Empirical Research on the Influence of Negative Electronic Word-Of-Mouth on Brand Switching Behavior

Haibin Zhang*, Chikako Takanashi*, Kiminori Gemba* and Shuichi Ishida*

Virtual community produces a new social model and consumption actions, which greatly affect an individual's network consumption behavior. This research investigated electronic word-of-mouth (EWOM) in virtual communities and examined the influence of negative EWOM on the switching behavior of consumers. Based on the analysis of the extant theory, we proposed the elements of virtual community involvement, negative EWOM's strength, consumer brand switching behavior, and complaint reaction. Subsequently, we postulated hypotheses. To explore the specific relationship between the variables further, we conducted an empirical test of the assumptions and the model using a questionnaire survey. Contrary to prior research findings, we found that virtual relationships cannot improve the reliability of negative EWOM, and that negative EWOM retransmission has no correlation with brand switching behavior.

Keywords: Virtual community involvement; negative electronic word-of-mouth; brand switching behavior; complaint reaction

1. Introduction

A virtual community, which forms the core of the virtual market, is an influential community with common interests or requirements that provides an online space for people to communicate and creates value through the website(s) (Hagel & Armstrong 1997, Chan & Li 2010). Virtual communities provide rich, colorful, and specific styles, including a transaction community for product and service deals, a hobby community for discussing common topics of interest, and a fantasy community for establishing social relations (Dubé, Bourhis & Jacob 2006).

According to CNNIC (2014), there was a vast improvement in the user scale and penetration rate in 2014 compared to the situation in the previous year. As of July 2014, the number of network users involved in making friends online was 284 million, 59.18 million more than the number at the end of 2010. With the popularization of virtual community technology and applications, the Internet is rapidly moving into a community era, and virtual communities are becoming a significant factor in creating online value.

A virtual community produces a new social model and consumption actions, which greatly affect individual's network consumption behavior. One of the results of a virtual community is electronic word-of-mouth (EWOM). As the most direct and real consumer feedback for products and services, EWOM widely exists in the various basic activities of human life. EWOM allows consumers to interact with one another socially, exchange product-related information, and make informed purchase decisions via computer-mediated conversations (Blazevic et al. 2013). Extensive prior research has shown that EWOM is widely used in

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EWOM is a classic double-edged sword. More consumers are eager to share their terrible consumer experience with others, rather than their pleasant experiences. Research indicates that a satisfied consumer will share their pleasant experience with three other people and bad experience with at least 10 others. Thus, more people get the message about a bad experience (Mangold, Miller & Brockway 1999). Because of the characteristics of the online environment, the online propagation of information does not cost much. In addition, the anonymity of the ideas presented online could make consumers more unscrupulous. Thus, they could offer negative and false information. Such information would be distorted and propagated repeatedly, leading to a crisis for the company (Aggarwalet al.2012). Therefore, the question of how to tackle negative EWOM has become a significant topic of discussion in academic and enterprise circles.

The lower brand loyalty of Chinese consumers is a problem that has always affected enterprise development in China, which deteriorates with negative EWOM. According to the 2013 Chinese Consumer Investigation Report released by McKinsey, brands in China witnessed a lowering of brand loyalty. Consumers often compare various brands and select the best of them. The brand switching behavior of consumers has severely affected the earning capacity and competitive power of enterprises. Statistics show that profits have reduced by 25–50% because of the betrayal of consumers (Liu & JiZhen 2005). The costs associated with attracting a new customer are 4-6 times the costs of maintaining a regular one. Brand loyalty leads to nine times the profits of the cases involving unfaithful ones (Rosenberg &Czepiel1984). Given the brand switching behavior of Chinese consumers and the associated losses, this study investigates the problem of EWOM in a virtual community and examines the influence of negative EWOM on the switching behavior of consumers.. Additionally, ways to reduce these losses are recommended.

