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Research on Online Reviews Reliability

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Abstract: This study examines the factors that have an impact on online reviews reliability. A theoretical framework was built and empirically tested with a sample of 200 interviewees. Results of structural equation model show that the online reviews quality and perceived risk have positive impact on online review reliability. Accordingly, online review value and number have positive impact on online review quality, customer involvement and reviewer acceptance have positive impact on perceived risk. The results of this study also suggest that the character of online review and reviewer indirectly impact review reliability by impacting intermediate variables.

Keywords: online reviews reliability; online reviews quality; perceived risk

1. INTRODUCTION

The Online Reviews is a form of Online Reputation. In recent years, with the rise of B2C, C2C and other shopping website, more and more online reputation is shown in the form of consumer reviews. Online Review has a significant influence on Consumer Online Purchase Decisions^[1].

According to China's Internet Development Statistics Report published China Internet Network Information Center (CNNIC), as of June 2016, the scale of China's Internet users reached 710 million, with a growth of 3.1%. China's Internet penetration rate reached 51.7% and increased by 1.3% points compared with the end of 2015. Moreover, China's online shopping users reached 455 million, compared with the end of 2015, and increased 38.57 million with a growth rate of 9.3%. The proportion of online shopping in China increased from 60.5% to 64.1%.

However, the network trust is now an important part of social trust, which fills the missing trust among people in the real society. Although there are still some events related to network security, the network trust ratio tends to continue to improve. The network provides a platform for netizens to express their opinions on an equal footing, which is conducive to conflict resolution of social trust.

At the same time, companies can improve product visibility and credibility through online reviews. Patralli Chatterjee point out that online reviews are more credibility than the traditional reputation^[2]. Consumers who are looking for online reviews prior to online purchase or even daily physical purchases seem to have become common place. But at the same time, the increasing number of comments also brings many practical problems. Numerous random comments will reduce the efficiency of consumer's decision-making. There are also some false comments disrupt the audio-visual and induce consumers to make wrong decisions. Also, under the network environment, reviewers are free to express their views and opinions, the "review fraud" which manipulates the available information by posting either fake positive reviews about companies themselves or fake negative reviews about their competitors. Since online reviews have a strong impact on the consumer purchasing decisions, how to judge the credibility of online reviews has been a growing concern for the businesses, consumers and scholars.

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In order to maximize the impact of online reviews and clear what influenced the characteristics of consumer comments, identifying the process will help consumers to reference online comments effectively and make better online shopping decision. However, prior study occasionally tended to look at this issue from the perspective from the online review reliability. To fill this knowledge gap, the present exploratory is to find what influenced the online review reliability that indirectly influence to the online purchase intension.

2. LITERATURE REVIEW

To address the influences of online review to individual consumption behavior, this dissertation builds a research model based on three theoretical perspectives: the Media Credibility Theory, the Information Adoption Model and the Theory of Reasoned Action.

2.1 Theory of Media Credibility

The media credibility was first proposed by Hovland and Janis at Yale University based on the persuasion or attitude change model of the information dissemination process, which was studied from three aspects: source, content and receiver^[3]. Currently, most people take the advantage of this model to study the impact factor of the perceived trustworthiness and perceived usefulness of online reviews. Park and Lee argue that it is difficult for consumers to determine the online reviews credibility based on source similarity, because online reviews come from anonymous individuals and are disseminated in the form of text^[4]. Therefore, our study believes that the content and receiver of online reviews are important factors affecting the reliability of online reviews. Whether the online reviews are reliable and whether the reviewer's experience of the product or service is described in detail will influence the online reviews reliability.

2.2 Theory of Information Adoption Model

Information adoption model believe that the quality of information and information sources of the reliability of a direct impact on the usefulness of information, while the usefulness of information influence the adoption of information^[5]. Because the information senders and receivers are not familiar with each other in the network environment, the credit is low in interpersonal interaction. Consequently, online reviews do not have high source credibility as traditional reputations. Now online product reviews have become the most important information source for consumers and businesses to learn about product and service quality. In particular, information quality is measured in reviewer acceptions of both the recognition^[6]. And these cognitive will have a significant impact on people's information adoption behavior^[7].

