University students are a group with high Internet usage rate. And great numbers of these young surfers make their online purchasing depending on e-WOMs. Besides, partial impact of democracy can be removed because there is less heterogeneity in demographic features for this group of people. In the experiment, we invite 320 university students to participate in this experiment. After reading one group of online reviews, the respondents are asked to answer the following questions in the questionnaire. Finally, we got 290 validated samples.

IV. ANALYSIS RESULTS

A. Manipulation and Control Checks

One item is designed to check whether review valence is manipulated successfully (see the appendix). T test for this item shows significant difference in attitude towards these reviews between positive reviews group and negative reviews group, (T(285.37))=50.68, P<0.001, Mean(positive)=4.56, and Mean(Negative)=1.65). Thus, review valence has been manipulated as intended.

The responses on the four items measuring consumer general attitude on online reviews (Cronbach's Alpha=0.802) are averaged to indicate the overall consumer general attitude on reviews. F test shows no significant difference in consumer general attitude towards online reviews among the groups (F(3)=2.14, P<0.10). Whereas, different gender groups vary in WOM effect (T(285)=2.39, P<0.01, Mean(Male)=3.49, Mean(female)=3.69). In addition, T test shows significant difference in WOM effect between groups with online purchase experience and those with no online purchase experience. (T(285)=-3.819, P<0.001, Mean(no online purchase experience)=3.39, Mean(ever purchased online)=3.70)). Thus, product type, gender and online purchase experience are included as covariates in the following ANOVA analysis.

B. Hypotheses Testing

Descriptive statistics of WOM effect among these groups are shown in Table I. Taking product type, gender and online purchase experience as covariates, we conduct an all two-way ANCOVA analysis to test the interaction effect between consumer expertise and the valence of reviews (See Table II for results).

TABLE I
DESCRIPTIVE STATISTICS OF WOM EFFECT AMONG THE EXPERIMENTAL GROUPS

Review Valence / Expertise	Positive reviews	Negative reviews	Total	T-value (P) for pairwise comparison
Low Expertise	3.239 (n=68)	3.676 (n=74)	3.493 (n=142)	-3.584 (0.000)
High Expertise	3.589 (n=73)	3.727 (n=75)	3.642 (n=148)	-1.286 (0.200)
Total	3.416	3.720	-	-

(Note: n denotes number of responses in corresponding groups; P denotes the p value for T test)

TABLE II
ANCOVA RESULTS FOR THE INTERACTION EFFECT BETWEEN
THE VALENCE OF ONLINE REVIEWS AND CONSUMER EXPERTISE

| Effect	F-value	P-value	Sig.
Review Valence	15.052	0.000	***
Consumer Expertise	3.134	0.078	*
WOM Valence * Consumer Expertise	4.106	0.044	**
Gender (as covariate)	6.330	0.012	**
Online Purchase Experience (as covariate)	11.208	0.001	***
Product Type (as covariate)	0.629	0.428	

(Note: * denotes significance at 0.1 level; ** denotes significance at 0.05 level; *** denotes significance at 0.01 level)

According to Table II, the main effect of review valence is significant (P<0.001). The effect of negative reviews (3.720) is stronger than that of positive reviews (3.416) if we don't consider the impact of consumer expertise. While the main effect of consumer expertise is significant at 0.1 level (P<0.078), indicating slightly significant difference in WOM effect for consumers with low expertise and ones with high expertise if the impact of review valence is not considered. The interaction effect between review valence and consumer expertise is shown significant (P<0.044). Among all the three covariates, the main effects of gender, consumer online purchase experience are significant (P values are 0.012 and 0.001 separately). Whereas, there is no significant difference between different types of products when we control other factors to be equal.