For those academic and industry reasons, we first gave a brief description of previous research and summarized a framework of research. Then, investigation data was used for correlation and regression analysis to explore variables’ relationship. Finally, we discussed the available results and outline limitations.
2. Literature Review and Research Hypotheses

An information process is involved in the influence of consumers’ EWOM on brand switching behavior (Cheung & Rabjohn 2008). Specifically, information receivers are affected by various factors while processing negative EWOM. Various information characteristics, including timeliness (Madu and Madu 2002), accuracy (Wixom & Todd 2005), and comprehensiveness (Sullivan 1999), have been shown to impact consumer behavior. Moreover, the source of negative EWOM and the relation between the source(s) and the consumer externally affect the evaluation and perception of the information receivers (Solomon 2011), which form the root of the effects produced by EWOM. The community members’ level of dependence on the virtual community and the relation between them and the virtual community would influence their perception of the related negative EWOM in the community, thereby affecting their brand switching behavior. In the process, the contextual factors of the consumers and the consequent reactions on the enterprises lead to regulations. The assumptions of this research are presented in the following sub-sections.

2.1 Virtual Community Involvement and Influence of EWOM

In traditional research, the factors affecting EWOM and the reliability of negative EWOM mainly involved the features of the sender/source of the WOM (specialty), the content features of the WOM (interesting and value-adding), the tendency to trust, etc. (Rieh 2002, Vázquez-Casielles, 2013). Subsequently, researchers began to pay more attention to the role of environmental factors in the reliability and influence of EWOM, in addition to the source of the WOM and its content features.

In traditional WOM, the social relation between the sender/source and the receiver could affect the judgment of the receiver with regard to the information and propaganda of WOM (Dichter 1966, Minxue 2010). In other words, information receivers are more willing to accept the messages from their familiar relatives or friends. (Bansal & Voyer 2002). In the context of online networks and virtual communities, social relations and network involvement remain the focus of scholars among the various factors that affect negative EWOM. These two factors frequently appear in the extant research as the factors that affect the influence and reliability of negative EWOM. Doh and Hwang (2009) proved that the degree of consumers’ network involvement could affect their resolution capability, and thus, the transmission effects of the WOM (Jidong 2010). Chen, a Chinese scholar, explored the role of network involvement in the retransmission process of EWOM; he reported that the degree of involvement had a positive function and influence in this process (Chen & Zhang 2008). Jidong (2010) argued that the degree of involvement and strength of relation could affect the propaganda effect of EWOM and the purchase intention of consumer. Yanhong (2005) classified the influential factors into non-interpersonal relationships and interpersonal relationships. The strength of the relation in interpersonal relationship plays a positive role in the effect of persuasion.

This indicates that despite the virtual nature of negative EWOM and the virtual relations involved, the virtual relationship between an individual and the other members of a virtual community and the individual’s independence from the community affect the strength of negative EWOM. “With regard to virtual relationship, people generally would like to obtain information from an intimate environment and accept the information” (Flanagin & Metzger 2000). Thus, the relationship between the receivers of WOM and the virtual community in which they are located could affect the strength and the reliability of the negative WOM and
Zhang, Takanashi, Gemba & Ishida

could also affect the retransmission of the negative EWOM. With regard to the degree of dependence of a virtual community, prior research shows that people will trust a particular media even more when they use it frequently (Westley and Severin 1964). That is, people tend to trust the media that they love. With regard to virtual community, the application and dependency of virtual community could impact the active searching idea of people and further produce influence for the strength of EWOM. Based on the preceding analysis, this study takes into account the degree of involvement of a virtual community and postulates the following hypotheses based on the virtual relationship and the dependence on a virtual community.

**H1**: A positive correlation exists between virtual relationship and the various dimensions of negative EWOM.

**H1a**: A positive correlation exists between virtual relationship and the strength of negative EWOM.

**H1b**: A positive correlation exists between virtual relationship and negative EWOM.

**H1c**: A positive correlation exists between virtual relationship and the intention of negative EWOM retransmission.

**H2**: A positive correlation exists between the degree of dependence on virtual community and the various dimensions of negative EWOM.

**H2a**: A positive correlation exists between the degree of dependence on virtual community and the strength of negative EWOM.

**H2b**: A positive correlation exists between the degree of dependence on virtual community and the reliability of negative EWOM.

**H2c**: A positive correlation exists between the degree of dependence on virtual community and the intention of negative EWOM retransmission.