2.3 Theory of Reasoned Action

The theory of reasoned action (TRA) describes the psychological process behind conscious human behavior, while exploring the determinants of that behavior^[12]. The basic assumption is that people are rational and will integrate a variety of information to consider the meaning and consequences of their behavior before making a certain action^[13]. Empirical studies applying TRA have validated that perceived behavioral control reflected by perceived risk and perceived self-efficacy can explain a higher proportion of variation in online purchasing intention with both direct and indirect impacts through attitude^[14].

2.4 Research Hypotheses

In addition to the above theories, multiplication of risk is perceived risk to consumers when online shopping. The information adoption is positively influenced by the perceived usefulness of the information and the credibility of the information. It is important to judge the reality of the online information, especially for the consumers to choose the real reviews for the commodity that attracting them. Therefore, the online review reliability is important to evaluate the impact of factors when consumers refer to online review. Studies have shown that consumer involvement can affect the factors they take into account when reviewing information^[15]. Online reviewer acceptance and customer involvement can influence people's perceived risk^[16]. In addition, the

quality and quantity of information of the online reviews positively influence consumers' purchase intention^[17].

3. RESEARCH DESIGN

On the basis of the theories above, this study takes into account online review number, value, quality, online reviewer acceptance, customer perceived risk, customer involvement and online review reliability as basic variables. The final research model is shown in Fig. 1.



Figure 1. The final research model

Based on the previous literature above, hypotheses are put forward from two perspectives in this study, which are shown below:

H1: Online review number has a significant impact on online review quality.

H2: Online review value has a significant impact on online review quality.

H3: Online review acceptance has a significant impact on customer perceived risk.

H4: Customer involvement has a significant impact on customer perceived risk.

H5: Customer perceived risk has a significant impact on online review reliability.

H6: Online review quality has a significant impact on online review reliability.

Table 1. Measurement for variables

Variables	Measurement	References
Online reviewer acceptance	A I think that the reviewer has the expertise of the relevant product B I think a lot of reviews are "returning customer" C I think most of the reviewers have a higher membership rating	Chen,P.Y.,Dhanasobhon,S.,&Smith,M.D ^[8]
Online review number	A Many buyers commented on the product B The product is highly concerned	Park,D.H.&Lee,J.,&Han,I ^[9]
Online review value	A. Most of these comments suggest that consumers should give priority to the purchase of the merchant's products B. These attitude of comments on the products and business is basically the same C. There is very little negative feedback in these reviews	Chan,H ^[10]
Online review quality	A. These reviews are updated on the date relatively new B. These reviews have a variety of manifestations (Photos, links, expressions etc.) C. The contents of these reviews are easy to understand	Chattejeeii Chen,P.Y.,Dhanasobhon,S.,&Smith,M.D ^[14]
Customer perceived risk	A. I don't think the purchase of the product will be a loss of money B. I think the actual function of the product is basically the same as my imagination	Bansal&Voyer ^[11]
Customer involvement	A. Laptops are very important to me B. I need to buy a computer now	Chan,H 错误! 未定义书签。
Online review reliability	A. These reviews can be believed B. These reviews provide valuable information for my purchase decision C. These reviews have a positive effect on my purchase of the product	Bansal&Voyer ^[14]

For the purpose of testing the correctness of the research model, questionnaire was designed according to measurement scale for variables, each of which were measured by at least two measurement items. The questionnaire was divided into three parts:

- 1) Guidance part, which shows brief introduction about the purpose of this questionnaire investigation;
- 2) Basic information of informants;
- 3) Informants' attitude towards online review.

In the meantime, the five-point Likert scale was chosen as the measurement methodology, whose definition was set as: " A. Totally Disagree ", " B. Disagree ", " C. Uncertain ", " D. Agree " and " E. Totally Agree ".

A variety of sampling methods can be employed individually or in combination, which mainly include simple random sampling, systematic sampling, stratified sampling, probability-proportional-to-size sampling, cluster sampling, quota sampling, accidental sampling and so on .

In this study, accidental sampling was selected as the sampling method. Accidental sampling (Convenience sampling) is a type of nonprobability sampling which involves the sample being drawn from that part of the population which is closed to hand. That is, a population is selected because it is readily available and convenient. Questionnaire pretest was performed and 50 effective questionnaires were recovered. The major indicator analyzing reliability is Reliability Coefficient and the greater its value is, the higher the reliability is. Empirically, coefficient Cronbach α method is often adopted, whose values generally range from 0 to 1. When the value of coefficient is above 0.9, the measurement reliability is excellent; when the value of coefficient is between 0.8 and 0.9, the measurement reliability is well; when the value of coefficient is between 0.7 and 0.8, some revision is necessary; when the value of coefficient is below 0.7, some items are to be removed. With data processing by SPSS, pretest analysis results are shown in Table2.

