THE IMPACT OF MULTIMEDIA WORD OF MOUTH ON TRUST BY GENDER DIFFERENCE AND PURCHASE INTENTION

Haibin Zhang[1,2], Chikako Takanashi[1], Kiminori Gemba[1]
and Shuichi Ishida[1]

[1]Management of Technology Department
Ritsumeikan University
2-150 Iwakura-cho, Osaka Ibaraki 567-8570, Japan
gr0190sh@ed.ritsumei.ac.jp

[2]School of Economics & Management
Zhejiang A&F University
No. 252, Yijin Road, Linan 311300, P. R. China

Abstract. *With the development of high-speed and 4G networks, various devices can now process multimedia files easily. Engendering a new realm of word of mouth, multimedia files and text have become important clues for e-business consumers' decisions. This research constructs a multimedia word of mouth trust model for information receivers based on two dimensions of trust theory. The research results indicate that multimedia word of mouth can significantly improve the dimensions of ability trust and integrity trust, along with the perceived word of mouth quantity. Gender plays a moderating role between multimedia expression and integrity trust.*
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1. **Introduction, Literature Review and Hypotheses.** The development of e-commerce is providing online businesses with a platform to communicate with consumers nowadays. Different from advertising, online comments are generated by consumers and identify products, brands, and services. Thus, in this way consumers have become ambassadors for specific products, brands, or services [1]. Relevant research can improve this interactive e-commercial system based on consumer behavioral patterns.

The definition of word of mouth (WOM) in marketing terms [2] is as follows: a non-commercial exchange of ideas between information senders and information receivers with respect to brands, products, or services. A model for receiving information has been proposed in the literature [3]. Information usefulness was considered as a mediating variable. This research ignored trust. Some researchers [4] proposed an integrated framework that is limited in two respects: 1) it is qualitative but not verified by empirical data, and 2) it ignores the diversity of WOM information arising from technical progress.

Many scholars have attempted to categorize WOM to explore distinct functions of various types. Others have focused on the reduction of sentences in comments to improve utility [5]. However, almost all previous research focuses on WOM that is text based. In 2014, scholars [6] stated that visual WOM urgently requires further research, especially regarding how it changes the way in which consumers handle information.

Trust is the overriding issue that confounds the development of e-commerce over the long term. Although some scholars [7] have studied this, most of these existing studies have only explored one aspect of trust in this context. Therefore, it appears that there is a need to explore multiple dimensions of trust on this topic. A survey report on cross-border e-commerce published by Japan's Ministry of Economy, Trade and Industry in 2015 [8] highlighted that customers were unwilling to use cross-border e-commerce mainly

because they had no trust in e-commerce entrepreneurs. Therefore, this research focuses on consumers' trust in others, more specifically, consumers' trust in WOM senders.

Most of the theories [9,10] focus on three aspects of trust: benevolence, integrity, and ability. Benevolence and integrity overlap on consumer personality. Therefore, we consider trust to be a mechanism of simplified criteria for the integrity and ability of others. Based on this analysis, this study proposes the following hypotheses.

H1. *The ability dimension of trust has positive impacts on the purchasing intention.*

H2. *The integrity dimension of trust has positive impacts on the purchasing intention.*

Furthermore, male trust may not equal female trust precisely. Males are guided to achieve agentic goals. In contrast, females achieve communal goals [11]. It is reasonable to assume gender roles adjust the relationship between multimedia expression and trust.

H_{g1}. *Gender plays a moderating role between multimedia expression and ability trust.*

H_{g2}. *Gender plays a moderating role between multimedia expression and integrity trust.*

With constant technical progress, consumer comments have evolved from being pure text comments into media-rich comments. The question then arises: how does unofficial media-rich WOM affect consumer trust? This issue is seldom discussed among scholars from different countries. Therefore, this study proposes the following hypotheses.

H3. *Multimedia expression of WOM has a positive impact on ability trust.*

H4. *Multimedia expression of WOM has a positive impact on integrity trust.*

H5. *Multimedia WOM has a positive impact on the quantity of perceived positive WOM.*

The quantity of positive WOM is associated closely with the sales quantity and popularity of the commodities. Certain researchers [12] focused on positive WOM. However, this research was restricted to six or less positive WOM messages. Therefore, whether the quantity of positive WOM boosts the trust level of consumers requires further research. We propose the following hypotheses.

H6. *The quantity of positive WOM has a positive impact on ability trust.*

H7. *The quantity of positive WOM has a positive impact on integrity trust.*

2. **Research Methodology.** The literature shows that most previous WOM studies resort to experimentation or questionnaire surveys. This research uses a combination of experimentation and questionnaire surveys, an underdeveloped but complementary method that has been used by some research scholars.

