social sciences

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Examining the Role of Online Reviews in Chinese Online Group Buying Context: The Moderating Effect of Promotional Marketing

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Received: 18 July 2018; Accepted: 14 August 2018; Published: 17 August 2018

Abstract: Given the rapid growth of online group buying (OGB) market in China, this study was designed to examine the influencing mechanism of online reviews on Chinese consumers' purchase intention in OGB context. A comprehensive model was developed based on technology acceptance model (TAM) and information adoption model (IAM). The construct named overall reviews was included in the research framework along with the variables from TAM and IAM. Promotional marketing (PM) was expected to play a moderating role between online reviews and consumers' purchase intention. A quantitative study was conducted, and data were collected using a survey. To test the conceptual model's hypotheses, Amos 18.0 was applied to estimate the structural equation model (SEM). The results indicate that review quality and reviewer characteristics have significant relationships with consumers' perceived credibility and usefulness of an online review, which in turn to influence their purchase intention. Overall reviews proposed in this study also have significant effects on purchase intention. Furthermore, low-interest promotional marketing group act more rational purchase behavior than high group. Specific practical and theoretical implications and study limitations are discussed based on the results.

Keywords: online group buying; online reviews; promotional marketing; purchase intention

1. Introduction

The evolution in information technology (IT) has been transforming electronic commerce (e-commerce) practices continuously. Information-based technologies have created many new business models and marketplaces (Narayanasamy et al. 2011; Lim 2015). Consumers have been able to search for product information and make purchases on websites for decades. However, the considerable number of options among online shopping platforms has made consumers uncertain about what to buy. With the availability of online product reviews, consumers' purchase decision process has been greatly improved. Moreover, product reviews also help retailers and companies understand consumers' needs faster and more accurately, which can reduce businesses' costs for marketing and R&D (Weathers et al. 2015).

Today, online review modules have been introduced in nearly all kinds of e-business platforms. Online group buying (OGB) platforms are no exception. As a new e-commerce model, OGB is described as the act of a group of consumers who collectively purchase deals for products or services at significantly reduced prices (Lim and Ting 2014). This business mode originated from the United States of America (USA) through the launch of Groupon at the end of 2008. Promoted by the globalization of the internet and information technology, this new e-commerce model surged across the globe in

only a few months (Lim and Ting 2014). In 2013 alone, there were 6246 OGB websites launched in China (APK8.com 2014). Thirty-seven out of 50 college students who we randomly interviewed in January 2016 have installed OGB apps on their phones (the top 3 were Meituan, Dianping and Nuomi). The OGB market and business opportunities are huge; however, more than 86% of OGB platforms have failed (APK8.com 2014). Although attractive low prices are the key factor for a successful OGB business, information sharing, and management are also critical elements of OGB. This research discusses the effect of consumer-generated information (online reviews) on consumer behavior.

As a conventional form of electronic word-of-mouth (e-WOM), online reviews have been recognized as one of the most important factors that affect consumers' experiences with online shopping, and they are considered a valuable asset to companies since product sales can be influenced by this type of e-WOM (Gu et al. 2012; Hu et al. 2013; Kozinets 2016; Zhu and Zhang 2010). An investigation by PowerReviews also revealed that approximately 60% of consumers agree that online reviews have a strong impact on their purchase intention, as they can learn more detailed and reliable information from others' consumption experiences (Yoo and Gretzel 2018).

Previous studies have provided extensive insights into online product reviews. Most of these studies focused on the reviews' content, such as review length, photos, and a negative or positive comment, whereas several of them discussed reviewer characteristics, which can also determine the credibility and helpfulness of reviews. Despite these studies examining the influence of many online reviews' attributes on consumers' purchase decision, the dimensions used to evaluate online reviews continue to change with the upgrading and improvement of online review modules. Moreover, online reviews may play different roles when they interact with other factors in different contexts. For example, on OGB platforms, even though consumers read product reviews, if the promotional marketing (price discounts, coupons) is attractive enough, consumers may consider both e-WOM and promotional marketing when they make a purchase decision.

In this study, a comprehensive model will be built to examine the effect of online review quality, reviewer characteristics, and overall review on consumers' perceived credibility and usefulness and on purchase intention in the OGB context. Promotional marketing, as the main attribute of OGB, will be considered a moderator to examine different consumers' sensitivity to product price compared with e-WOM. Crosstab analyses will be used to distinguish price-sensitive consumers from e-WOM-sensitive consumers. The implications of this study will be presented based on the empirical analysis results.

2. Theoretical Background and Hypotheses

2.1. Conceptualization of Online Review

Adoption theories have been studied for decades to explain the process that people make the decision to adopt new technologies. The most well-known theory is the technology acceptance model (TAM), developed by Davis to explain the relationships between perceived usefulness, perceived ease of use, and user acceptance of information technology (Davis 1989). A theoretical extension of TAM was developed in their later research to explain perceived usefulness and usage intentions in terms of social influence and cognitive instrument processes which were verified significantly influencing user acceptance (Venkatesh and Davis 2000). TAM has been widely accepted for understanding information and communication technology (ICT) adoption and usage processes (Gangwar et al. 2015), and applied in a large number of studies on technology adoption in the organization (Gefen et al. 2003; Palos-Sanchez et al. 2017a). For instance, evidence about main acceptance factors on enterprise resource planning (ERP) has been obtained in previous study that based on TAM (Bueno and Salmeron 2008). Perceived usefulness and ease to sue, the variables derived from TAM, have been examined playing significant roles on the attitude and intention of using cloud computing along with some other external variables (Palos-Sanchez et al. 2017a). TAM as a solid model was also used to explain the adoption of mobile application with location based

services (LBS) (Palos-Sanchez et al. 2017b). To be more specific, all the original variables of TAM are fully valid and applicable to LBS.

