

The Research on Impact Factors of Perceived Online Review Usefulness

LIU Mengmeng^{[a],*}; LI Zhihong^[a]; SHAO Ming^[a]

^[a]South China University of Technology, School of Business Administration, Guangzhou, China.

*Corresponding author.

Received 6 November 2014; accepted 24 February 2015
Published online 26 March 2015

Abstract

Online review has become a research focus of marketing researchers recently, especially on its impacting on consumers' purchasing decision. But considering the questionnaire research method and ignorance of influencing mechanism research, this study is established to study the detail impact factors of online reviews of usefulness. The study uses text mining method to collect valid data on Yelp.com, the biggest online review platform over the world. Results indicate that online reviews depth, review humor marked by other users, reviewers' historic comments amount, reviewers' rank, reviewers' centrality of social network and others' responds all have significant impact on the perceived online reviews usefulness. And the product involvement of review receiver plays moderating role in influencing the content of information and sources of information on the perceived online reviews usefulness.

Key words: Online review; Perceived online reviews usefulness; Information processing theory

Liu, M. M., Li, Z. H., & Shao, M. (2015). The Research on Impact Factors of Perceived Online Review Usefulness. *Management Science and Engineering*, 9(1), 36-44. Available from: URL: <http://www.cscanada.net/index.php/mse/article/view/6496> DOI: <http://dx.doi.org/10.3968/6496>

INTRODUCTION

The development of information technology has not only changed the way of people's life, but also the consumer

decision-making behavior. Virtual environment makes it difficult to evaluate goods directly, consumers have to make decisions on others' shopping experience and comments. According to survey, 71% users searches for online reviews on the Internet to get satisfactory products, and more than 90% companies believe that user recommendations and comments will affect consumer shopping decision (Yin, 2012). At present, most domestic and foreign e-commerce sites have established online review system to release the shopping experience for consumers, such as Amazon, Dangdang, Yelp, etc.. Consumers evaluate the usefulness of online reviews and accept the useful ones selectively. What's more, online reviews are more credible compared to other marketing methods. Therefore, the E-commerce enterprises need to figure the exact factors which will affect the user's perceived usefulness of online reviews to help build valid review system and lead consumer decision-making behavior. Meanwhile, the uncertainty of information source, such as water army, network hype, etc., shortens the credibility of online comments than the traditional word of mouth, which will affect the consumers' wiliness to use online review.

The impact of online reviews on consumer decision-making behavior has become a hot topic, and researches show that online reviews do have a tremendous impact on consumer decisions (Park, Lee, & Han, 2007). This paper has found that less paper concrete on the influencing mechanism of the usefulness of online reviews. And previous studies mainly use empirical research methods by questionnaire, so the accuracy of the results is limited. Therefore, this study will set model to research the impacting factors of perceived online review usefulness, based on Information Processing theory, Reference Group theory. Then through the text mining method to carry on the empirical analysis and verify the influence factors of online reviews of usefulness.

1. THEORETICAL BACKGROUND AND HYPOTHESES

Online review, also known as online WOM or online comments, is a kind of personal experience of consumption published online which has nothing to do with business. Online review platform mainly consists of online review content information and source information, content information concludes consumer's evaluation of product or service such as open text comments and scores. Consumers propose the reviews and comments online, meanwhile they also search for information about products actively. When they do this, the perceived usefulness occupies an important position which works as a base of consumer information adoption according to Information Adoption Theory (Pitta & Fowler, 2005). Perceived usefulness means that a consumer hopes to improve the efficiency by using one technology or product. Especially in the virtual environment, people need to evaluate the perceived usefulness of online reviews to make the final decision. So with the improvement of perceived usefulness, the desire to adopt the review will also increase and so as to the willingness to final shopping decision.

Based on the summary of online review researches, the previous studies mainly focus on three aspects such as online reviews content, the source of online reviews and the characteristic of online reviews to receiver. And the Dual Information Processing theory suggests that information source and content work as two important ways to influence consumer decision making. So this paper will set hypotheses of online review content, the source and the receiver to research the influencing factors of online reviews perceived usefulness.

