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A Multi-Country Case Study of Mobile Applications

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Abstract

This study examines preceding factors of user innovation behavior using a case of smartphone applications to examine indirect and direct effects of consumer attitude on user innovation. Specifically, this study focuses on two aspects of the user innovation evaluation: quality and quantity. Quality of user innovation in particular has the potential to contribute to the profitability of firms that provide SNS or other community services. This study proposes a structural model to examine the relationship between these two user innovation aspects and preceding attitude factors, involvement, consumer knowledge, and customer orientation. The empirical analysis is based on a consumer survey to examine commonalities and differences in two countries: Japan and China. In each country, two services are chosen as representative cases of the user-generated content business model to measure user innovation behaviors based on the two aspects mentioned. By clarifying the preceding factors of user innovation behavior, this study has implications for new business models and future innovation research.

JEL Classification: M31, M15,O30

Key words: User Innovation, UGC (User-Generated Content), DSMM (Digital, Social Media, and Mobile Marketing), Customer Orientation

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1. Introduction

The Organization for Economic Cooperation and Development(OECD) recently reported that smartphone adoption in OECD countries had increased by 30%, reaching a high of 73% in South Korea and an average of almost 50% in 2013 (OECD Digital Economy Outlook 2015). Online social media is now going mobile: in 2013, more than 40% of individuals in OECD countries used their smartphones several times per day to access social media. As smartphone penetration is increasing, mobile social media are driving the emergence of new business models, causing changes in consumers' communication behavior (Lamberton and Stephen 2016). Several properties of social media, such as an online identity, sharing of content, and frequent status updates, play important roles in popularizing user-generated content platforms. Unlike early business models, today's business models enable customers to communicate directly with businesses by sharing their own content more easily and freely using the Internet and mobile devices. The term "user-generated content" is defined in an OECD (2007) report as: (1) content made publicly available over the Internet, (2) which reflects a certain amount of creative effort, and (3) which is created outside of the platforms presented. That is, user-generated content refers to any form of content or media that is produced by users of online services such as social media platforms. Currently, a large portion of user-generated content is produced via smartphone.

This study considers user-generated content to be part of user innovation because users can create their own valuable content through online platforms without interfering with companies. Von Hippel (1976; 1977; 1986) developed the theoretical study of users' contributions to production activities and corporate management in the field of user innovation using the construct of "lead users." Von Hippel (1986) indicated the possibility of end users' participation in production activities as well as interaction between corporations in the industrial market. Chesbrough (2003) also emphasized the concept of "open innovation," which indicates a corporation's attempts to acquire innovation from outside the organization. In practice, today, businesses have more difficulty driving innovation only from within the corporation. Therefore, obtaining innovation from outside the firm has become an important issue for companies. At the same time, the necessity of user innovation has also increased. Moreover, the Internet has enabled individual consumers to spread their influence more easily and widely, stimulating consumers' participation in user innovation.

Currently, the development of IT technology and social media platforms enables user innovation to occur more frequently than in the past. However, Internet communication businesses are becoming competitive. It is necessary to evaluate whether consumer-generated content has the potential to earn a profit for firms. Firms that provide social networking websites or communication applications have to find consumers who provide higher value content. Although the quantity aspect, such as the amount of content, is important to attracting users, the quality aspect, such as the importance and usefulness of content, also has to be examined. High-value content directly affects the attractiveness of a service; in other words, this content is the source of competitive advantages.

For these reasons, this research focuses on social media, the smartphone market, and user innovation. Specifically, the effect of consumer attitude towards user innovation is mainly explored. To

examine preceding factors of user innovation behaviors, the constructs of involvement, customer orientation, and consumer knowledge are considered.

2. Literature Review

2.1. User Innovation

User innovation theory explains consumers' participation in companies' product development process. Traditionally, it has been thought that companies are the main developers of new products, while consumers passively purchase and consume what producers create (von Hippel, Ogawa and De Jong 2011). However, previous studies have argued that consumers themselves could be involved in product innovation. Von Hippel (1986) theoretically defined "lead users" who develop user innovations and suggested the possibility of users' participation in production. Lead users are defined as those (1) who are at the leading edge of each identified trend in terms of related new product and process needs, and (2) who expect to obtain a relatively high net benefit from solutions to those needs (von Hippel 1986). According to von Hippel (1986), user innovation and lead user status have significant correlation and very large effects. Thus, the importance of users' participation in innovation and the role of lead users have been emphasized.