Usefulness, an essential component of TAM, was extended to the field of information adoption by Sussman and Siegal (Yan et al. 2016; Sussman and Siegal 2003). The information adoption model (IAM) was first proposed in their work, in which argument quality and source credibility were included and verified having impact on information adoption (Sussman and Siegal 2003). An extended model, named the information acceptance model (IACM), was used to examine the influence of eWOM in social media on consumers' purchase intentions in a latest research. This discovered that quality, credibility, usefulness, needs, and attitude towards information are the key factors of eWOM (Erkan and Evans 2016). Extending the IAM theory to this study, the product reviews posted by consumers are information for later online store visitors and will powerfully influence their judgments about the product (Klein 1998; Mudambi and Schuff 2010).

Online product review is a common form of e-WOM (Xu et al. 2015). Many researchers have examined the effect of online reviews on consumers' attitude toward a product and their purchase intention through empirical studies (Chu and Kamal 2008; Doh and Hwang 2009; Lee et al. 2008; Lee and Youn 2009; Martin and Lueg 2013; Sen and Lerman 2007; Vázquez-Casielles et al. 2017).

Online product review-related studies have focused mainly on the quantity and quality of online reviews. Generally, the quantity of reviews is represented by the number of the reviews, and the quality of reviews is evaluated through the words and images contained in the reviews (Cheng and Ho 2015; Nieto et al. 2014; Zhang et al. 2014). Many previous studies have revealed that the volume of online reviews positively affects the sales of products (Zhu and Zhang 2010; Cheung and Thadani 2012; Chevalier and Mayzlin 2006; Liu 2006; Ye et al. 2011). In combination with the volume of reviews, and review quality (in terms of the content features of the reviews), has been verified having significant influence on review helpfulness (Hu and Chen 2016). The richer the contents of an online review are, the higher the perceived quality of the online review. Thus, if reviews have higher word and image counts, they are perceived as more useful (Mudambi and Schuff 2010; Cheng and Ho 2015; Cheung et al. 2008; Korfiatis et al. 2012).

With the evolution of online product review systems, the notion of overall review has been gradually introduced as another feature of online reviews; an overall review is the overall/average evaluation of all reviewers for a product, and its important role has been repeatedly investigated in several studies (Aiken and Boush 2006; Benedicktus 2011; Cheung et al. 2009; Filieri 2015).

The source of information is also a factor for people when assessing the credibility of a product review. Thus, the characteristics of reviewer, such as level of expertise, number of followers and reviewer's photo, have been recently added to the framework used in online review studies (Weathers et al. 2015; Cheng and Ho 2015; Lee and Shin 2014). However, researchers study online reviews in different contexts and obtain varying results.

2.2. Literature Review and Hypothesis Development

Review quality involves the quality of the information contained in a product review (Park et al. 2007). Information quality indicates the persuasive strength of the review and is commonly determined by the detailed content of a specific review (Cheung and Thadani 2012). Many previous studies have shown that online review quality could affect whether consumers trust and adopt the provided information. Review quality has been measured in terms of review star rating, review length, and image, among others (Cheng and Ho 2015; Korfiatis et al. 2012; Neirotti et al. 2016). Previous research investigated the relationship between the qualitative characteristics of review text and review helpfulness and found that the helpfulness of a review is affected by its positive rating value (Korfiatis et al. 2012). Some evidence in prior researches also show that reviews with longer text have a positive effect on the perceived usefulness of the reviews (Liu and Park 2015), and more images make readers feel the review is more practical and useful (Cheng and Ho 2015). Online product reviews that provide specific details (e.g., more words or images) about product features are more credible and persuasive than

the simple reviews like "great product", "awesome" (Xu et al. 2015; Jiménez and Mendoza 2013). Therefore, we hypothesize:

Hypothesis 1 (H1). *Consumers' perception of a review's credibility is positively associated with their perception of the review's quality.*

Hypothesis 2 (H2). *Consumers' perception of a review's usefulness is positively associated with their perception of the review's quality.*

Since word-of-mouth (WOM) traditionally involves information from people close to a consumer, the consumer can easily judge the trustworthiness of the message. However, in the online environment, it is difficult for consumers to evaluate the credibility of a review posted by a stranger. In fact, OGB platforms provide some sources for consumers to assess a reviewer. For instance, consumers can analyze the information contained in a reviewer's profile. A reviewer's disclosure of his/her identity has a positive effect on consumers' perception of a review's credibility and usefulness (Lee and Shin 2014; Liu and Park 2015). Moreover, most OGB platforms have introduced a reviewer reputation module. For example, Dianping (a famous group buying platform in China) provides a level division system to indicate the expertise of reviewers, ranging from Lv.1 (lowest) to Lv.7 (highest), depending on the number of reviews posted by reviewers. Additionally, the total number of helpful votes also can be considered an aspect of a reviewer's expertise. In the e-commerce environment, prior studies have found that consumers perceive a review as more credible and helpful when the reviewer has either a higher level or more helpful votes (Weathers et al. 2015; Xu et al. 2015; Cheng and Ho 2015; Filieri 2015). We adapt the above theories to the online group buying context and hypothesize:

Hypothesis 3 (H3). *Consumers' perception of a review's credibility is positively associated with the reviewer's characteristics.*

Hypothesis 4 (H4). *Consumers' perception of a review's usefulness is positively associated with the reviewer's characteristics.*

In this study, the concept of an overall review is presented to describe the overall evaluation of a product including the overall rating, number of reviews, and hot words (high frequency words mined from reviews and displayed below the overall rating and the number of reviews, such as 'k' shown in Appendix A). The overall rating indicates reviewers' average evaluation of a product. Compared with a single customer rating, the overall rating, as a form of crowd opinion, can reflect the status of a product or service more objectively (Filieri 2015; Lee and Shin 2014). For experience products, consumers tend to rely heavily on the overall rating, as the quality of most experience products is uncertain (Nieto et al. 2014). It has been widely verified that the number of reviews, which is also defined as the volume of reviews and represents the popularity of a product, influences market outcomes (Zhu and Zhang 2010; Nieto et al. 2014; Suri and Monroe 2003). The larger number of reviews increases consumers' awareness of the provided product (Cheung and Thadani 2012). Hot words, also known as high frequency words, extracted from all reviews generally reflect the attitudes of majority towards a product and can demonstrate the different features of the product. Overall reviews play a critical role in consumers' purchase decision process. Therefore, we hypothesize:

Hypothesis 5 (H5). *The overall reviews directly influence consumers' purchase intention.*

One important factor in consumers' evaluation of the usefulness of a product review is whether they trust the review. Consumers perceive a review as more useful when the information and its publisher have a higher level of credibility (Cheng and Ho 2015). Previous research revealed that consumers' perceptions regarding credibility determine the perceived helpfulness of a product review

(Weathers et al. 2015). Meanwhile, some other researchers clarified that consumers will be more likely to purchase a product if they find that its online reviews are from credible reviewers; in other words, perceived credibility could influence consumers' behavioral intention (Zhang et al. 2014). Once an online review is recognized as credible, helpful, and persuasive, it could positively affect consumers' intention to purchase the product (Xu et al. 2015). Since many previous studies have already investigated the relationship between perceived credibility and perceived usefulness as well as the influence of perceived credibility and usefulness on consumers' behavioral intention (Cheung et al. 2008; Purnawirawan et al. 2012), the following hypotheses are grounded to be proposed:

Hypothesis 6 (H6). *Consumers' perception of the usefulness of a review is positively associated with their perceived credibility of the review.*

Hypothesis 7 (H7). *Consumers' purchase intention is positively associated with their perceived credibility of online reviews.*

Hypothesis 8 (H8). *Consumers' purchase intention is positively associated with their perceived usefulness of online reviews.*

There has been strong growth in online promotional marketing with the rapid growth of e-commerce. Various types of online promotional marketing, such as display advertisements, paid searches, email, coupons, and price discounts, are influencing consumers' online shopping behavior. E-mail advertising related previous study indicates that the content and the frequency of advertising message have largest impact on consumers' attitude on promotional marketing via e-mails (ul Haq 2009). In blog-based marketing, blogging involvement, blog credibility, and attitude toward the corporation are related to consumers' attitude toward the corporate blog (Colton 2017). As for social commerce site, consumer's attitude is significantly affected by perceived shopping enjoyment and risk besides the TAM related factors (Um 2018). In the context of OGB, the most common forms of promotional marketing are online coupons and discounts (such as buy 1, get 1; 30% off). Both price discounts and the WOM information about the product will influence consumers' evaluation of the product and their intention to purchase (Suri and Monroe 2003; Lu et al. 2015). Offering online coupons also has been shown to have a positive impact on product sales, particularly when the coupons have a high face value (Lu et al. 2015; Huang et al. 2014). Lu et al. demonstrated that both promotional marketing and WOM have significant impacts on product sales. They also found interaction effects between WOM and promotional marketing when these two factors coexist (Lu et al. 2015). According to these findings, in the OGB context, although reviews may shape consumers' attitude towards a product, promotional marketing as a primary marketing tool can affect consumers' purchase decision. In this study, we define people who express more interest in promotional marketing as high-interest promotional marketing group while the others as low-interest promotional marketing group, and hypothesize:

Hypothesis 9 (H9a~H9c). *The relationships between online reviews (including reviews' credibility, usefulness, overall reviews) and consumers' purchase intention are different between high- and low-interest promotional marketing groups.*

3. Research Methods

3.1. Theoretical Framework

Drawing on the Technology Acceptance Model (TAM) and Information Adoption Model (IAM), a research framework containing all the hypotheses developed in this study is proposed and illustrated in Figure 1. According to H1 and H2 in Figure 1, consumers' perception of a review's credibility and usefulness is associated with their perception of the review's quality, while H3 and H4 assume that

reviewers' characteristics may also lead to different perceptions of credibility and usefulness. H5 shows that overall reviews could directly influence consumers' purchase intention. H6~H8 propose that consumers' perceived credibility can influence their purchase intention both directly and indirectly through perceived usefulness. H9a~H9c suggest the moderating effects of promotional marketing. Considering that our study focused on a local social living OGB platform, store location (the distance from consumer's location) and use policies of OGB coupon are put into the research framework as control variables.