1.1 The Dimension of Online Review Content

Online review content is about the using experience or evaluation of product or service includes information structure, quality and depth of online reviews. From the perspective of Dual Information Processing theory, content quality is core to affect online reviews usefulness. The higher and richer the online reviews content, the better the effect of persuasion on the receiver (Cheung et al., 2009). Park and Lee (2007) pointed out that high quality of online comment can help consumers distinguish the merits and defects of products effectively, which will improve the efficiency of decision making. Johnson and Payne (1985) found that the more of review words, the more specific the reviews will be. Consumers can reduce uncertainty by reading the comments, and thus improve the usefulness of comments (Payne, Bettman, Johnson, 1988). Sussan et al. (2003) proposed review depth can represent the depth of reviewers comment content (Sussman & Siegal, 2003). Therefore, this research adopts the reviews depth concept and put forward hypothesis H1:

H1: Online review depth has positive effect on perceived online review usefulness.

Scholars set online reviews into three directions: positive, negative and neutral by using traditional WOM propagation direction. Skowronski and Carlston (1989) found that people will pay more attention to negative information than positive ones, due to different reaction intensity (Skowronski & Carlston, 1989). Consumers may treat negative information more useful to help them judge the usefulness of review information. Different propagation direction of online reviews can also lead to different attribution. Negative comments are more likely to lead to internal attribution, while positive ones are easy to cause external attribution (Thibaut & Riecken, 1955). That is to say, consumers tend to believe that the negative evaluation is due to the bad quality of commodity itself. As a result, the perceived usefulness of negative comments is higher than positive comments. The online evaluation system is mainly composed of index score and open text. Index score, to a certain extent, reflects the consumer's shopping experience or the service quality of the goods, etc. So this study sets hypothesis H2:

H2: The score of online review has negative effect on perceived online review usefulness.

Information Processing Theory is an important model to study human reasoning and decision-making in psychology, one mature model is the Elaboration Likelihood model. The Elaboration Likelihood model is first proposed by Petty and Cacioppo, which mainly used to study how consumers process and filter information (Petty, Cacioppo, Schumann, 1983). The model divides the influencing process of information into the central path and edge path. Central path means that comprehensive consideration of new information leads to consumer attitudes change while edge path is used and emotional factors are added in the situation when consumer lacks motivation and ability (Zhang & Zinkhan, 2006). Online review also works in the influencing process with two different paths. Humor is a kind of emotion factors which has been proved that will affect consumer attention, memory efficiency and cognitive in marketing areas (Madden et al., 2004). Users can vote on the comment humorous in Yelp.com. So this paper hypothesis:

H3: Humor online review has positive effect on perceived online review usefulness.

1.2 The Dimension of Online Review Source

The consumers who publish real using experience and evaluations actively play the source of online review. Most academic paper works on the motivation and reliability of review source which will affect others' adoption willingness. Researchers mainly use Social Exchange Theory and Social Capital theory to study consumer motivation (Sun et al., 2006; Hennig-Thurau et

al., 2004; Wiertz & de Ruyter, 2007). And the reliability of review source concludes two parts: specialty and dependability. Specialty weighs review publishers' knowledge or experience about the goods and the more Professional the more positive impact on consumer decisions (Gilly et al., 1998; Hovland, Janis, & Kelley, 1953). Dependability means the intention of publishers is objective, justice and none of business. Godes (2004) points that the anonymous and virtual environment make review receivers can't verify the motivation and trustworthiness of information source which has bad effect on review adoption wiliness. In online review system, the experience or specialty is showed by historic comments of review source. Dependability are scored and ranked by usefulness evaluation by website and other users. And in this paper, the useful votes scored by other users are used to represent the rank of review source and dependability. Based on these, this paper proposes below hypothesis:

H4: Historic review amount of review source has positive effect on perceived online review usefulness.

H5: The rank of review source has positive effect on perceived online review usefulness.

Consumers conduct information research, knowledge sharing in the virtual community, also they seek for support, personal relationship, and entertainment from both the community and other members (Harrison-Walker, 2001). In online review system, users can "follow" and communicate with review source which will help to identify the review source better. During this way, one-way or dual relations are built between review source and receiver, then social network will set up. So Social Network theory can also be used to analyze online review. In social network, individual centrality and the relationship strength of each node will influence the information broadcasting (Granovetter, 1983). Individual centrality reflects the social capital in one network (Ellison, Steinfield, & Lampe, 2007). And the more follow and response process happens, the more social network or relationships build, as Fan Xiaoping (2009) proposes that social network does affect consumer shopping attention positively (Fan, 2009). In the online review system, other commentators' response can be used to evaluate the social network of review source. So this paper set hypothesis 6 and 7:

H6: the centrality of review source has positive effect on perceived online review usefulness

H7: other commentators' respond to the review source has positive effect on perceived online review usefulness

1.3 The Dimension of Online Review Receiver

According to Elaboration Likelihood Model, the perceived information usefulness will be affected by central path and edge path. In edge path, personal knowledge and information base, product involvement

will influence people's decision making and information choose. In this paper, product involvement will be researched in depth. The product involvement reflects the relationship and significance of the product means to consumer, high involvement means the product is very important to consumer or the connection between product and consumer is very tight.