To confirm the detailed form of interaction effect between review valence and consumer expertise and test the above hypothesis, we further compare the impact difference of positive reviews and negative reviews separately for low consumer expertise and high consumer expertise situations through T tests. (For T tests results, see Figure 1 and the last column in Table 1) For consumers with low expertise, the effect of negative reviews is significantly greater than that of positive reviews (T=3.584, P<0.001, Mean (negative reviews) =3.676, Mean (positive reviews) =3.239). For consumers with high expertise, though the effect of negative reviews (3.727) is slightly greater than that of positive reviews (3.589), this difference is not statistically significant (T=1.286, P<0.2). Thus, the impact difference of negative reviews and positive reviews for consumers with low expertise (3.676-3.239=0.437) is significantly greater than that for consumers with high expertise (3.727-3.589=0.138). It is mainly because consumers with high expertise have more knowledge about the

product than ones with low expertise so that they can make purchase decision more independently. Therefore, the hypothesis in our study is supported.
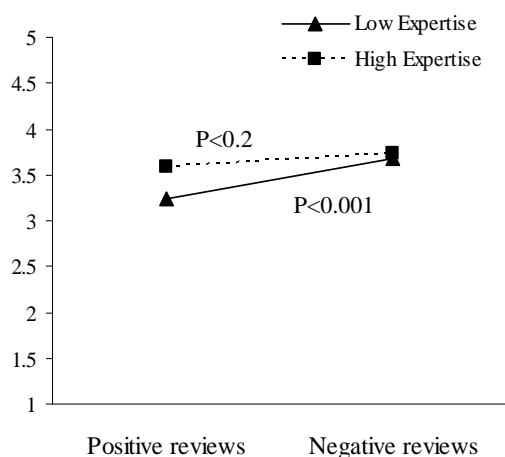
(Note: Doted line indicate non-significant difference at 0.05)

Figure 1 T test results for the form of interaction effect between consumer expertise and WOM valence

V. CONCLUSIONS

To explain the inconsistent relationship between the online reviews valence and consumers' decision in previous studies, we explore the moderating effect of consumer expertise on the impact of review valence.

From the theoretical perspective, we confirm the effect of online reviews valence is situation dependent and may change under the moderation of consumer expertise for the first time. Inferring from accessibility/diagnosticity theory, we suppose and validate that the effect of review valence is greater for consumers with low expertise than that for consumers with high expertise. Our findings may add to existing literature relevant with impact factors of e-WOM communication effect.

From the managerial perspective, our findings have implications for marketers on how to develop e-WOM marketing more effectively and economically for consumers with different levels of product expertise. Our study can help in telling e-WOM marketers whether e-WOM valence has impact on consumer decision making for consumers with different expertise, for which type of consumers the effect of e-WOM valence is greater and which type of consumers should be first focused when developing positive or negative WOM marketing. According to the different directions and strengths of WOM valence under different situations, marketers can correspondingly adjust the e-WOM marketing strategies more economically and effectively, for selling the goods such as wearing, which need less knowledge of product should design more standard WOM format so that the consumer referral influence potential buyer. For selling the goods such as digital camera, which needs more specific attribute information should add more descriptive content rather than simple positive or negative option choice.

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APPENDIX

TABLE A. MEASURES AND MANIPULATION CHECK ITEMS OF VARIABLES

	Measures
WOM Effect (Cronbach's Alpha=0.827)	I will refer to these reviews in my purchase decision.
	Overall, I think these reviews are credible.
	These reviews will crucially affect my purchase decision.
General Attitude on Online Reviews (Cronbach's Alpha=0.802) "When I buy a product online, "	I always read online product reviews posted by other users.
	The online product reviews are helpful for my decision making.
	The online product reviews make me confident in purchasing the relevant product.
	If I don't read the online product reviews, I will worry about my decision.
Consumer Expertise (Cronbach's Alpha=0.939)	I am knowledgeable about USB Flash Drive/ Face Lotion.
	I have rich purchasing experiences on USB Flash Drive/Face Lotion.
	I learn well about USB Flash Drive/Face Lotion.
	I am an expert on USB Flash Drive/ Face Lotion.
WOM Valence	What is the overall attitude of these user reviews towards this product? A. completely negative … E. completely positive