### 2.2 Negative EWOM Strength and Brand Switching Behavior of Consumers

Prior studies mainly focused on the subjective perception of consumers such as the cognition about enterprise’s price and the attractive services offered by other competitors. However, in addition to such factors, WOM vastly affects the actions of consumers as an objective environmental factor (Zhongke & Chunhe 2009). Moreover, scholars generally think that negative EWOM acts on consumers much more than positive WOM does (Chevalier & Mayzlin 2006). With the development of Internet technology, virtual communities are rapidly entering every aspect of the consumers' information acquisition and purchasing process. Given the background, negative EWOM would have a greater influence on brand attitude and brand switching behavior, and it would lower customer loyalty and hurt the profits of a company (Zhongke & Chunhe 2009).

Among the various aspects of WOM that affect the brand switching behavior of consumers, negative EWOM is undoubtedly a significant factor. Pinghua (2010) proved that stronger EWOM could lead to greater influence on brand switching behavior. Hui (2010) reported that information strength would affect the cognition, reliability, and trust of consumers, thereby affecting their purchasing decision and brand switching behavior. Jidong (2009) verified the influence of negative EWOM strength on the purchasing decision and brand behavior of consumers. The strength of negative EWOM determines the frequency with which the information receivers encounter negative information; further, it affects their cognition and evaluation of information and the possibility of their brand switching behavior. That is, the strength of EWOM encountered by an information receiver could impact the brand switching behavior of consumers. Additionally, reliability of WOM is a decisive factor
that affects its propaganda effect. With regard to the spread of negative EWOM, the level of its reliability would determine the degree of perception of information receivers, and would impact their trust and evaluation of the WOM and the follow-up behaviors of consumers (Flanagin & Metzger 2000, Minxue 2010). That is, the reliability of negative EWOM affects the brand switching behavior of consumers. The retransmission intention of information receivers with regard to negative EWOM is the most direct proof of his/her WOM information evaluation, which also represents the effective external dissemination of information. Individuals are more likely to spread the information that they consider to be valuable and credible. The change in attitude is an effective antecedent variable for the change in consumer behavior. Based on this discussion, this study postulates the following hypotheses:

**H3:** A positive correlation exists between the various dimensions of negative EWOM strength and the brand switching behavior of consumers.

**H3a:** A positive correlation exists between the strength of negative EWOM and the brand switching behavior of consumers.

**H3b:** A positive correlation exists between the reliability of negative EWOM and the brand switching behavior of consumers.

**H3c:** A positive correlation exists between the retransmission intention of negative EWOM and the brand switching behavior of consumers.

### 2.3 Moderator Effect of Complaint Reaction

Negative EWOM is affected by various subjective and objective factors in the process of influencing the consumers' brand switching behavior. The relevant reaction to the negative complaints of consumers is one of these factors.

Complaint reaction refers to the relevant measures and acts adopted by an enterprise in order to deal with the propaganda of negative EWOM, complaints, and negative evaluations of consumers. Given how negative EWOM is formed, the complaint tendency of consumers could affect the propaganda of negative EWOM (Minxue, 2010). Generally, consumer complaints are related to dissatisfaction. If an enterprise handles the complaints in a timely manner, the production and propaganda of the negative EWOM could be effectively contained (Russellet et al. 2001). “the research has shown that a number of variables both within and outside management control affect consumer dissatisfaction”(Richins 1983). It is especially important for enterprises to respond to and treat the negative EWOM related to the brand switching behavior of consumers based on the strength of the negative EWOM.

**H4:** An enterprise’s reactive degree to complaints plays an moderator role for the relationship between the strength of negative EWOM and the brand switching behavior of consumers.

**H4a:** An enterprise’s reactive degree to complaints plays an moderator role for the relationship between the strength of negative EWOM and the brand switching behavior of consumers.

**H4b:** An enterprise’s reactive degree to complaints plays an moderator role for the relationship between the reliability of negative EWOM and the brand switching behavior of consumers.

**H4c:** An enterprise’s reactive degree to complaints plays an moderator role for the relationship between the retransmission intention with regard to negative EWOM and the brand switching behavior of consumers.
3. Method

3.1 Sample

For ensuring the scientific rationality of the research, the data collection mainly involved college students and new employees given their higher educational background and familiarity with the Internet. A total of 910 questionnaires were issued, and 756 completed questionnaires were collected. After excluding 42 unqualified questionnaires, the final sample included 714 effective questionnaires (collection rate of 78%).