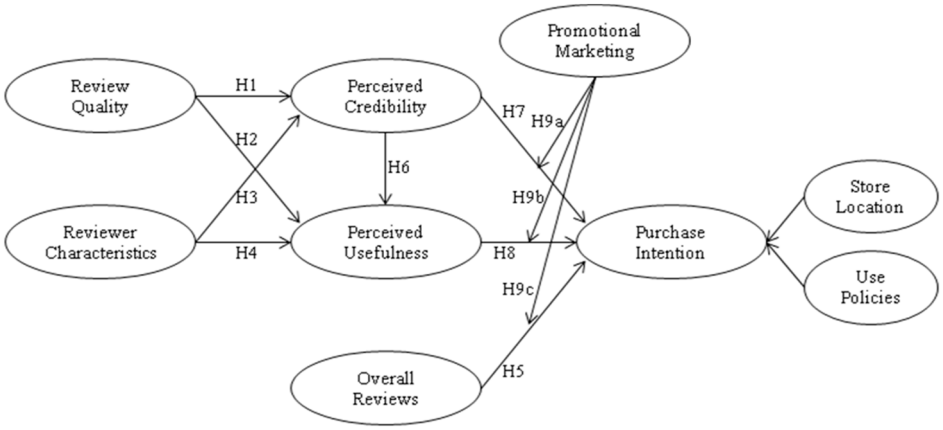


Figure 1. Theoretical framework.

3.2. Questionnaire Development

To better investigate the comprehensive construction of online reviews, the survey questionnaire was developed based on both previous studies and actual online restaurant reviews listed on Dianping (shown in Appendix A). Items borrowed from previous studies were modified for the context of this study. All items were measured using 7-point Likert scale from 1 ("strongly disagree") to 7 ("strongly agree"). Clear, concise questions were asked using very familiar terms for respondents (e.g., "When browsing the online reviews, I really care about the star rating"). Components "a"~"u", marked in Source 2, correspond to all the items listed in Appendix A. For instance, star rating (a) is directly shown in Source 2, while word count (b) of a review can be obtained from the "eeview text". "Useful votes" (d) indicates the total votes that a single review earned, while "total useful votes" (h) means the total votes that a reviewer has accumulated in the past. The "high frequency words" (k) refers to the words those were frequently mentioned by reviewers. Generally, there is "use policy" (u) such as "not available in weekend" announced by either OGB platforms or service providers.

3.3. Samples

The survey questionnaire was posted on the public forum of dianping.com to recruit participants between August 2017 and December 2017. To encourage participation, participants were told in advance that they have a chance of winning a prize randomly delivered by the system after they filled out the questionnaire. In total, 599 questionnaires were collected. The participants are believed appropriate to this research as they are the actual users of OGB platform (dianping.com). Ninety-seven incomplete surveys were discarded, leaving 502 usable responses. Table 1 presents a summary of the respondents' demographic characteristics. The majority of the participants are single (73.5 percent), under 30 years of age (82.1 percent), and college students (50.8 percent) or hold a college degree (40.0 percent). Most of them earn a monthly salary of less than 5000 RMB (95.8 percent), and the gender ratio is 45.6 percent male to 54.4 percent female.

Table 1. Summary of respondents' demographic characteristics.

Variable	Description	Frequency	Percentage %
Gender	Male	229	45.6
	Female	273	54.4
Age	≤20 years old	188	37.5
	21–30 years old	224	44.6
	31–40 years old	76	15.1
	41–50 years old	8	1.6
	≥51 years old	6	1.2
Marital Status	Married	128	25.5
	Single	369	73.5
	Others	5	1.0
Education	Below high school	10	2.0
	College student	255	50.8
	College degree	201	40.0
	Graduate school or above	36	7.2
Monthly Income	≤1999 RMB	256	51.0
	2000–3499 RMB	83	16.5
	3500–4999 RMB	142	28.3
	5000–7999 RMB	15	3.0
	≥8000 RMB	6	1.2

3.4. Common Method Bias Test.

Unmeasured latent marker construct (ULMC) is used to test the potential common method bias (Chin et al. 2012). ULMC is an extended common latent factor method. This method teases out truer common variance than the basic common latent factor method, as it is finding the common variance between unrelated latent factors. As shown in Table 2, there are no significant changes to goodness-of-fit of the model after adding the common latent factor (CLF). Moreover, the value of RMR even got worse than the model without CLF. According to the above results, the common method bias is unlikely to be a concern for this study.

Table 2. Common method bias test.