Some studies have attempted to develop measurement scales of user innovation. "Leading edge status (LES)" is a scale developed by Morrison (1995) to measure lead users. LES measures the tendency of lead users by continuous scoring. This scale considers the concept of lead users as a continuous variable rather than a binominal of lead user/not lead user. On the other hand, Franke, von Hippel, and Schreier (2006) define a lead user using a two-dimensional construct based on von Hippel's (1986) definition. They suggest scales for each construct: ahead of trend (AH) and high-benefit expected (HBE). Further, Schweisfurth and Raasch (2014) indicated that some lead users have a customer orientation attitude. They found that the lead userness of employees is positively related to their customer orientation behavior. That is, previous research shows the important role of lead users in user innovation. This study explores the preceding factors of user innovation, recognizing the importance of lead users who have a customer orientation attitude.

2.2. Product Attitude

2.2.1. Involvement

Product attitude has two major components: motivation and ability. Motivation evokes involvement and interest in products. Ability consists of familiarity and expertise in terms of knowledge about products. This research in particular employs the constructs of involvement and familiarity.

Previously, researchers of consumer behavior have developed various theories about product involvement. In past research, consumer behavior has been defined in terms of two dimensions: low-involvement consumer behavior and high-involvement consumer behavior (Engel and Blackwell 1982; Kassarjian and Kassarjian 1979). Later, Houston and Rothschild (1978) refined the concept of involvement by distinguishing situational, enduring, and response involvement. Richins and Bloch (1986) further developed Houston and Rothschild's conceptualization, proposing that there are situational and enduring

forms of product involvement. Situational involvement (SI) refers to product involvement in specific situations. Enduring involvement (EI) refers to a continuous concern with a product that is unaffected by situational influences (Richins and Bloch 1986; Houston and Rothschild 1978; Laurent and Kapferer 1985). Richins and Bloch (1983) also suggested that enduring involvement consists of self-expression and hedonic dimension. That is, the degree of self and/or the hedonic pleasure received from the product affects the individual's level of enduring involvement. Later, a measure of enduring involvement was developed by Higie and Feick (1989), which integrates the conceptual work of Bloch and Richins (1986) and the measurement work of Zaichkowsky (1985) and McQuarrie and Munson (1987). Higie and Feick (1989) focused on enduring involvement and product relevance related to self-image or hedonic dimensions.

2.2.2. Consumer Knowledge

Knowledge has been recognized as an important factor in consumer research (Bettman and Park 1980; Park and Lessig 1981; Johnson and Russo 1984). Early in the stream of research, knowledge was considered a one-dimensional variable, mainly referring to product familiarity or prior knowledge. Through various attempts to measure consumers' experience with or information about products, it has been recognized that there are different types of knowledge. Many researchers have for the necessity of a multi-dimensional account of the knowledge variable (Brucks 1985; Alba and Hutchinson 1987).

At first, three types of knowledge were suggested: subjective knowledge, objective knowledge, and usage experience. Brucks (1985) defined subjective knowledge as an individual's perception of degree of confidence in his/her knowledge, objective knowledge as only what an individual actually knows, and usage experience as the amount of purchasing. Subject knowledge is usually measured using consumers' self-reports of their knowledge about products (Brucks 1985), while objective knowledge is measured using an objective test of consumers' knowledge about products (Johnson and Russo, 1984). Usage experience is mostly assessed by consumers' self-reports of experience with products (Raju, Lonial, and Mangold 1995).

Later, Alba and Hutchinson (1987) suggested that consumer knowledge has two distinct components. The first component is familiarity. According to Alba and Hutchinson's definition, familiarity is "the number of product-related experiences that have been accumulated by the consumer." The second component is expertise. Expertise is defined as the ability to perform product-related tasks successfully (Alba and Hutchinson 1987). These researchers also argued that there are at least five aspects of expertise that can be improved as product familiarity increases. Among these constructs of consumer knowledge, this study particularly focuses on familiarity to measure consumers' smartphone usage behavior and estimate the effect on user innovation.