This approach is an attempt to capture the advantages of the experimental method and avoid its disadvantages. Experimentation effectively controls for other variables, thereby filtering out the bias arising from the interaction of multiple factors. Thus, this semi-experimental method controls price and competition strategies to reduce bias. An ME581 tablet computer was selected as the WOM product. Its price changes slightly among different online shops. The online shop is required to revamp the webpage of the specific commodity to serve the experiment's purpose and disregard differentiation strategy. At the same time, comments are replaced with multimedia comments, according to the original attitudes. For this step, four doctoral students of language and psychology are invited to point out key words in the original comments. Once these words are replaced, they are asked to review the comments again to ensure attitude consistency. This step ensures that only media expression is manipulated; otherwise, it would be difficult to detect H5.

At the same time, experimentation has obvious drawbacks. First, the objects of social experiments tend to play up to the experimental results consciously, thereby causing errors in the experimental results. To prevent this, selected shoppers were informed that they were selected to participate in an anniversary celebration. After browsing the experiment's web pages, answering the questionnaire, which could be downloaded free from the Internet [13], and passing a trap test, customers were entitled to obtain general points from the website. It did not impose restrictions on commodity types or shops for

actual consumption. Second, most experiments conducted in specific places, at specific times, and targeting specific groups of people impose restrictions on the choices and recognition method of the consumers. Objects of this research could browse and consider other real shops except for the experiment shops and products, without limitation.

The disadvantages of questionnaire surveys often lie in the recollection difficulties of consumers [14]. We solve this problem through an instant questionnaire survey after consumers browsed the experiment webpage.

The combination of experiment and survey was conducted taking in three perspectives. 1) Key disturbances (price and competition strategies) were filtered, while random disturbances remained (e.g., environment and emotion). 2) Consumer survey answers were influenced by a manipulated variable. 3) Answers were not the direct observations in the experiment but self-reporting. They were processed through consumer cognition.

3. **Data Analysis.**

3.1. **Sample size and descriptive statistics.** We set the significance level at 0.01 and the anticipated effect size at 0.02. The desired statistical power level is maintained at 0.8. According to our latent variable number, 8, and the observed variable, 18, the minimum sample size should be 171 for SEM [15,16]. After data cleaning, we have 211 valid responses. Thus, the number of responses fulfills the SEM model: 55.3% of the responses come from women; 59.3% of the respondents are aged between 25-34. Company employees account for 64%.

3.2. **Reliability and validity tests.** For the 18 items, Cronbach's alpha is 0.926 with all items over the 0.7 minimum. Table 1 shows the validity test by factor analysis. Factor rotation indicates that the validity of only two questions appears low (integrity trust 1 and ability trust 3). Generally, reliability and validity are good. We further test the variance inflation factor (VIF) to confirm that the multicollinearity can be accepted.

However, Table 1 does not reveal sub-dimensions of trust. Many marketing researchers stop at the whole concept level of trust because sub-dimensions are too close to be observed when comparing other concepts. Another reason is that they have their own axes. Our research tests six trust questions independently using another rotation method to solve this problem. Tables 2 and 3 illustrate sub-dimensions of trust and discriminant validity although those two sub-dimensions are not very clear.

3.3. **Model fit and result.** Ordinarily, GFI (goodness of fit index), AGFI (adjusted goodness of fit index), CFI (comparative fit index), NFI (normed fit index), RMSEA (root mean square error of approximation), and Chi-square/d.f. (degrees of freedom) can be used to measure the model's fit. CFI, NFI, GFI, and AGFI should be larger than 0.9. Chi-square/d.f. should be less than 3 and RMSEA should be less than 0.06 or 0.08 [17,18].

From Table 4, we can see that the model can be accepted. Figure 1 presents the results for the seven hypotheses, excluding the gender hypotheses. Except for Hypothesis 2, the other six hypotheses are supported very well. All coefficients of Figure 1 are standard coefficients.

Principal component data analysis can be used to reduce the dimensions. Next, we use SPSS20 to confirm the moderating role of sex in the hierarchical linear model. Table 5 demonstrates the test results for H_{g1} and H_{g2}. From Table 5, it is easy to observe that H_{g1} is rejected and H_{g2} is supported by the data test.

4. **Conclusion and Discussion.** First, this research analyzes and tests how media-rich information improves customer trust, thereby verifying the significant impacts of such information on the formation of customer trust and purchasing intention. Meanwhile, the media-rich presentation has obvious effects on the quantity of perceived WOM.