Model	χ^2/df	RMR	RMSEA	GFI	AGFI	NFI	RFI	CFI
One Factor	7.682	0.167	0.115	0.783	0.741	0.745	0.724	0.770
Without CLF	2.577	0.066	0.056	0.936	0.905	0.932	0.907	0.957
CLF Added	2.433	0.088	0.053	0.939	0.908	0.936	0.913	0.961

4. Data Analysis and Results

4.1. Factor Analysis and Reliability Test

Confirmatory factor analysis (CFA) was performed to examine the reliability and validity of the measures. As shown in Table 3, the fit indices of the measurement model are as follows: χ^2/DF = 2.577, GFI = 0.936, AGFI = 0.905, NFI = 0.932, RFI = 0.907, CFI = 0.957, RMSEA = 0.056. All fit indices are above the recommended level. All the composite reliability (CR) coefficients are greater than the recommended level of 0.7, showing good reliability of the constructs (Fornell and Larcker 1981). The average variance extracted (AVE) values of the constructs are all above the recommended level of 0.5 (Fornell and Larcker 1981), except review quality (0.439). To ensure reliability, a Cronbach's α was computed. All Cronbach's α values are above recommended 0.7 (Hair et al. 2005); thus, the set of items can be considered reliable.

Table 3. Summary of confirmatory factor analysis and reliability analysis.

Variable	Item	Loadings	Composite Reliability	AVE	Cronbach's α
Review Quality	RQ1	0.664	0.757	0.439	0.751
	RQ2	0.724			
	RQ3	0.648			
	RQ4	0.610			
Reviewer Characteristics	RC1	0.702	0.867	0.621	0.832
	RC2	0.845			
	RC3	0.815			
	RC4	0.784			
Overall Review	OR1	0.730	0.760	0.516	0.746
	OR2	0.790			
	OR3	0.626			
Perceived Credibility	PC1	0.773	0.839	0.635	0.837
	PC2	0.839			
	PC3	0.776			
Perceived Usefulness	PU1	0.694	0.784	0.549	0.790
	PU2	0.769			
	PU3	0.757			
Behavioral Intention	BI1	0.781	0.803	0.576	0.766
	BI2	0.757			
	BI3	0.738			

Correlation analysis was performed to examine the discriminant validity between each two variables. As shown in Table 4, the square roots of the AVE for each construct are greater than the correlation coefficients, showing good discriminant validity of the constructs.

Table 4. Summary of correlation analysis.

	Mean	S.D.	RQ	RC	OR	PC	PU	PI
Review Quality	5.477	0.988	0.663					
Reviewer Characteristics	5.153	1.180	0.630 **	0.788				
Overall Review	5.880	0.971	0.600 **	0.501 **	0.719			
Perceived Credibility	5.154	1.165	0.568 **	0.577 **	0.487 **	0.797		
Perceived Usefulness	5.627	1.017	0.605 **	0.553 **	0.612 **	0.548 **	0.741	
Behavioral Intention	5.357	1.095	0.575 **	0.505 **	0.583 **	0.535 **	0.662 **	0.759

Diagonal elements are the square root of the AVEs; ** $p < 0.01$.

4.2. Hypothesis Test

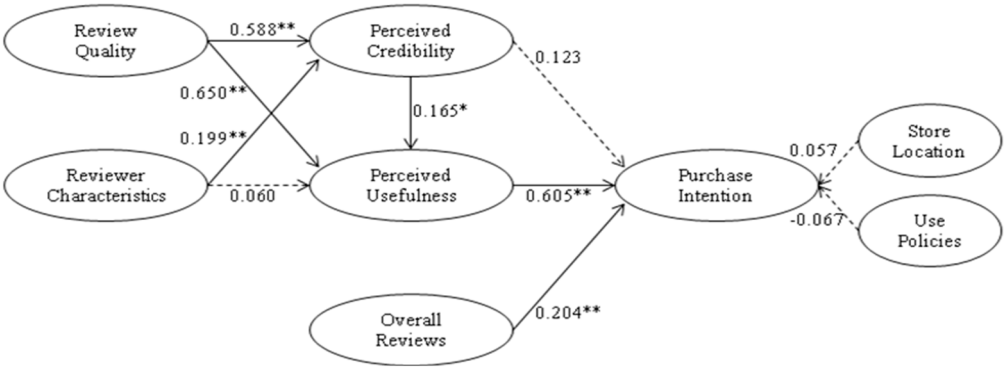
Covariance-based structural equation modeling (SEM) is used to test the conceptual model's hypotheses, as it is suggested appropriate for testing and confirmation where prior theory is strong (Hair et al. 2011). SEM can solve problems with many variables and allow in independent variables and dependent variables to have measurement errors (Bollen and Long 1993). Most of all, when seeking to find the simultaneous effect of dependence relationships, SEM is a better choice than other multivariate techniques, such as multiple regression (Palos-Sanchez et al. 2017a; Kahn 2006). AMOS 18.0 software was chosen to test the structural model for its graphic resolution capacity and the set of applied statistical method. The fit indices of the structural model are as follows: $\chi^2/DF = 2.291$, GFI = 0.936, AGFI = 0.905, NFI = 0.929, RFI = 0.904, CFI = 0.958, RMSEA = 0.051. All fit indices are close to the recommended level. The standardized path coefficients for each hypothesized path are shown in Table 5 as well as Figure 2. "RQ -> PC" denotes the path form review quality to perceived credibility (similarly hereinafter). Six of the proposed hypothesis (H1, H2, H3, H5, H6, H8) are supported while

the remaining two (H4, H7) are not supported. The results also show that the control variables do not have significant relationships with consumer's purchase intention.

Table 5. Summary of hypothesis test.