2.3. Customer Orientation

Prior marketing research indicates that organizations consequentially achieve success by satisfying customer needs (Deshpandé, Farley, and Webster 1993; Kotler 1997). Specifically, customer orientation has been identified as a significant theory and practice of marketing management (Jaworski and

Kohli 1993). As described by Saxe and Weitz (1982), customer orientation is related to the "concern for others" dimension. High customer orientation is closely associated with high concern for others, whereas low customer orientation is most closely associated with low concern for others.

Early customer orientation studies mainly focus on salespeople and service workers. The selling orientation customer orientation (SOCO) scale was developed by Saxe and Weitz (1982) to directly measure the degree to which salespeople engage in customer-oriented selling. They developed a 24-itemscale with 12 positively stated items and 12 negatively stated items, and their study suggested that customer orientation is related to sales performance. Brown, Mowen, Donavan, and Licata (2002) further defined customer orientation as a self-assessment of an employee's tendency to try to meet customer needs and the degree to which he or she enjoys doing so.

Although most customer orientation research has been limited to the service industry, today's new business models enable customer orientation to occur in any field. This study focuses on the user-generated content business model, which is based on online communication tools (e.g., YouTube, Twitter, Instagram). In these social media businesses, customer orientation could occur when users post their own information to meet their followers' or subscribers' needs. Thus, customer orientation is not only a construct between customers and salespeople but could also involve users. This study explores the effect of customer orientation on online communication and the quality of content created by users. Recently, Schweisfurth and Raasch (2014) suggested that some lead users have a customer orientation attitude. They indicated that the lead userness of employees is positively related to their customer orientation behavior.

2.4. Hypotheses

As discussed above, this study aims to examine the relationship between consumer attitude and user innovation behaviors. In particular, this study focuses on the quality and quantity of transmission of user innovation. Although the preceding factors of the two outcomes may differ, previous studies did not separately discuss them in general. Therefore, the hypotheses are defined assuming a single "user innovation" construct after these studies. A more detailed model to examine two aspects of user innovation is proposed in the following section.

2.4.1. Involvement and Familiarity

Previously, involvement was thought by various researchers to be related to product use (e.g., Houston and Rothschild 1978). This relationship was thought to occur because involvement is defined as a function of an individual's past experience with the product and the product's relevance to the individual's values (Houston and Rothschild 1978). Blackwell, Miniard, and Engel (2006), Peter and Olson (2010) also noted that involvement is personal relevance, which is related to the needs of the individual. Implicit in the proposal of Hypothesis 1 is the expectation that highly involved consumers might use a product more frequently than do lowly involved consumers. Therefore, it can be expected that:

Hypothesis 1. Consumers' involvement with smartphones has a positive impact on their familiarity with

smartphones.

2.4.2. Involvement and Customer Orientation

According to previous research, enduring involvement is positively correlated with information provision and opinion leadership (Higie and Feick 1989). Opinion leaders are defined as individuals who exert an unequal amount of influence on the decisions of others (Rogers and Cartano 1962). They provide advice or recommendations about products, thereby assisting in other consumers' decision making. That is, consumers seek information to make more satisfying purchase decisions, and opinion leaders transmit helpful information to them. In this process, opinion leaders' attitudes seem similar to customer orientation in salespeople because both provide information such as advice or recommendations to meet customers' needs. In this context, the similarity between opinion leadership and customer orientation suggests that customer orientation could also be affected by involvement. Therefore, it can be expected that:

Hypothesis 2. Consumers' involvement with smartphones has a positive impact on customer orientation toward information transmission using smartphones.

2.4.3. Familiarity and User Innovation

Alba and Hutchinson (1987) suggested that consumer knowledge consists of two major components: familiarity and expertise. According to their research, familiarity is defined as the number of product-related experiences that have been accumulated by the consumer. Expertise is defined as the ability to perform product-related tasks successfully. They also indicated that high product familiarity positively affects consumer expertise. Thus, based on the definition, more familiarity improves the ability to perform product-related tasks successfully. For example, in the case of social media, "successfully performed product-related tasks" could be the provision of a large quantity of high-quality information. Therefore, high familiarity could be expected to promote user innovation by improving the ability to perform product-related tasks. Thus, we hypothesize:

Hypothesis 3a. Consumers' familiarity with smartphones has a positive impact on user innovation behaviors using smartphone applications.