Table 2. Coefficient cronbach α for variables

Variables	coefficient
Online reviewer acception	0.767
Online review number	
Online review value	0.705
Online review quality	0.749
Customer involvement	
Customer perceived risk	0.843
Online review reliability	0.804

In Table2, Cronbach α values of four variables are above 0.7, which indicates the reliability of measurement scale is well enough and it is suitable for further analysis.

Validity equals to effectiveness, measuring whether comprehensive evaluation system is able to accurately reflect purposes and requirements for measurement and it judges the correctness of the measurement tool's measuring the features to be measured. The greater the value of validity is, the better the measurement results reflect the features to be measured and vice versa. As for validity test, the study tested the pretest data results conducting Exploratory Factor Analysis (EFA), the level of sample factor analysis is shown below in Table 3.

Table 3. Factor analysis for variables

Variables	Items	Sig.	Factor loading
CINV	CINV-A	0.000	0.801
	CINV-B	0.000	0.802
PR	PR-A	0.000	0.930
	PR-B	0.000	0.929

RA	RA-A	0.000	0.794
	RA-B	0.000	0.860
	RA-C	0.000	0.822
RN	RN-A	0.000	0.838
	RN-B	0.000	0.872
RQA	RQA-A	0.000	0.828
	RQA-B	0.000	0.793
	RQA-C	0.000	0.826
RRL	RRL-A	0.000	0.861
	RRL-B	0.000	0.859
	RRL-C	0.000	0.622
RV	RV-A	0.000	0.791
	RV-B	0.000	0.735
	RV-C	0.000	0.832

According to data analysis results in Table 3, data analysis results perform well and prove their measurement items' rationality.

4. DATA ANALYSIS

The questionnaire was formally distributed via "So Jump" online platform after modification according to reliability test and validity test. In total, 200 questionnaires were recovered among which 162 were valid after excluding those incomplete responses. Viewed from the investigation results of users' basic information, the gender of investigated users are uniformly distributed.

Instead of an exploratory technique, Structural Equation Model (SEM) is one of the empirical analysis technique. That is, in spite of referring to some exploratory factors, Structural Equation Model is chiefly used to determine the rationality of a specific model rather than seek and discover an appropriate model. Hence, by seeking internal relationship between variables, Structural Equation Model can be used for verifying a structural relationship or the rationality of research model hypotheses. Moreover, solutions of problems existing in the research model can be put forward. By combining factor analysis, canonical correlation analysis and multiple regression analysis together, Structural equation Model takes into account and deals with several dependent variables simultaneously. It allows measurement error existing between dependent variables and independent variables as well as potential variables being composed of several observation indicators.

Referring to research model and hypotheses, initial research model of factors impacting reliability of online reviews by Structural Equation Modeling software SmartPLS.

With the purpose of simplifying model, use RA, RN,RV,RQA,PR,CINV,RRL to represent online reviewer acceptance, online review number, value, quality, perceived risk, customer involvement and online review reliability. The structural equation model of this study is displayed in Fig.2 as follows.

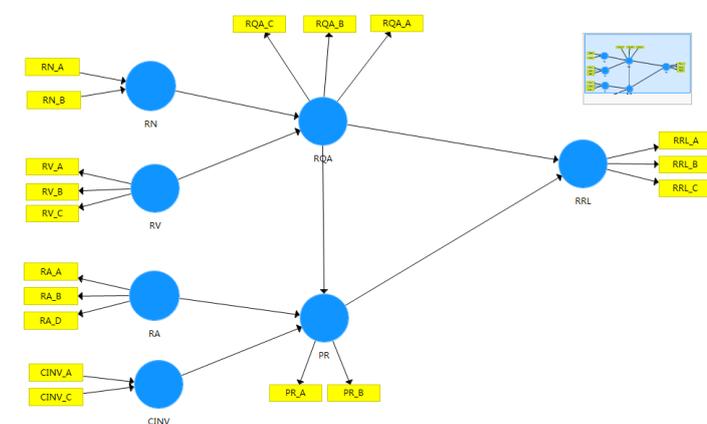


Figure 2. Research Structured Model

In reference to the preset of PLS analysis method, processed data results of 162 questionnaires were imported into SmartPLS and the standard processes that mean equals 0 and variance equals 1 were performed. After PLS path modeling analysis and multiple iteration, a convergent model was figured out after which the path weight method was conducted for internal analysis of the model. Data analysis results of each indicator are shown below in Table 4.