	Path	St.d β	St.d Error.	*t*-Value	Results
H1	RQ -> PC	0.588	0.092	7.256 **	Supported
H2	RQ -> PU	0.650	0.090	6.656 **	Supported
H3	RC -> PC	0.199	0.064	2.800 **	Supported
H4	RC -> PU	0.060	0.051	0.863	Not supported
H5	OR -> PI	0.204	0.106	2.598 **	Supported
H6	PC -> PU	0.165	0.057	2.334 *	Supported
H7	PC -> PI	0.123	0.070	1.778	Not supported
H8	PU -> PI	0.605	0.134	5.617 **	Supported
Control Variables	SL -> PI	0.057	0.906	0.014	
	UP -> PI	−0.067	0.828	−0.286	

* $p < 0.05$, ** $p < 0.01$.



* $p < 0.05$, ** $p < 0.01$.

Figure 2. Result of path analysis.

As reviewer characteristics do not have a direct effect on perceived usefulness; and perceived credibility does not have a direct effect on purchase intention, we therefore examined the mediating effects of perceived credibility and perceived usefulness. The bootstrap method was used to test the significance. As shown in Table 6, the effect of a review's quality on perceived usefulness is partially mediated by perceived credibility, whereas the effect of reviewer's characteristics on perceived usefulness is entirely mediated by perceived credibility. Meanwhile, the effect of perceived credibility on purchase intention is also entirely mediated by perceived usefulness.

Table 6. Summary of mediating analysis.

Variable	Lower Bounds	Upper Bounds	Indirect Effect
RQ -> PC -> PU	0.018	0.196	0.095 *
RC -> PC -> PU	0.003	0.066	0.025 *
PC -> PU -> PI	0.016	0.209	0.099 *

* $p < 0.05$.

To examine the moderating effect of promotional marketing, the sample was divided into two groups based on the value of 4.66, which is the mean of the promotional marketing (PM) scale. The lower 44.4% (N = 223) of respondents were classified as the low-interest promotional marketing group (low-interest PM group), while the higher 55.6% (N = 279) respondents were classified as

the high-interest promotional marketing group (high-interest PM group). The moderating effects of promotional marketing on the three hypothesized paths were tested using the chi-square differences between the constrained model and the unconstrained model. As shown in Table 7 and Figure 3, H9a and H9b were supported. Specifically, more significant relationship between perceived credibility and purchase intention is shown for low-interest PM group, whereas more significant relationship between perceived usefulness and purchase intention is shown for high-interest PM group. According to the standardized path coefficients and the trend lines in the plots, the purchase intention of low-interest PM group is synergistically influenced by perceived credibility, usefulness, and overall review (the slops of three trend lines of high group are almost same). It indicates that, compared with high-interest PM group, low-interest PM group consumers are more rational when they make purchase decision.

Table 7. Summary of moderating analysis.

Hypothesis	Path	St.d β		χ^2		$\Delta\chi^2$ (Δdf = 1)	Results
		Low Group	High Group	Free Model	Constrained Model		
H9a	PC -> PI	0.247 **	−0.012		725.802	4.250 *	Supported
H9b	PU -> PI	0.294 **	0.811 **	721.552	733.232	11.680 **	Supported
H9c	OR -> PI	0.339 **	0.073		724.584	3.031	Not supported

* $p < 0.05$, ** $p < 0.01$.

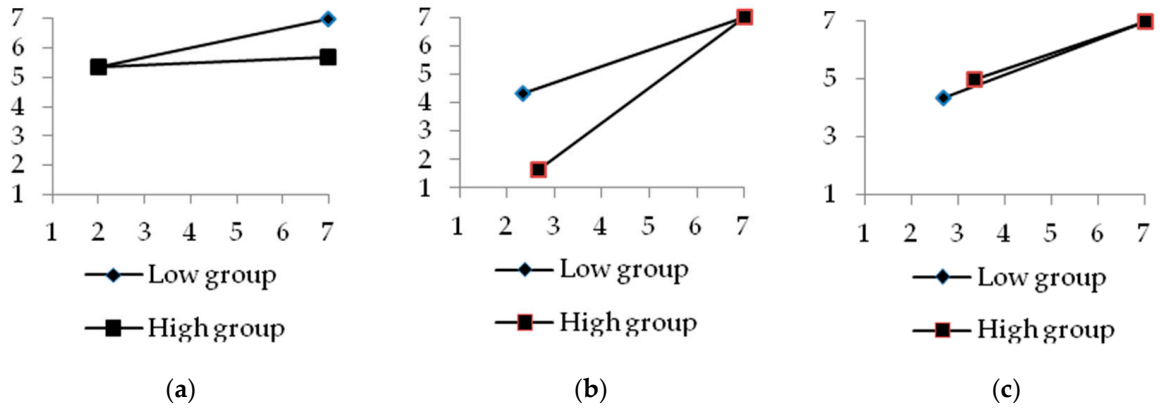


Figure 3. Plots of moderating effects. (**a**) PC -> PI; (**b**) PU -> PI; (**c**) OR -> PI.

4.3. Crosstab Analysis

A crosstab analysis was performed to determine the differences in demographic characteristics between the low-interest PM group and high-interest PM group. The gray shaded cells in Table 8 show the significant differences between the two groups. Compared with the low-interest PM group, young female consumers account for a large percentage of the high-interest PM group, and these consumers are generally unmarried college students with little or no income.