2.4.4. Customer Orientation and User Innovation

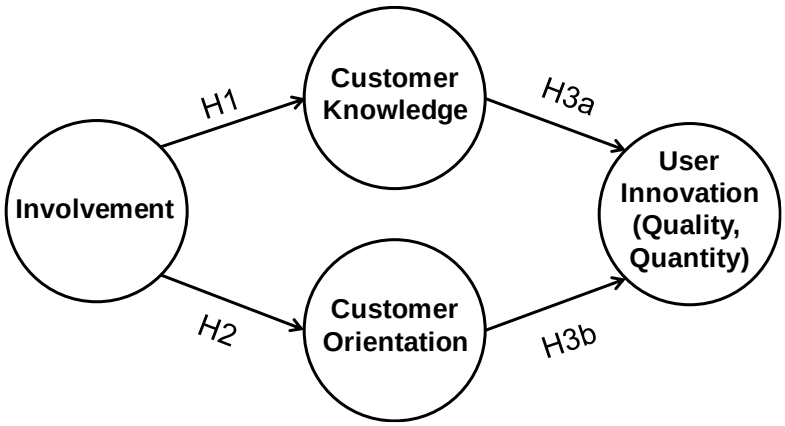
Past research on innovation shows that many users engage in product modification or product development. Von Hippel (2005) explained the characteristics of innovating users with the construct of lead users. He noted that user innovations in general and commercially attractive ones in particular tended to be developed by lead users. That is, lead users play an important role in user innovation. This also implies that lead userness is necessary to promote user innovation. Later, Schweisfurth and Raasch (2015) found that the lead userness of employees is positively related to their customer orientation behavior. Thus, lead userness stimulates both customer orientation behavior and user innovation behavior. Considering which of

the two variables takes precedence, we expect customer orientation to be a preceding factor of user innovation behavior because customer orientation is a construct of attitude, while user innovation is a behavior concept. Therefore, we hypothesize that:

Hypothesis 3b. Consumers' customer orientation toward information transmission using smartphones has a positive impact on user innovation behaviors using smartphone applications.

Figure 1 shows the conceptual framework of the hypotheses and the model. Note that user innovation is divided into two aspects—quality and quantity—in the empirical analysis.

Figure 1: Conceptual Framework



3. Research Design

3.1. Objective Industry and Country

This research is conducted focusing on the smartphone market. The reason why we chose the smartphone market is that the user-generated content business is closely related to smartphones. Today, user innovation can easily occur in online platforms that provide user-generated content. In particular, social media sites such as Twitter and Instagram are highly used with smartphone devices. That is, involvement with smartphones may represent involvement in social media. Thus, we presume that there is high correlation between smartphones, social media, and user innovation.

Because the main purpose of this study is to examine the preceding factors of user innovation behavior, it is also important to estimate the degree of enduring involvement and customer orientation as well as user innovation. The smartphone case can represent the degree of product involvement, while social media cases can clearly show the degree of customer orientation and user innovation behavior. Therefore, we judge the smartphone market to be an appropriate industry on which to test our hypotheses.

This study focuses on Japan and China as objective countries. The smartphone diffusion rates in these two countries are both high enough, but the two countries have different telecommunication policies. In Japan, global SNS applications and search engines are easily available, and many consumers use these

services; however, in China, global services are strictly limited, and domestic SNS applications are common. These two cases provide a feasible sample to examine the robustness of our hypotheses. As objective services, this study focuses on Twitter and Instagram in Japan, and Weibo and WeChat in China, because these services are popular in each country and therefore it is easy to collect a large enough sample through random consumer surveys.

3.2. Measurement Scales

The measurement scales used in this study are enduring involvement, customer orientation, and user innovation behavior. Previously developed measures of enduring involvement (Higie and Feick 1989) and customer orientation (Brown, Mowen, Donavan, and Licata 2002), as well asan original questionnaire, are used to measure familiarity and user innovation in this research.