Then Reference Group theory points out that people are affected by the other person or group during the decision making process. And the involvement will play regulating action when people are affected by group. Kuenzel & Musters (2007) found that people with low level of product involvement are not easy to be affected by the group (Kuenzel & Musters, 2007). With high level of product involvement, people will prior to use central path to analysis and use online review carefully. While with low level of involvement, people may shorten the efforts to do information search and evaluation. So the level of product involvement will affect the online review adoption and perceived usefulness. This paper sets product involvement as a moderating variable, and assumes:

H8.1: Compare to low level of product involvement, online reviews depth has more positive effect on perceived online review usefulness with high level of product involvement.

H8.2: Compare to low level of product involvement, the score of online review has more negative effect on perceived online review usefulness with high level of product involvement.

H8.3: Compare to low level of product involvement, humor online review has more positive effect on perceived online review usefulness with high level of product involvement.

H8.4: Compare to low level of product involvement, historic review amount of review source has less positive effect on perceived online review usefulness with high level of product involvement.

H8.5: Compare to low level of product involvement, the rank of review source has less positive effect on perceived online review usefulness with high level of product involvement.

H8.6: Compare to low level of product involvement, the centrality of review source has less positive effect on perceived online review usefulness with high level of product involvement.

H8.7: Compare to low level of product involvement, other commentators' response has less positive effect on perceived online review usefulness with high level of product involvement.

1.4 The Summary

Based on the previous analysis and hypothesis, the model of impact factors of perceived online review usefulness is built as below:

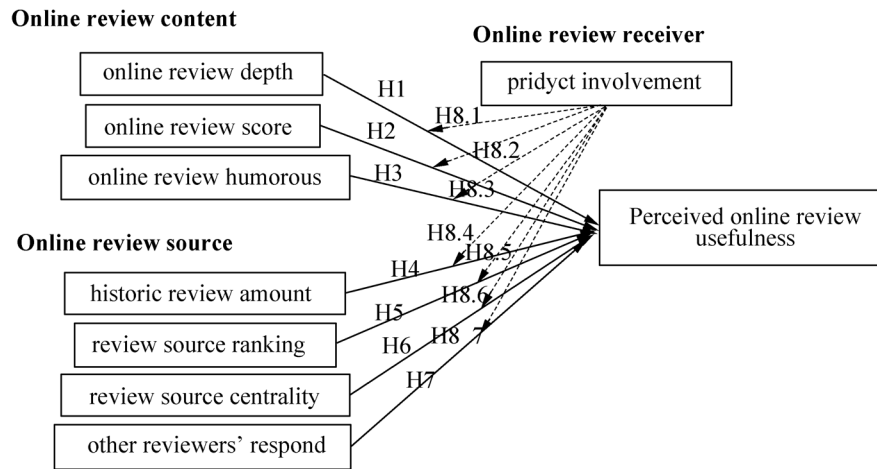


Figure1
The Model of Impact Factors of Perceived Online Review Usefulness

2. METHOD AND DATA ANALYSIS

2.1 Sample and Descriptive Statistics

Based on the model built in Chapter 2, data collection is conducted in online review system Yelp.com. Then data statistics and regression analysis are processed to verify the hypothesis. This paper will collect data from Yelp.com, which has the largest network flow among the online review system or community worldwide. Yelp.com provide different comments including entertainment, catering, hotels and local based service, and the comments are presented in open text, score, rank, others' response and social network variables. Then LocoySpider V2014 is used to do data mining. This paper mainly focuses on catering business to collect comments. Data acquisition is conducted from Mar 1st

to Mar 19th 2004, and the whole review page including review comments and review source website are all collected. Total comments reached 5,812 pieces, and covered the historic review since October 19th2004 to March 19th 2013. Detail independent variable includes, comment score, review source rank, total comments amount, respond number of comment, time of comment, open text of comment, text number of each comment and useful votes of review. Useful votes of review reflect the perceived online review usefulness, the dependent variable. The descriptive statistics of each variable are showed below, and average and standard deviation shows that sample quality is qualified. Also different product involvement is showed in 0 and 1 to reflect its moderating (0 means high level of product involvement and 1 means low level).