Table 1: Descriptive Statistics of the Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>%</th>
<th>Variable</th>
<th>Category</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>42.9</td>
<td>Educational</td>
<td>Junior College Education</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>57.1</td>
<td>Background</td>
<td>Undergraduate Course</td>
<td>65.3</td>
</tr>
<tr>
<td>Age</td>
<td>19-24</td>
<td>54.1</td>
<td></td>
<td>Master</td>
<td>32.1</td>
</tr>
<tr>
<td></td>
<td>25-30</td>
<td>44.9</td>
<td></td>
<td>Doctorate or above</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>31-35</td>
<td>1.0</td>
<td></td>
<td>No Income</td>
<td>60.2</td>
</tr>
<tr>
<td>Occupation</td>
<td>Student</td>
<td>83.7</td>
<td>Monthly</td>
<td>Below 1000 Yuan</td>
<td>19.9</td>
</tr>
<tr>
<td></td>
<td>Teacher</td>
<td>1.5</td>
<td>Income</td>
<td>1000-2000 Yuan</td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td>Technician</td>
<td>2.0</td>
<td></td>
<td>2000-3000 Yuan</td>
<td>7.7</td>
</tr>
<tr>
<td></td>
<td>Salesman</td>
<td>2.0</td>
<td></td>
<td>3000-4000 Yuan</td>
<td>5.1</td>
</tr>
<tr>
<td></td>
<td>Government officer</td>
<td>1.5</td>
<td></td>
<td>4000-5000 Yuan</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>Non-profit organization</td>
<td>3.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>6.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.2 Questionnaire Design

The research model includes the concepts of virtual community involvement, virtual community dependence, negative EWOM strength, negative EWOM reliability, negative EWOM retransmission intention, complaint reaction, and brand switching behavior of consumers. The operational variable of each concept and the measurement items are presented in Table 2.
Table 2: Questionnaire Measurement Items (translated version)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Variable</th>
<th>Measurement items (7 point scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual Community Involvement</td>
<td>Virtual Relationship</td>
<td>1-1 My questions raised in this community are often be answered by net friends.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-2 I often participate in the topic discussion in community for mutual help.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-3 I would like to have a dialogue with the net friends in community for communication, exchange emotion and establish relationship.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-4 I enjoy the communication with other friends through the virtual community.</td>
</tr>
<tr>
<td></td>
<td>Virtual Community</td>
<td>2-1 I nearly log on the community every day.</td>
</tr>
<tr>
<td>Dependence</td>
<td></td>
<td>2-2 I always concentrate on the community and forget other trifles.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2-3 I tend to obtain various information from the community.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2-4 I vastly enjoy the joy brought by the community.</td>
</tr>
<tr>
<td>Negative EWOM Strength</td>
<td>Negative EWOM Number</td>
<td>3-1 I once repeatedly browse such negative posts or reviews in the community.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3-2 In the past, various friends of mine in community had shared or published such negative posts or reviews.</td>
</tr>
<tr>
<td></td>
<td>Negative EWOM</td>
<td>4-1 The negative post or review is trustworthy.</td>
</tr>
<tr>
<td>Reliability</td>
<td></td>
<td>4-2 The contents of negative post or review are clear and easy to understand.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4-3 I take the negative post or review as reference.</td>
</tr>
<tr>
<td></td>
<td>Negative EWOM</td>
<td>5-1 I will inform my friend the negative information when he is considering buying the product.</td>
</tr>
<tr>
<td>Retransmission Will</td>
<td></td>
<td>5-2 I would mention the negative information when my friends discuss it.</td>
</tr>
<tr>
<td>Moderator Variable</td>
<td>Complaint Reaction</td>
<td>6-1 When the negative information appears, enterprise has announced statement and treatment suggestions aiming to the information.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6-2 Aiming to the negative information, the enterprise could provide special treatment measures.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6-3 I am satisfied with the solutions of the enterprise.</td>
</tr>
<tr>
<td>Brand Switching Behavior</td>
<td>Behavioral Intention</td>
<td>7-1 I am inclined to use other branded product when I browse the negative post or review.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-2 I would not constantly use the branded product when I browse the negative post or review.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-3 I would not keep the relation with the branded product when I browse the negative post or review.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-4 I would not suggest my friends to continually use the branded product when I browse the negative post or review.</td>
</tr>
</tbody>
</table>
4. Data Analysis and Hypotheses Testing