3.2.1. Enduring Involvement

The measurement scale for enduring involvement was developed by Zaichkowsky (1985). This bipolar adjective scale called the personal involvement inventory (PII) is used to increase understanding of the concept of involvement with products. The PII was demonstrated to have content validity, reliability, criterion-related validity, and construct validity, and covers three different product categories. However, McQuarrie and Munson (1987) indicated that Zaichkowsky's PII was contaminated with attitudinal variables, and, thus, the PII was not clearly distinct from a measure of attitude. To modify and improve the PII, McQuarrie and Munson (1987) developed the revised product involvement inventory (RPII). They also reported that involvement is a multidimensional construct, trying to incorporate the three factors of importance, pleasure, and risk. They included four hedonic and two self-expression items in the pleasure factor. Higie and Feick (1989) argued that existing measurement scales of involvement fell short of measuring motivating factors and the hedonic and self-expression components. Thus, Higie and Feick (1989) developed the enduring involvement scale (EIS) containing five hedonic and five self-expression items. They used four hedonic and two self-expression items from the RPII (McQuarrie and Munson 1987), one hedonic item from the PII (Zaichkowsky 1985), and semantic differential items they generated to measure the self-expression component of enduring involvement. The main difference between the PII, the RPII, and the EIS is dimensional. The RII is one-dimensional, the RPII is three-dimensional, and the EIS is a two-dimensional measurement scale consisting of five hedonic items and five self-expression items. In this study, a 10-item scale of enduring involvement (Higie and Feick 1989) is used to measure the level of hedonism and self-expression. A seven-point scoring format (1= strongly agree; 7= strongly disagree) is employed for these items.

3.2.2. Customer Orientation

Customer orientation is measured using a six-item scale developed by Brown, Mowen, Donavan, and Licata (2002). The first attempt to develop a measurement of customer orientation was performed by Saxe and Weitz (1982). Their selling orientation customer orientation (SOCO) scale was developed to

include 24 items with two dimensions: 12 positively phrased customer orientation items and 12 negatively phrased selling orientation items. Later, Brown et al. (2002) expanded the concept of customer orientation by suggesting two dimensions of customer orientation. They suggested that customer orientation is composed of a needs dimension and an enjoyment dimension. The needs dimension is based on Saxe and Weitz's (1982) conceptualization of customer orientation. Thus, they composed the measure of the needs dimension by selecting six items from the positively stated items of the SOCO scale. In this study, six items from the needs dimension (Brown et al. 2002) are used to assess the level of customer orientation. All items are scored on a seven-point scale, ranging from "strongly agree" to "strongly disagree."

3.2.3. Familiarity

Familiarity is assessed using aone-item scale from our original questionnaire, which asks about the amount of time spent using smartphones per day. The item is rated using a 10-point scoring format (1=more than 6 hours per day; 2=more than 3 but less than 6 hours per day; 3=more than 2 but less than 3 hours per day; 4=more than 1 hour but less than 2 hours per day; 5=more than half an hour but less than 1 hour per day; 6=more than 15 minutes but less than half an hour per day; 7=more than 10 but less than 15 minutes per day; 8=more than 5 but less than 10 minutes per day; 9=less than 5 minutes per day; 10=do not use).

3.2.4. User Innovation

User innovation is measured using our original questionnaire composed of two dimensions: the quantity dimension and the quality dimension. Respondents are required to answer two questions for each of two services. Japanese respondents are asked about Twitter and Instagram, while Chinese respondents are asked about Weibo and WeChat.

The quantity dimension represents the frequency of posts on each service. The frequency of posts is assessed by single-item scale: How often do you *post* on *Name of Service*? The item is measured on an eight-point scale (1=more than 21 times per day; 2=more than 11 times per day; 3=more than 6 times per day; 4=more than once per day; 5=more than once per week; 6=more than once per month; 7=less than once per month; 8=do not use).

The quality dimension represents the number of followers on each service. The number of followers is measured using a single-item scale: How many followers do you have on *Name of Service*? A 10-point scoring format (1= no followers; 2=more than 0; 3=more than 10; 4=more than 20; 5=more than 50; 6=more than 100; 7=more than 200; 8=more than 500; 9=more than 1000; 10=do not use) is employed for this item (See Appendix A).

4. Data Collection

4.1. Summary Statistics

Consumer surveys were conducted through the Internet based on panels from Japanese and Chinese market research companies, respectively. The survey in Japan was conducted in March 2016, and

that in China was conducted in March 2017. As a screening, respondents were required to own a smartphone. Table 1 shows the sample summary. The numbers of samples are not so different; however, the average age is substantially different. Therefore, this difference needs to be adjusted in the empirical model.