Table1
Descriptive Statistics of Sample and Data

| Product involvement | N | Minimum | Maximum | Average | Standard deviation |
|-----------------------|------|----------------------------|-----------------------------|---------------------------|---------------------|
| Review time | 2591 | July 20 th 2006 | March 19 th 2014 | July 2 nd 2011 | 646 15:45:55.318 |
| Useful votes | 2591 | 0 | 112 | 1.26 | 4.245 |
| Review depth | 2591 | 38 | 4447 | 683.68 | 562.942 |
| Review score | 2591 | 1.0 | 5.0 | 4.453 | .8636 |
| Humorous | 2591 | 0 | 152 | .97 | 4.602 |
| Review amount | 2591 | 1 | 3212 | 153.59 | 280.127 |
| Rank | 2591 | 0 | 14 | 3.39 | 6.000 |
| Friends number | 2591 | 0 | 4993 | 112.32 | 302.995 |
| Fans number | 2591 | 0 | 1238 | 8.91 | 55.565 |
| Individual centrality | 2591 | .00 | 6214.00 | 121.2331 | 347.76135 |
| Responds | 2591 | 0 | 105 | 1.00 | 4.002 |
| Valid N | 2591 | | | | |

To be continued

Continued

| Product involvement | N | Minimum | Maximum | Average | Standard deviation |
|-----------------------|------|-------------------------------|-----------------------------|-----------------------------|---------------------|
| Review time | 3221 | October 23 th 2004 | March 19 th 2014 | August 4 th 2010 | 829 21:49:35.085 |
| Useful votes | 3221 | 0 | 60 | 1.31 | 3.117 |
| Review depth | 3221 | 37 | 5311 | 959.72 | 919.450 |
| Review score | 3221 | 1.0 | 5.0 | 4.490 | .8015 |
| Humorous | 3221 | 0 | 42 | .75 | 2.386 |
| Review amount | 3221 | 1 | 7639 | 149.70 | 290.238 |
| Rank | 3221 | 0 | 14 | 2.94 | 5.705 |
| Friends number | 3221 | 0 | 4165 | 60.27 | 216.456 |
| Fans number | 3221 | 0 | 752 | 6.23 | 33.624 |
| Individual centrality | 3221 | .00 | 4766.00 | 66.4939 | 244.11756 |
| Responds | 3221 | 0 | 60 | .94 | 2.808 |
| Valid N | 3221 | | | | |

2.2 Regression Analysis

In the following part, SPSS V19 and multiple regression analysis will be conducted to do the further analysis and hypothesis verification. Seven independent variables and one dependent variable are regressed to get coefficient test.

The result showed that collinearity statistic VIF of

seven independent variables are all below 10, which means there is no multi-collinearity among these variables. But no correlation between review score and perceived online reviews usefulness based on the regression analysis. So Hypothesis 2 is not supported. Then after eliminating the score of online review, regression analysis is conducted again. The result is showed below in Tables 2-4.

Table 2
Coefficient of Fixed Model Test

| Model | Non standardized coefficient | | Standardized coefficient | T | Sig. | Collinearity statistics | |
|-----------------------|------------------------------|----------------|--------------------------|--------|------|-------------------------|-------|
| | B | Standard error | Beta | | | Tolerance | VIF |
| (Constant) | .142 | .026 | | 5.470 | .000 | | |
| Review depth | .000 | .000 | .028 | 6.170 | .000 | .972 | 1.029 |
| Humorous | .145 | .009 | .140 | 15.948 | .000 | .265 | 3.768 |
| Review amount | .000 | .000 | .016 | 2.974 | .003 | .712 | 1.405 |
| Rank | .009 | .003 | .014 | 2.995 | .003 | .949 | 1.054 |
| Individual centrality | .000 | .000 | .018 | 3.223 | .001 | .675 | 1.481 |
| Responds | .863 | .010 | .800 | 90.333 | .000 | .261 | 3.827 |

Table 3
Simulating Degree Test of Fixed Model

| Model | R | R-square | Adjusted R-square | Standard error of estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .939 ^a | .881 | .881 | 1.264 |

Note. a. Predictor variable: (Constant), Responds, Review depth, Rank, Review amounts, Individual centrality, Humorous.