4.1 Analysis of Reliability and Validity

As shown in Table 3, the coefficient of Cronbach’s $\alpha$ is 0.864 and the coefficient of Cronbach’s $\alpha$ reflecting the factors of virtual community involvement, negative EWOM, behavioral intention, and the moderator variable (i.e., complaint reaction) are all (nearly) above 0.70, which indicates that the internal consistency of the various items of the scale is good with high reliability.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measurement Subject</th>
<th>Cronbach’s $\alpha$ Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual Community Involvement</td>
<td>1-1 to 2-4</td>
<td>0.818</td>
</tr>
<tr>
<td>Virtual Relationship</td>
<td>1-1 to 1-4</td>
<td>0.769</td>
</tr>
<tr>
<td>Virtual Community Dependence</td>
<td>2-1 to 2-4</td>
<td>0.745</td>
</tr>
<tr>
<td>Negative EWOM Strength</td>
<td>3-1 to 5-2</td>
<td>0.784</td>
</tr>
<tr>
<td>Negative EWOM Number</td>
<td>3-1 to 3-2</td>
<td>0.669</td>
</tr>
<tr>
<td>Negative EWOM Reliability</td>
<td>4-1 to 4-3</td>
<td>0.714</td>
</tr>
<tr>
<td>Negative EWOM Retransmission Intention</td>
<td>5-1 to 5-2</td>
<td>0.672</td>
</tr>
<tr>
<td>Moderator Variable: Complaint Reaction</td>
<td>6-1 to 6-3</td>
<td>0.715</td>
</tr>
<tr>
<td>Complaint Reaction</td>
<td>7-1 to 7-4</td>
<td>0.827</td>
</tr>
<tr>
<td>Behavioral Intention</td>
<td>1-1 to 7-4</td>
<td>0.782</td>
</tr>
</tbody>
</table>

To test the validity of the scale items, the Kaiser-Meyer-Olkin (KMO) measure of each scale and Bartlett’s test of sphericity were conducted. The KMO is greater than 0.5 (0.791/0.758/0.712/0.774), which is suitable for consideration in the factor analysis (Kaiser, 1974). When the orthogonal rotation is carried out using Varimax, the factor above 1 will be the common factor. Additionally, the accumulative variance contribution should be greater than 60% (60.311%/59.257%/61.775%/66.019%); the element load factor of each measurement item is over 0.50.

4.2 Correlation Analysis

This research uses correlation analysis to explore whether there are relationships between variables. Then, we use regression to investigate how variables contribute to another and confirm their relationships again. Finally, multilevel regression is used to confirm moderator variable. The Pearson product-moment correlation approach is adopted to analyze the correlation among the variables. The various data under the common factors analyzed from the validity analysis are aggregated to form a new variable for the relevant analysis. The results are shown in Table 4., which indicates hypotheses are verified tentatively.
### Table 4: Correlation Analysis Result

<table>
<thead>
<tr>
<th>Virtual Dependence</th>
<th>Virtual Relationship Correlation</th>
<th>Virtual Dependence Quantity Correlation</th>
<th>Reliability Correlation</th>
<th>Retransmission Correlation</th>
<th>Complaint Reaction Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual Dependence</td>
<td>0.519**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability</td>
<td>0.231**</td>
<td>0.385**</td>
<td>0.438**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retransmission</td>
<td>0.218**</td>
<td>0.341**</td>
<td>0.341**</td>
<td>0.338**</td>
<td></td>
</tr>
<tr>
<td>Complaint Reaction</td>
<td>0.203**</td>
<td>0.167*</td>
<td>0.192**</td>
<td>0.186**</td>
<td>0.223**</td>
</tr>
<tr>
<td>Behavioral Intention</td>
<td>0.147</td>
<td>0.245*</td>
<td>0.305**</td>
<td>0.341**</td>
<td>0.103*</td>
</tr>
</tbody>
</table>

Notes:
* Significant correlation at the level above 0.05 (bilateral).
** Significant correlation at the level above 0.01 (bilateral).