Table 8. Summary of crosstab analysis.

	Variable	Low Group N = 223	High Group N = 279	χ^2
Gender	Male	122 (54.7%)	107 (38.4%)	13.367 **
	Female	101 (45.3%)	172 (61.6%)	
Age	≤20 years old	57 (25.6%)	131 (47.0%)	28.623 **
	21–30 years old	111 (49.8%)	113 (40.5%)	
	31–40 years old	46 (20.6%)	30 (10.8%)	
	41–50 years old	6 (2.7%)	2 (0.7%)	
	≥51 years old	3 (1.3%)	3 (1.1%)	
Marital Status	Married	73 (32.7%)	55 (19.7%)	11.876 **
	Single	147 (65.9%)	222 (79.6%)	
	Others	3 (1.3%)	2 (0.7%)	
Education	Below high school	8 (3.6%)	2 (0.7%)	28.675 **
	College student	85 (38.1%)	170 (60.9%)	
	College degree	112 (50.2%)	89 (31.9%)	
	Graduate school or above	18 (8.1%)	18 (6.5%)	
Income	≤1999 RMB	85 (38.1%)	171 (61.3%)	31.083 **
	2000–3499 RMB	40 (17.9%)	43 (15.4%)	
	3500–4999 RMB	87 (39.0%)	55 (19.7%)	
	5000–7999 RMB	7 (3.1%)	8 (2.9%)	
	≥8000 RMB	4 (1.8%)	2 (0.7%)	

** $p < 0.01$.

5. Conclusions, Implications, and Limitations

5.1. Conclusions

Recently, many studies have focused on product reviews which have been universally adopted and diffused by consumers. Most of these studies used a dataset obtained from e–commerce websites, such as Taobao and Amazon. This study adopted some of the theories and findings of previous studies, and developed an extensional framework to investigate the influencing mechanism of online reviews on consumers' purchase intention on OGB platforms. Empirical evidence from the consumers' perspective was investigated to explain the relationship among online reviews, perceived values and purchase intention. As OGB is a special type of e-commerce that attracts consumers by providing discounts or coupons, the interaction effects between promotional marketing and consumers' perceptions of the value of online reviews were examined in this study.

According to the analysis results, we found that review quality has a significant effect on consumers' perception of credibility and usefulness, which is consistent with the results of some previous researches (Cheng and Ho 2015; Korfiatis et al. 2012). Reviewer characteristics have a significant effect on perceived credibility, and they affect perceived usefulness indirectly through perceived usefulness. This result is somewhat different from the findings of Chen's research (Cheng and Ho 2015). Chen's research results show a direct effect of reviewer characteristics on perceived usefulness, but in Chen's research model, there is no construct of credibility as either a dependent variable or a mediating variable. However, this study's results show some agreement with Liu's research (Liu and Park 2015). Liu et al. clarified that the real name and expertise of a reviewer do not have a direct effect on consumers' perceptions of the usefulness of an online review. The results of this study also show that perceived usefulness has a significant effect on purchase intention, whereas perceived credibility affects purchase intention indirectly through perceived usefulness. As proposed in this study, overall reviews, as a form of crowd opinion, play a critical role in consumers' purchase decision process.

According to the results of moderating effect analysis, the low-interest PM group has a higher coefficient than the high-interest PM group on the path from perceived credibility to purchase intention,

whereas the high-interest PM group has a higher coefficient than the low-interest PM group on the path from perceived usefulness to purchase intention. This means, for low-interest PM group, review credibility is much more important than discount or coupons. On the other hand, for the high-interest PM group, promotional marketing and perceived usefulness have positive interaction effect on their purchase intention. The results of crosstab analysis show that the majority of the high-interest PM group are young, single, female consumers, and most of them are college students with little income.

In conclusion, most hypotheses of this study are supported by the empirical analysis except the relationships between reviewer characteristics and perceived usefulness as well as perceived credibility and purchase intention. In the view of previous studies, the results vary according to different context and structure of research model. Some researches verified the positive relationship between reviewer characteristics and perceived usefulness without considering perceived credibility as a mediating variable in their studies (Cheng and Ho 2015), while the results of other studies indicate there is no direct relationship between those two variables when including perceived credibility in their research models (Liu and Park 2015). These evidences are telling the influencing mechanism that the relationship between reviewer characteristics and perceived usefulness is mediated by perceived credibility. Likewise, the relationship between perceived credibility and purchase intention is mediated by perceived usefulness. The result of moderating effect analysis indicates that, even though perceived usefulness significantly influences consumers' purchase intention, promotional marketing (such as discount) may, to some extent, diminish its impact.

5.2. Implications

Based on the above results, the following implications can be generated.

Firstly, since review quality significantly affects whether consumers adopt a review and make a purchase decision, the posting of more high-quality reviews should be encouraged (Park et al. 2007; Liu and Park 2015). To achieve this goal, vendors on OGB platforms can provide rewards or incentives for consumers who write excellent reviews. Meanwhile, OGB platforms should provide better and more intelligent service for the vendors who are the source of their profit. For example, these platforms can list reviews by quality instead of by date or make a fixed format that consumers can follow to write high-quality reviews.