TABLE 1. Validity test

Kaiser-Meyer-Olkin (KMO)					.927
Bartlett's test of sphericity	Chi-square				1943.730
	d.f.				153
	Sig.				.000
		1	2	3	4
Purchase 1		**.772**	.219	.018	.147
Purchase 2		**.815**	.246	.010	.121
Purchase 3		**.849**	.159	.150	.211
Purchase 4		**.867**	.158	.209	.077
Multimedia 1		.174	**.953**	.287	.180
Multimedia 2		.330	**.853**	.116	.142
Multimedia 3		.188	**.567**	.017	.275
Multimedia 4		.182	**.854**	.203	.319
Ability trust 1		.201	.245	**.831**	.249
Ability trust 2		.388	.207	**.943**	.236
Ability trust 3		.291	.106	**.390**	.179
Integrity trust 1		.121	.252	**.372**	.307
Integrity trust 2		.288	.258	**.703**	.239
Integrity trust 3		.110	.351	**.650**	.211
Quantity 1		.268	.387	.266	**.410**
Quantity 2		.245	.235	.274	**.657**
Quantity 3		.131	.285	−.083	**.936**
Quantity 4		.267	.276	.335	**.419**

TABLE 2. Sub-dimensions of trust

Rotated Factor Matrix[a]		
Ability trust 1	**.571**	.465
Ability trust 2	**.859**	.223
Ability trust 3	**.373**	.362
Integrity trust 1	.203	**.773**
Integrity trust 2	.444	**.549**
Integrity trust 3	.486	**.482**
Initial eigenvalues cumulative	68%	
[a]Principal Axis Factor Analysis, Maximum Variance		

TABLE 3. Discriminant test by CFA

	Multimedia	Quantity WOM	Integrity	Ability	Intention
Multimedia expression	**0.794**				
Quantity of WOM	0.617	**0.719**			
Integrity trust	0.556	0.526	**0.737**		
Ability trust	0.559	0.615	0.681	**0.664**	
Intention	0.620	0.576	0.625	0.629	**0.821**

TABLE 4. Model fit index

Chi-square/d.f.	GFI	AGFI	CFI	NFI	RMSEA
190.9/125	.91	.88	.97	.91	.05
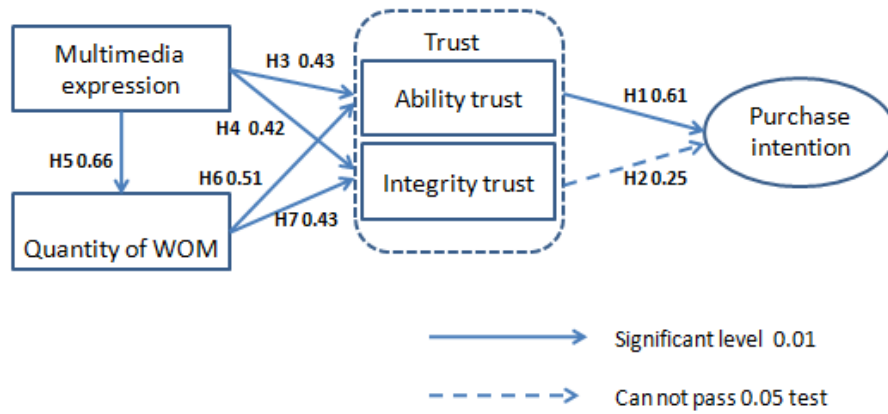
FIGURE 1. Test for Hypotheses 1-7

TABLE 5. Moderating role of gender

Model	R Square	Adj. R Square	Change Statistics				
			R Square Change	F Change	d.f.1	d.f.2	Sig.F Change
Ability Trust[a]							
1[b]	.335	.329	.335	52.451	2	208	.000
2[c]	.343	.333	.008	2.436	1	207	.120
Integrity Trust[d]							
1[e]	.334	.328	.334	52.249	2	208	.000
2[f]	.361	.352	.027	8.610	1	207	.003

[a] Dependent variable: ability trust
[b] Independent variable: sex, multimedia expression
[c] Independent variable: sex, multimedia expression, expression multiple sex
[d] Dependent variable: integrity trust
[e] Independent variable: sex, multimedia expression
[f] Independent variable: sex, multimedia expression, expression multiple sex

Second, the impacts of the ability dimension of trust on purchase intention pass the significance test, whereas the impacts of the integrity dimension of trust on purchasing intention fail. It is possible that multimedia WOM helps consumers acquire more detailed evidence to verify the correctness of information. The influence and function of integrity trust on purchase intention should be prudently suspected.

Finally, this research may answer the long-argued issue of the role of gender when considering trust. Some researchers [19] find that the effect of WOM quality on trust is significantly different between men and women. However, others [20] do not discover a difference between genders using the ranksum test. The research here reveals another possible explanation: gender difference may occur in sub-dimensions of trust, and not at the whole concept-of-trust level.

With regard to implications of our research for management, e-commerce websites should encourage customers to use variable means of information display to share their product experience. In addition, websites should limit the number or extent of the photos, audio or video in each WOM item, possibly preventing information overload. Managers should pay more attention to the ability trust rather than the integrity trust of WOM.

This research has the following limitations. First, the quantity of the samples is limited, which creates the issue of sample representativeness and bias. Second, this research is oriented only toward a single commodity with a specific model. Thus, the experimental results may be insufficient to account for experience-based commodities.

Last, linear regression can efficiently test the symmetric relationship. However, it is useless for the asymmetric relationship. Almost all current research concentrates on a discussion of sufficient and necessary relationships between independent and dependent variables. It is essential to pay attention to sufficient and unnecessary relationships in the future. Such relationships exist widely in practice.

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