Table 4
Residual Error Test of Fixed Model (Anova^b)

| Model | Sum of squares | df | F | Sig. |
|----------------|----------------|------|----------|-------------------|
| Regression | 68694.125 | 6 | 7169.748 | .000 ^a |
| Residual error | 9269.722 | 5805 | .881 | 1.264 |
| Total | 77963.847 | 5811 | | |

Note. Dependent variable (useful votes of review).

The *F* of this multiple regression model reaches 7169.748 and *R*-square (0.881), both mean the simulating effect of this model is up to standard. Then the regression results show that:

In the dimension of online review content: The online review depth has positive effect on online review perceived usefulness and H1 are supported ($p < .01$, VIF=1.029). Review depth reflects the richness of text which will share users more useful information and improve the perceived usefulness. But there is no correlation between online review score and perceived usefulness, H2 can't be supported. Then the regression result of humorous show that humor online review does have positive effect on perceived online review usefulness ($p < .01$, VIF=3.768), and H3 are supported.

In the dimension of online review source, the historic review amount significantly positive predict perceived online review usefulness, H4 are supported. Historic review amount represents one reviewer's using experience and professional degree about this product or service, this true information will play core role in the influencing process. The rank of online review source also has positive effect on perceived online review usefulness ($P < .01$, VIF=1.054). Review system or website list the rank of review source based on other users' grade for this reviewer's comments. This rank process and standard will make users feel fair and dependable. H6 are also significantly supported which means that the centrality of online review source has positive effect on online review usefulness ($p < .01$, VIF=1.481). The correlation between others' responds to the online review source and online review usefulness is

supported and H7 pass hypothesis test. H6 and H7 both prove that social interactions are important in the online review system or website. Users are not only looking for useful information but also personal interaction and friendship online. Tight social network can satisfy users' different needs and shortens the uncertainty of virtual environment which will result more perceived usefulness.

2.3 Mediating Effect Analysis

Mediating effect means the impact of *X* on *Y* goes through *M*, this paper use this method to test the influence of Reference Group theory and product involvement. Wen Zhonglin's mediating effect criterion method is used to do the test (Wen, Hou, & Zhang, 2005). The test process includes: (a) Test the correlation between seven independent variable and dependent variable, and regression results show that except online review score other independent variable are all significantly impact perceived online review usefulness(refer to Chapter3.2). (b) Then set product involvement as the dependent variable to test the correlation between seven independent variable and product involvement. The results show that with a significance level of 0.1, review depth, humorous, historic review amount, rank, centrality and others' response have significant effect on product involvement. (c) At last, set product involvement as independent variable and test correlation between these eight variables and perceived variable. The results are showed below in Tables 5-6. The effect of these eight variables, including review depth, humorous, product involvement, et al work on perceived online usefulness is significantly verified at 0.1 significant level.

Table 5
Coefficient of Mediating Effect

| Model | Non standardized coefficient | | standardized coefficient | <i>T</i> | Sig. | Collinearity statistics | |
|--------------------------|------------------------------|----------------|--------------------------|----------|------|-------------------------|-------|
| | <i>B</i> | Standard Error | Beta | | | Tolerance | VIF |
| (constant) | .080 | .031 | | 2.623 | .009 | | |
| Review depth | .000 | .000 | .025 | 5.369 | .000 | .939 | 1.065 |
| Humorous | .145 | .009 | .141 | 16.110 | .000 | .265 | 3.774 |
| 1 Historic Review amount | .000 | .000 | .015 | 2.799 | .005 | .710 | 1.408 |
| Rank | .009 | .003 | .015 | 3.180 | .001 | .946 | 1.057 |
| Individual centrality | .000 | .000 | .020 | 3.614 | .000 | .668 | 1.498 |
| Responds | .863 | .010 | .798 | 90.241 | .000 | .261 | 3.832 |
| Product involvement | .130 | .034 | .018 | 3.818 | .000 | .953 | 1.049 |

Table 6
Simulating Degree Test of Mediating Effect

| Model | <i>R</i> | <i>R</i> -square | Adjusted <i>R</i> -square | Standard error of estimate |
|-------|-------------------|------------------|---------------------------|----------------------------|
| 1 | .939 ^a | .881 | .881 | 1.262 |

Note. a. Predictor variable: (Constant), Responds, Review depth, Rank, Review amounts, Individual centrality, Humorous.