Table 4. Factor analysis for variables

	AVE	Composite Reliability	R Square
Online reviewer acceptance	0.682	0.865	
Online review number			
Online review value	0.619	0.830	
Online review quality	0.665	0.856	0.436
Customer involvement			
Customer perceived risk	0.864	0.927	0.449
Online review reliability	0.719	0.885	0.637

According to Table 4, data analysis results of parameters verification can be summed up as:

1)Average Variance Extracted (AVE) is greater than 0.6 as the standard threshold value, representing the convergent degree of each variable being effectively measured by its items is well enough.

2)Composite Reliability (CR) measures the consistency of measurement items of the same variable and when its value is greater than 0.6, the CR of measurement items performs well. All the CR values in the table above are greater than 0.8, exceeding the required 0.6.

3)The Fitting Coefficients (R Square) represents how well the internal relationship has been explained by the model and the greater its value is, the less the variance of internal variables not being explained by the model is. In particular, variable online reviewer acceptance, customer perceived risk and online review quality are all around 0.5, reluctantly up to standard. From this perspective, this model still has huge rise space.

Based on the analysis of each parameter verification indicator, we firmly reach the conclusion that the initial PLS model on factors impacting online review reliability established in Fig.2 performs ideally and the model path parameters are shown below in table 5.

Table 5. Bootstap test results for research hypotheses

	Original Sample(O)	Sample Mean(M)	Standard Deviation (STDEV)	T Statistics($ O/STDEV $)
ReviewNumber->ReviewQuality	0.339	0.346	0.098	3.467
ReviewQuality->PerceivedRisk	0.095	0.103	0.129	4.385
ReviewQuality->ReviewReliability	0.435	0.445	0.076	5.739
ReviewerAcception->PerceivedRisk	0.494	0.487	0.126	3.924
CustomerInvolvement->PerceivedRisk	0.195	0.209	0.115	1.706
PerceivedRisk->ReviewReliability	0.487	0.479	0.080	6.114
ReviewValue->ReviewQuality	0.407	0.410	0.098	4.161

According to the data analysis results in Table 5, all the T statistics of bootstrap tests for hypotheses are above $|t_{\alpha}|$, passing the test.

According to the data analysis results in Table 5, all the T statistics of bootstrap tests for hypotheses are passing the test. Analyzing the impact of each variable, we conclude that:

1)Online review value and number have positive impact on online review quality.

- 2) Customer involvement and reviewer acceptance have positive impact on perceived risk.
- 3) Online review quality and perceived risk have positive impact on online review reliability.

All in all, online review widely effects customers' purchase intention and this research mainly focuses on factors impacting online review reliability. On the basis of data analysis results, preferable explanation of the research model and variable definitions can be supposed. Major contributions as well as further suggestions in this study are summarized as follows:

- 1) The research model establishment on factors impacting online review reliability;
- 2) Measurement scale was proposed according to each dimension definition.
- 3) Questionnaire issue and data collection via "So Jump" platform according to measurement scale.
- 4) Conclusions that online review quality and perceived risk significantly impact review reliability. Online review value, number, customer involvement and reviewer acceptance indirectly impact review reliability by impacting intermediate variables.

5. CONCLUSIONS

Based on the previous theories, this study developed a research framework to understand the factors that influence online reviews reliability. An empirical investigation tested the proposed assumption with data from 200 questionnaires. Empirical results indicate that both the characters of customers and online reviews are important factors. All the conclusions above basically correspond to previous researches. Enterprise should draw inspiration from this study to reduce customers' perceived risk by abstracting more reviewers with high acceptance and making products more helpful to customers. Besides, using some award mechanism to encourage customers to review online, improving the quality of the product and service will directly enhance the review quality, which will greatly increasing the review reliability. Nevertheless, restricted to time and effort, the study still shows weaknesses such as the limit of research objects and no negative factors were included in the research model. Finally, apart from factors examined in this study, future studies should also incorporate other consumer behavior factors into the full explanation of the online reviews reliability.

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