### 4.3 Regression Analysis

Based on the research model and hypotheses, three multivariable regression analyses are conducted: virtual community involvement and negative EWOM strength; negative EWOM strength and brand switching behavior; and the moderator effect of complaint reaction.

#### 4.3.1 Virtual Community Involvement and Negative EWOM Strength

The results of the stepwise regression analyses of the virtual community involvement factors and negative EWOM are shown in Table 5.
Table 5: Regression Results: Virtual Community Involvement Factors and Negative EWOM

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>β Value</th>
<th>Value of T</th>
<th>Significance Level</th>
<th>VIF</th>
<th>Value of D.W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant Quantity</td>
<td>2.976</td>
<td>5.625</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual Dependence</td>
<td>0.170</td>
<td>4.331</td>
<td>0.000</td>
<td>1.361</td>
<td>1.832</td>
</tr>
<tr>
<td>Virtual Relationship</td>
<td>0.139</td>
<td>3.306</td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Regression Analysis of Virtual Community Involvement and Negative EWOM Reliability

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>β Value</th>
<th>Value of T</th>
<th>Significance Level</th>
<th>VIF</th>
<th>Value of D.W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant Quantity</td>
<td>6.753</td>
<td>10.917</td>
<td>0.000</td>
<td>1.000</td>
<td>1.837</td>
</tr>
<tr>
<td>Virtual Dependence</td>
<td>0.238</td>
<td>5.825</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Intention Analysis of Virtual Community Involvement and Negative EWOM Retransmission

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>β Value</th>
<th>Value of T</th>
<th>Significance Level</th>
<th>VIF</th>
<th>Value of D.W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant Quantity</td>
<td>3.823</td>
<td>7.141</td>
<td>0.000</td>
<td>1.000</td>
<td>1.856</td>
</tr>
<tr>
<td>Virtual Dependence</td>
<td>0.191</td>
<td>5.043</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The regression results show that two depictive factors of virtual community contribute to the quantity of negative EWOM. Further, virtual dependence hypotheses are supported because of its positive role in the reliability of negative EWOM and the intention of negative EWOM retransmission. Virtual relationship failed to enter the model of negative EWOM reliability and negative EWOM retransmission. Therefore, its positive role could not be validated. Thus, Hypothesis H1—which states that there is a positive correlation between virtual relationship and the various dimensions of negative EWOM strength—is partially validated: H1a (strength of negative EWOM) is validated, while H1b (reliability of negative EWOM) and H1c (intention of negative EWOM retransmission) are not verified. Hypothesis 2—which states that there is a correlation between virtual community dependence and the various dimensions of negative EWOM strength—is validated by the regression results: H2a (strength of negative EWOM), H2b (reliability of negative EWOM), and H2c (intention of negative EWOM retransmission) are all validated.

4.3.2 Negative EWOM Strength and Brand Switching Behavior

The results of the stepwise regression analyses of the strength of negative EWOM and brand switching behavior are shown in Table 6.

Table 6: Regression Results: Strength of Negative EWOM and Brand Switching Behavior

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>β Value</th>
<th>Value of T</th>
<th>Significant Level</th>
<th>VIF</th>
<th>Value of D.W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity of Negative EWOM</td>
<td>0.406</td>
<td>3.645</td>
<td>0.000</td>
<td>1.240</td>
<td>2.185</td>
</tr>
<tr>
<td>Reliability of Negative EWOM</td>
<td>0.350</td>
<td>2.525</td>
<td>0.012</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Zhang, Takanashi, Gemba & Ishida

As shown in Table 6, of the three variables of the strength of negative EWOM, only negative EWOM quantity and reliability enter the model and pass the test; the intention of negative EWOM retransmission fails to enter the model. Hypothesis H3—which states that there is a positive correlation between the various dimensions of negative EWOM and the brand switching behavior of consumers—is partially validated: H3a (quantity of negative EWOM) and H3b (reliability of negative EWOM) are verified, while H3c (intention of negative EWOM retransmission) is not validated.