Based on the analysis, product involvement plays as mediating role between review depth, humorous, historic review amount, rank, centrality, responds and perceived online review usefulness. not-fully mediating effect exists in this model.

2.4 Moderating Effect Analysis

This paper assumes product involvement works as moderating variable to influence the relationship between online review content, source and perceived usefulness. The following part will test the moderating effect of product involvement. Wen's (2005) method is used again and procedure conducted: (a) Processing all continuous

variables under standardized way and generate the interactive variable of independent variable and dependent variable in SPSS; (b) Build multi-level equations, set independent, dependent and moderator variable in Model 1, while independent, dependent, moderator and interactive variable in Model 2.

The regression results of multi-level equation are showed in Tables7-8. With significance level of 0.01, product involvement moderates the relationship between historic review amount, review centrality and perceived usefulness. Then set product involvement into different groups: High level and low level to analyze the working path of moderating effect. SPSS results are showed in Table 9.

Table 7
Simulating Degree Test of Moderating Effect

| Model | R | R-square | Adjusted R-square | Standard error of estimate | R-squared change | F change | df1 | df2 | Sig. F change |
|-------|-------------------|----------|-------------------|----------------------------|------------------|----------|-----|------|---------------|
| 1 | .939 ^a | .881 | .881 | 1.262 | .881 | 6161.958 | 7 | 5804 | .000 |
| 2 | .939 ^a | .882 | .882 | 1.259 | .001 | 6.010 | 6 | 5798 | .000 |

Note. a. Predictor variable: (Constant), Responds, Review depth, Rank, Review amounts, Individual centrality, Humorous, product involvement. b. predictor variable: (Constant), Responds, Review depth, Rank, Review amounts, Individual centrality, Humorous, product involvement, involvement* Responds/ Review depth/ Rank/ Review amounts/ Individual centrality/ Humorous.

Table 8
Regression Test of Moderating Effect

| Model | Non standardized coefficient standardized coefficient | | | T | Sig. | Collinearity statistics | |
|-----------------------------|---|----------------|------|--------|------|-------------------------|-------|
| | B | Standard error | Beta | | | Tolerance | VIF |
| (Constant) | .080 | .031 | | 2.623 | .009 | | |
| Review depth | .000 | .000 | .025 | 5.369 | .000 | .939 | 1.065 |
| Humorous | .146 | .009 | .141 | 16.110 | .000 | .265 | 3.774 |
| Historic review amount | .000 | .000 | .015 | 2.799 | .005 | .710 | 1.408 |
| Rank | .009 | .003 | .015 | 3.180 | .001 | .946 | 1.057 |
| Individual centrality | .000 | .000 | .020 | 3.614 | .000 | .668 | 1.498 |
| Responds | .862 | .010 | .798 | 90.241 | .000 | .261 | 3.832 |
| Product involvement | .130 | .034 | .018 | 3.818 | .000 | .953 | 1.049 |
| (constant) | .085 | .031 | | 2.775 | .006 | | |
| Review depth | 9.919×10 ⁻⁵ | .000 | .021 | 4.108 | .000 | .744 | 1.343 |
| Humorous | .160 | .010 | .156 | 15.513 | .000 | .202 | 4.943 |
| Historic review amount | .000 | .000 | .012 | 2.226 | .026 | .686 | 1.457 |
| Rank | .009 | .003 | .014 | 3.061 | .002 | .940 | 1.064 |
| Individual centrality | .000 | .000 | .028 | 4.777 | .000 | .593 | 1.688 |
| Responds | .854 | .010 | .791 | 87.677 | .000 | .250 | 4.004 |
| Product involvement | .141 | .034 | .019 | 4.107 | .000 | .935 | 1.070 |
| Involvement* depth | .011 | .020 | .003 | .531 | .595 | .767 | 1.303 |
| Involvement* humorous | .040 | .035 | .012 | 1.139 | .255 | .195 | 5.132 |
| Involvement*historic review | .051 | .020 | .014 | 2.528 | .011 | .667 | 1.500 |
| Involvement* rank | .000 | .017 | .000 | -.028 | .978 | .943 | 1.061 |
| Involvement* centrality | .043 | .021 | .012 | 2.057 | .040 | .583 | 1.714 |
| Involvement* responds | .006 | .033 | .002 | .169 | .866 | .238 | 4.194 |