Secondly, according to the results, reviewer characteristics affect consumers' perceived usefulness through perceived credibility. This influence means that a review will be perceived as more credible if the reviewer has a detailed and credible profile, a high level of expertise and more helpful votes (Cheng and Ho 2015; Park et al. 2007). Thus, OGB platforms should require that consumers fill out their profiles carefully, using thoughtful and readable nicknames, and their real photos. OGB platforms could also help consumers become familiar with a product by displaying reviews from reviewers who have a high level of expertise and rich review experience at the top as "sticky" reviews. Continuous improvement of the reviewer management system is also necessary.

Thirdly, overall reviews, which reflect the wisdom of the crowd, can directly affect consumers' purchase intention. An overall rating represents consumers' average evaluation of a product. However, consumers rate a product according to different specific performance criteria (Filieri 2015). For example, for a restaurant, consumers may rate it according to taste, price, environment, service, etc. Therefore, OGB platforms should provide overall ratings for each aspect of a product to address different consumers' interests. In contrast, the number of reviews represents the popularity of a product. More reviews can increase consumers' awareness (Nieto et al. 2014). Thus, vendors and OGB platforms should respond to or thank reviewers for providing their feedback to encourage consumers to write more reviews.

Finally, OGB platforms should display a current list of high frequency words mined from the reviews for a product. This service is highly recommended, as it can help consumers understand the features of a product more objectively. Thus, OGB platforms should continuously improve this

function by optimizing their text mining and word segmentation methods to provide more concise and informative messages to consumers.

Most importantly, venders and platforms need to take different strategies for different types of consumers. As mentioned above, product reviews from experienced and high-level-expertise reviewers should be pushed to low-interest PM group who are more concerned about review credibility. On the other hand, promotional marketing, as a nonintrusive and "targeted" marketing approach, is very effective in terms of generating purchases (Lu et al. 2015). Therefore, vendors should continue offering competitive promotional marketing such as attractive price discounts or coupons to influence consumers' purchase intention and increase sales. As IT service providers, OGB platforms should help venders find their target customers, so that vendors can develop effective and precise promotional marketing strategies to meet the need of target customers. For instance, in this study, the compositions of the low- and high- interest PM groups are significantly different. Young, female, low-income college students account for a higher proportion of the high-interest PM group than the low-interest PM group. This will be a useful clue for vendors.

5.3. Limitations

Despite the above findings and implications, this study has some limitations. Firstly, since this study focused only on online reviews from a single OGB platform (i.e., Dianping) as the research context, the generalizability of our findings may be limited. Further research should extend these findings to other OGB platforms to verify the performance of online reviews in the OGB context. Secondly, this study is based on the use of OGB for restaurant-related products. Research to test the proposed framework across different OGB products, such as utilitarian products and other service products, should be conducted. Moreover, although promotional marketing is the OGB platform's distinguishing feature, it was measured only via price discounts and coupons in this study. Beautiful pictures of product and persuasive advertising slogans should also be considered in future research.

Finally, we must note that this survey was carried out online, which led to the uncontrollability of the process, which is manifested by 97 incomplete responses.

Author Contributions: Conceptualization, W.L.; Data collection, R.J.; Data analysis, W.L. and R.J.; Original draft writing, W.L.; Manuscript revising, W.L.

Funding: This research was funded by The Fundamental Research Funds for the Central University grant number NS2017056.

Acknowledgments: The authors would like to express their appreciation to their colleagues who made suggestions for modification of the questionnaire and all respondents who participated in the survey.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix

Table A1. Items used in the study.

Construct	Items	Source 1 (References)	Source 2 (a~k, p,s,u)
Review Quality (RQ)	Care about review's a. Star rating b. Word count c. Image count d. Useful votes	(Cheng and Ho 2015; Korfiatis et al. 2012; Lee and Shin 2014; Park et al. 2007; Liu and Park 2015; Huang et al. 2014; Baek et al. 2015; Yin et al. 2014)	
Reviewer Characteristics (RC)	Care about reviewer's e. Identity disclosure f. Level of expertise g. Review experience h. Total useful votes	(Weathers et al. 2015; Cheng and Ho 2015; Zhang et al. 2014; Filieri 2015; Baek et al. 2015)	
Overall Reviews (OR)	Care about product's i. Overall rating j. Number of reviews k. High frequency words	(Nieto et al. 2014; Filieri 2015)	
Promotional Marketing (PM)	p. Interest in discount or coupon	(Lim and Ting 2014; Lu et al. 2015)	
Store Location (SL)	s. Care about the distance from your location to the store		
Use policy (UP)	u. Care about if there are restrictions to use the purchased service.		
Perceived Credibility (PC)	The review is PC1. Objective PC2. Trustworthy PC3. Reliable	(Weathers et al. 2015; Xu et al. 2015; Zhang et al. 2014; Filieri 2015)	
Perceived Usefulness (PU)	The review is PH1. Informative PH2. Persuasive PH3. Helpful	(Weathers et al. 2015; Xu et al. 2015; Huang et al. 2014; Baek et al. 2015; Yin et al. 2014)	
Purchase Intention (PI)	After reading reviews, I will PI1. Try the product PI2. Definitely purchase PI3. Recommend that others purchase	(Lim 2015; Xu et al. 2015; Zhang et al. 2014; Lee and Shin 2014; Park et al. 2007; Huang et al. 2014)	

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