4.3.3 Effect of Complaint Reaction

Hierarchical linear model (multilevel linear model) was conducted to measure the effect of complaint reaction. The regression results are presented in Table 7.

Table 7: Regression Results: Moderator Effect of Complaint Reaction on Various Dimensions of Negative EWOM and Brand Switching Behavior

<table>
<thead>
<tr>
<th>Model Collection</th>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>ΔR²</th>
<th>Sig.F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Regression of complaint reaction to the quantity of negative EWOM and brand switching behavior</td>
<td>1</td>
<td>0.361</td>
<td>0.115</td>
<td>0.115</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0.342</td>
<td>0.123</td>
<td>0.041</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B: Regression of complaint reaction to the reliability of negative EWOM and brand switching behavior</td>
<td>1</td>
<td>0.389</td>
<td>0.151</td>
<td>0.151</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0.452</td>
<td>0.205</td>
<td>0.052</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C: Regression of complaint reaction to the retransmission of negative EWOM and brand switching behavior</td>
<td>1</td>
<td>0.291</td>
<td>0.084</td>
<td>0.084</td>
<td>0.103</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0.311</td>
<td>0.097</td>
<td>0.037</td>
<td>0.225</td>
</tr>
</tbody>
</table>

Notes:
- a Dependent variable: behavior intention
- b Independent variable of this model: complaint reaction, quantity
- c Independent variable: complaint reaction, quantity, and the product of negative EWOM and complaint reaction
- d Independent variable: complaint reaction, reliability
- e Independent variable: complaint reaction, reliability, and the product of negative EWOM reliability and complaint reaction
- f Independent variable: complaint reaction, retransmission
- g Independent variable: complaint reaction, retransmission, and the product of negative EWOM and complaint reaction

The regression results in Panel A of Table 7 show that the model’s R² shows a significant change(0.041) when the complaint response factor is included in the analysis; the significance is at the 0.025 level(less than 0.05). This shows that complaint reaction has a significant moderator effect on the quantity of negative EWOM and brand switching behavior. Therefore, Hypothesis H4a is validated.

The regression results in Panel B show that the model’s multiple correlation coefficient R² shows a significant change(0.052), and the significance is 0.000, which is significant at a level under 0.05. This shows that complaint reaction has a significant moderator effect on the reliability of negative EWOM and brand switching behavior. Therefore, Hypothesis H4b is supported.
The regression results in Panel C show that the model’s multiple correlation coefficient $R^2$ shows a significant change (0.037) when complaint reaction is included in the analysis. However, its significance is 0.105, which is not significant at a level under 0.05. This shows that complaint reaction has low moderator effect on the retransmission of negative EWOM and brand switching behavior. Therefore, Hypothesis H4c is not validated.

4.4 Final Research Model

Final model was shown in Figure 1 based on the results of the regression analyses. In the influencing mechanism of negative EWOM on the brand switching behavior of consumer, virtual community plays a significant role. Virtual relationship could affect the quantity of negative EWOM, and virtual community dependence could affect the various factors of negative EWOM strength. The negative EWOM strength characterized as negative EWOM quantity and reliability could affect the brand switching behavior of consumers. In the process, the reaction of enterprises to complaints could regulate the complaints of consumers (negative EWOM). Further, the research identifies that the dependence of the WOM receiver has significant influence on the propaganda of negative EWOM.

Figure 1: Final Research Model

5. Discussion and Conclusion

5.1 Discussion

This study verifies the influence of virtual community involvement on the strength of negative EWOM perceived by the WOM receiver and the influence of the strength of negative EWOM on the brand switching behavior of consumer. Additionally, it verifies the moderator effect of an enterprise's reaction to the negative EWOM complaints.