Table 9
Simulating Degree Test of Moderating Effect

| Level of involvement | Model | R | R-square | Adjusted R-square | Standard error of estimate | R-squared change | F change | df1 | df2 | Sig. F change |
|----------------------|-------|-------------------|----------|-------------------|----------------------------|------------------|----------|-----|------|---------------|
| 0 | 1 | .956 ^a | .914 | .914 | 1.243 | .914 | 4604.412 | 6 | 2584 | .000 |
| 1 | 1 | .913 ^b | .834 | .834 | 1.272 | .834 | 2689.308 | 6 | 3214 | .000 |

2.5 The Summary

This chapter focuses on data collecting and regression analysis, the results are summarized: Online review depth, humorous, historic review amount, review source centrality, other users’ response to the reviewer and his comments have significant impact on perceived online

review usefulness. And product involvement plays the moderating role in the relationship between historic review amount, review source centrality and perceived online review usefulness. The tested model is showed below:

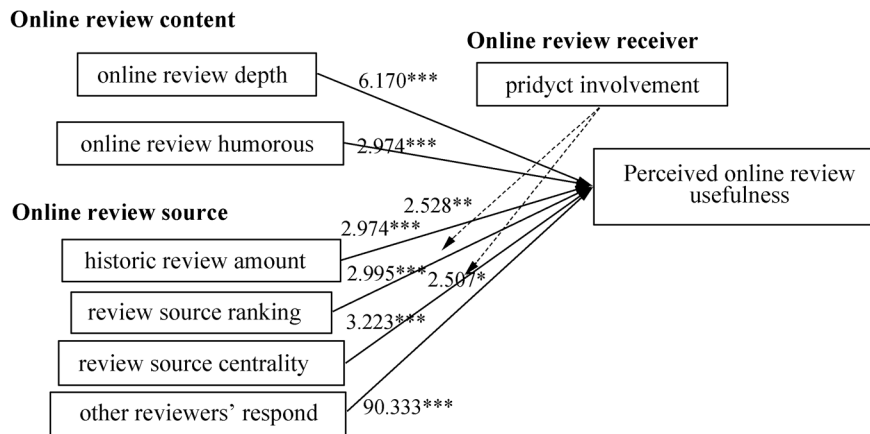


Figure 2
The Model of Impact Factors of Perceived Online Review Usefulness (Tested Version)

CONCLUSION AND DIRECTIONS FOR FUTURE RESEARCH

This paper focuses on the perceived online review usefulness research and build models to verify the impact of online review content, source and receiver on perceived online review usefulness. Based on the current researches, this new model combines online review theories, Reference Group Theory, Elaboration Likelihood Model and Information Process Theory, and especially take social networks variable into consideration. Text mining method is used to close the gap of questionnaire empirical method. The regression results show that online review depth, humorous, historic review amount, review source centrality, other users’ response to the reviewer and his comments can all impact perceived online review usefulness. And product involvement of online review receive can moderate the relationship between historic review amount, review source centrality and perceived online review usefulness.

Then based on the theoretical results, management directions are also proposed for online review system and website:

Firstly, optimize the online review content. Online review depth does have a positive effect on perceived online review usefulness. Depth is directly influenced

by open text, so control the text number to optimize the content depth is important. The system should lead users to publish suitable text number. Too short text number may make users feel this review useless. Then the positive effect of review humorous supposes that online review system or website can lead users to publish more humor comments, for example, use “funny” to mark some comments and give special reward to these “funny” comments.

Then adjust and improve the presenting page or system of online review source. Some factors of review source are effective to shorten the uncertainty and risk of virtual environment, such as the rank of review source, historic comments amount and his position in this social network. Most review systems have not pay high attention on review source but just to display the comments. So this paper advises that online review system or website could label and list some important information of review source at clear position to help other users identify this review source’s specialty and dependability.

Currently most academic researches and E-commerce business are all focus on online review recommendation system building and optimizing. And based on time, usefulness, key word and other information, recommendation system works to list appropriate comments. This paper tests the significant correlation

between product involvement of review receiver and perceived online usefulness. So maybe the involvement of review receiver can be considered in the recommendation system to provide more tremendous service.