In the analysis, first, the reliability and validity of the measurement scales are examined using the entire samples: 1000 Japanese consumers and 1038 Chinese consumers. Second, four cases are independently examined for users. The Japanese Twitter case is examined for 567 respondents who use the service, the Japanese Instagram case is examined for 469 respondents, the Chinese Weibo case is examined for 978 respondents, and the Chinese WeChat case is examined for all 1038 respondents.

Table 1: Sample Summary

	Japan	China
Number of Samples	1000	1038
Average Age (Standard Deviation)	46.56 (12.05)	26.52 (4.51)
Female Ratio	0.436	0.288
Number of Twitter Users (%)	567 (56.7%)	-
Number of Instagram Users (%)	469 (46.9%)	-
Number of Weibo Users (%)	-	978 (94.2%)
Number of WeChat Users (%)	-	1038 (100%)

4.2. Validity and Reliability of Constructs

In advance of the analysis, we need to examine the validity and reliability of the constructs. Higie and Feick (1989) imply that the EIS, which is adapted in the questionnaire, has two sub-constructs: hedonic and self-expression factors. To examine the number of sub-constructs of EIS, we prepare two models and compare the fitness of each model. The first model assumes a single construct preceding all measurement scales; on the other hand, the second model assumes two different constructs. Note that the second model assumes correlation between two constructs. The results of the analysis are shown in Table 2. This implies that the two construct models are suitable.

Table 2: Result of Involvement Model

	Japan		China	
	Single EIS construct	Two EIS constructs	Single EIS construct	Two EIS constructs
GFI	0.633	0.951	0.771	0.973
AGFI	0.339	0.907	0.466	0.929
RMSEA	0.358	0.095	0.302	0.099
CFI	0.683	0.978	0.059	0.961
N	1000	1000	1038	1038

Based on the above result, confirmatory factor analyses of the hedonic and self-expression

constructs are conducted and show that the reliability coefficients are high enough. The Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) coefficients are examined, and all of the variables exceed the required threshold: $\alpha > 0.7$, CR > 0.7, and AVE > 0.5 (Bagozzi and Li, 1988; Fornell and Laker, 1981). In addition, all factor loadings exceed 0.5 (Anderson and Gerbing 1988).The reliability coefficients and factor loadings of the customer orientation scale also exceed the threshold. Note that some items are omitted in the analysis (see Appendix A). The correlation coefficient between hedonic and self-expression factor of Japanese sample is 0.41, and Chinese sample is 0.11. Therefore, ASV (Average Shared Square Variance) of each sample is 0.17 and 0.01 respectively. Since the ASV is lower than AVE for both samples, the discriminant validity is guaranteed.

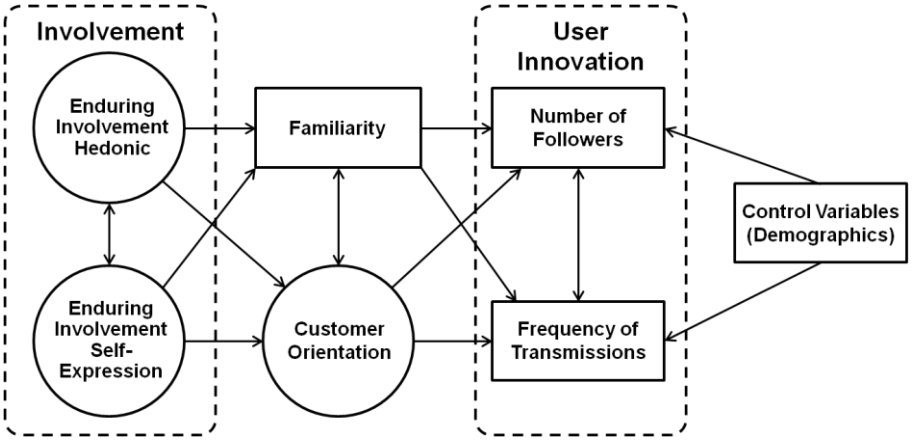
In addition, Harman's single factor test was conducted to test for common method bias between the enduring involvement scale and the customer orientation scale. This test is referred to in Podaskoff's research (2003; 2012). As a result, three factors were found in two scales indicating no problems in terms of common method bias.