Virtual community involvement influences negative EWOM, which is consistent with Leal and Pessôa’s (2014) finding: “There was evidence that purchasing intentions and behavior can be altered as a result of interactions among members through communication.” However, Leal et al (2014) did not use qualitative methods to measure the contribution of virtual relationship and virtual dependence. Several prior researchers such as Smith (2002) proved that virtual relationship has a positive relationship with customer trust. However, since Hypothesis H1b was rejected, this study did not find evidence that a strong virtual relationship can improve the consumer’s trust in WOM. If this result is not caused by the
sample used in this study, this finding could be explained by two possible theories. Kanawattanachai and Yoo (2002) reported that trust includes two dimensions: cognition-based trust and affect-based trust. Cognition-based trust refers to the calculative and rational characteristics demonstrated by trustees. Affect-based trust involves the emotional elements and social skills of trustees. This classification shows that virtual relationship cannot improve trust through the cognition-based trust dimension that was used in this research. However, virtual relationship could affect trust via affect-based trust. Another possible explanation is that regardless of whether customers believe in WOMs, a strong virtual relationship could guide their behavior directly through the implications of WOM. Therefore, we did not prove the connection between virtual relationship and WOM reliability. Some prior researchers showed that customers seek social benefits from online communities (Hennig-Thurau et al. 2004).

Another correlation that was not confirmed is that the intention of WOM retransmission and complaint response should correlate with brand switching behavior. The results of this study indicate that we cannot assume that an individual's transmission behavior implies that they accept what they transmit. People transmit WOM because of altruism (Berger 2014). They think that negative WOM could serve as reference to others, which does not mean that they will change their choice. Further, even if companies do respond to complaints quickly and appropriately, the customers may still want to transmit bad WOM. People prefer to talk about common topics because it makes them feel more socially connected (Clark & Kashima 2007).

5.2 Implications for Industry and Consumers

For consumers who have to go deep into the current information-based society and virtual community, the ability to identify relevant information should be truly enhanced. In today's information era, people's sources and ability to obtain information have been greatly improved. However, not all these rich sources of information are good. Thus, the ability to identify relevant information and the sensory ability regarding the quality of information are especially important. This study shows that in a situation with virtual community involvement, the virtual community relationship and dependence of consumers could affect their perceptions about the strength of negative EWOM, which would subsequently influence their brand switching behavior. In particular, virtual community dependence positively affects the reliability of negative EWOM. This indicates that the consumers' degree of dependence on the virtual community would decide the reliability of negative EWOM to a large extent and their intention of retransmission, apart from the quality of information. Therefore, consumers should reinforce their ability to identify the authenticity of the negative EWOM available in various major virtual communities in order to ensure their quality of life and tastes are not affected.

From the perspective of network information management, greater hitting dynamics for false network information is needed. On the one hand, consumers are likely to lack perception about the information because of the influence of virtual community dependence. On the other hand, the study shows that the intention of the WOM receiver to spread the negative EWOM is affected by virtual community dependence. However, its effect on the brand switching behavior of consumers is low, and their rational consumption is not affected by their intention to spread information. This indicates that the information retransmission of consumers may be a subconscious, irrational act compared to the relatively rational behavior of brand switching, which is sure to accelerate the spread of the irrational information. Thus, negative EWOM significantly affects enterprises and market
order. To avoid the unnecessary destruction of resources and to safeguard a good market order and a fair marketing environment, the effective management of network information is essential.

For enterprises, in an age witnessing increasingly faster information spread, the control, supervision, and counter measures related to negative EWOM in virtual communities should be enhanced, and a suitable channel for complaints should be provided. The destructive effect of negative EWOM for enterprises has been verified in the extant literature. The results of this study show that irrational factors play an important role in the perception of the reliability of negative EWOM and the retransmission intention of the WOM receiver. Thus, the network in a virtual community affects the propaganda of negative EWOM to a large extent, as well as the customer loyalty to an enterprise, in addition to the authenticity of negative EWOM. Moreover, this study shows that the reaction of enterprises to customers’ complaints in a situation of EWOM has obvious moderator effects on the final brand switching behavior of consumers. It is also important to offer a channel for the consumers’ rational venting and complaints, in addition to improving the quality of products and services.

5.3 Limitations

Firstly, most of this research’s samples came from students. Other customers except students should be paid more attentions in the future. Secondly, this research didn’t distinguish different products’ purchase behavior. Some researches (Scholz,M &Domer.V 2013) show that the process of WOM acceptance is significantly correlated to the type of commodity. Last, The inherent influence of brands and e-commerce platforms will also affect the results. This research didn’t ask each sample to report brand name. This weakness should be noticed.

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