Lastly, build social network among users in online review system or website. The interactions among users and individual centrality of review source can promote information circulation, trust maturing and perceived usefulness improvement. Most E-commerce enterprises just focus on sales marketing, but ignore the significance of social network.

REFERENCES

- Cheung, M. Y., Luo, C., & Sia, C. L., et al. (2009). Credibility of electronic word-of-mouth: Informational and normative determinants of on-line consumer recommendations. *International Journal of Electronic Commerce*, 13(4), 9-38.
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of facebook "friends" social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4), 1143-1168.
- Fan, X. P. (2009). The motivation to participate untrading virtual community: Empirical research and management predictions. *Journal of Industrial Engineering and Engineering Management*, (1), 1-6.
- Gilly, M. C., Graham, J. L., & Wolfinbarger, M. F., et al. (1998). A dyadic study of interpersonal information search. *Journal of the Academy of Marketing Science*, 26(2), 83-100.
- Godes, D. M. (2004). Using online conversations to study word-of-mouth communication. *Marketing Science*, 23(4), 545-560.
- Granovetter, M. (1983). The strength of weak ties: A network theory revisited. *Sociological Theory*, 1(1), 201-233.
- Harrison-Walker, L. J. (2001). The measurement of word-of-mouth communication and an investigation of service quality and customer commitment as potential antecedents. *Journal of Service Research*, 4(1), 60-75.
- Hennig-Thurau, T., Gwinner, K. P., & Walsh, G., et al. (2004). Electronic word-of-mouth via consumer-opinion platforms: What motivates consumers to articulate themselves on the Internet? *Journal of Interactive Marketing*, 18(1), 38-52.
- Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion; psychological studies of opinion change*. New Heaven: Yale University Press.
- Kuenzel, J., & Musters, P. (2007). Social interaction and low involvement products. *Journal of Business Research*, 60(8), 876-883.
- Madden, G. J., Raiff, B. R., Lagorio, C. H., Begotka, A. M., Mueller, A. M., Hehli, D. J., & Wegener, A. A. (2004). Delay discounting of potentially real and hypothetical rewards: II. Between- and within-subject comparisons. *Experimental and Clinical Psychopharmacology*, 12, 251-261.
- Park, D. H., Lee, J., & Han, I. (2007). The effect of on-line consumer reviews on consumer purchasing intention: The moderating role of involvement. *International Journal of Electronic Commerce*, 11(4), 125-148.
- Payne, J. W., Bettman, J. R., & Johnson, E. J. (1988). Adaptive strategy selection in decision making. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 14(3), 534.
- Petty, R. E., Cacioppo, J. T., & Schumann, D. (1983). Central and peripheral routes to advertising effectiveness: The moderating role of involvement. *Journal of Consumer Research*, 10(2), 135.
- Pitta, D. A., & Fowler, D. (2005). Internet community forums: An untapped resource for consumer marketers. *Journal of Consumer Marketing*, 22(5), 265-274.
- Skowronski, J. J., & Carlston, D. E. (1989). Negativity and extremity biases in impression formation: A review of explanations. *Psychological Bulletin*, 105(1), 131.
- Sun, T., Youn, S., & Wu, G., et al. (2006). Online word - of - mouth (or mouse): An exploration of its antecedents and consequences. *Journal of Computer-Mediated Communication*, 11(4), 1104-1127.
- Sussman, S. W., & Siegal, W. S. (2003). Informational influence in organizations: An integrated approach to knowledge adoption. *Information Systems Research*, 14(1), 47-65.
- Thibaut, J. W., & Riecken, H. W. (1955). Some determinants and consequences of the perception of social causality. *Journal of Personality*, 24(2), 113-133.
- Wen, Z. L., Hou, J. T., & Zhang, L. (2005). The research and comparison between moderating and mediating effect. *Acta Psychologica Sinica*, 37(2), 268-274.
- Wiertz, C., & de Ruyter, K. (2007). Beyond the call of duty: Why customers contribute to firm-hosted commercial online communities. *Organization Studies*, 28(3), 347-376.
- Yin, G. P. (2012). Which kind of online review works better — The influence of social network factors. *Management World*, (12), 115-124.
- Zhang, Y., & Zinkhan, G. M. (2006). Responses to humorous ads. Does audience involvement matter? *Journal of Advertising*, 35(4), 113-127.