4.3. Model

The method of analysis is structural equation modeling. We develop a proposed model based on the conceptual framework shown in Figure 1, which displays the hypothesized relationship. Figure 2 is the final model to be examined. As discussed above, the leftmost precedent, the involvement construct, is divided into two sub-constructs: the hedonic and self-expression factors. The user innovation behavioral variable has two aspects: quantity and quality. As the quantity measurement, the model incorporates the number of information transmissions, such as the number of tweets and photo submissions. On the other hand, as the quality measurement, the model incorporates the number of followers, which is regarded as peer evaluation. Finally, since the sample average age and female rate between the Japanese and Chinese surveys are different, the final model incorporates the demographics of age and gender as control variables to adjust the effect of customer orientation and familiarity on user innovation.

This structural model suggests that user innovation is indirectly affected by enduring involvement and directly affected by customer orientation and familiarity. To be specific, each hedonic/self-expression variable of enduring involvement positively affects customer orientation and familiarity. It follows that customer orientation and familiarity positively affect both the number of followers and the quantity of posts.

Figure 2: Proposed Model



5. Results

5.1. Summary Results

Table 3 displays the estimates of standardized coefficients and fit indices. The results for the Japanese sample are shown on the top, while the results for the Chinese sample are shown on the bottom. According to Schermelleh-Engel, Moosbrugger, and Muller (2003), GFI > 0.9, AGFI > 0.85, RMSEA > 0.08, and CFI > 0.95 are the approximate standards of a good model. These four models exceed the recommendations for GFI, AGFI, and RMSEA, while the CFI for the two Chinese cases are less than 0.95. However, the CFI indices of these two models are not very much lower than the above standard. Therefore, we can say that the fitness of these four models is acceptable.

The upper left of Table 4 shows the result of the Twitter case in Japan. The effects of enduring involvement on familiarity (H1) are not straightforward. The hedonic dimension has a positive impact on familiarity, supporting H1. However, the self-expression dimension has no significant effect on familiarity. The hypothesis about the effects of enduring involvement on customer orientation (H2) is also complicated. The self-expression dimension positively affects customer orientation, supporting H2. In contrast, the hedonic dimension has a negative effect on customer orientation. The hypothesis about the effects of familiarity on user innovation (H3a) is supported. Familiarity has positive effects on both the number of followers and the frequency of transmissions. The effects of customer orientation on user innovation (H3b) are also positive and significant, supporting H3b. Both the number of followers and the frequency of transmissions are positively affected by customer orientation. As in previous research, the correlation between the hedonic and self-expression dimensions is significant. The correlation between customer orientation and familiarity is also significant, and the correlation between the number of followers and the frequency of transmissions is highly significant.

The upper right of Table 3 shows the case of Instagram in Japan. As in the Twitter case, the effects of enduring involvement on familiarity (H1) are not straightforward. The hedonic dimension has a positive impact on familiarity, supporting H1. However, the self-expression dimension is not significant. The hypothesis about the effects of enduring involvement on customer orientation (H2) is the same as in the Twitter case. The self-expression dimension positively affects customer orientation, supporting H2. On

the other hand, the hedonic dimension has a negative impact on customer orientation. The hypothesis about familiarity and user innovation (H3a) is partially supported. Familiarity has a positive impact on frequency of transmissions. However, there is no significant relationship between familiarity and number of followers. Therefore, H3b is not supported.

The lower left of Table 3shows the result for Weibo in China. According to the table, H1, which examines the relationship between involvement and familiarity, is supported, while H2 is partially supported. The hedonic factor does not have a significant impact on customer orientation, while the self-expression factor positively affects customer orientation. For H3, familiarity only affects the number of followers at the 5%level. On the other hand, for H4, customer orientation significantly affects both the number of followers and the frequency of transmissions at the 0.1% level.

The lower right of Table 3 shows the result for WeChat in China. For H1, the effect of the self-expression factor on familiarity is significantly positive, while the effect of the hedonic factor is not significant. For H2, as in the case of Weibo, the hedonic factor does not have a significant impact on customer orientation, and the self-expression factor positively affects customer orientation. The hypothesis about familiarity and user innovation (H3a) is not supported. There is no significant relationship between familiarity and user innovation outcomes. On the other hand, the effects of the customer orientation construct on both frequency of submission and the number of followers are significantly positive.

The results are partially common; however, some different results are observed among the four cases. In the next subsection, we provide the overall evaluation of the hypotheses.

Table 3: Results of the SEM

Case1: Japanese Sample	**Japan1: Twitter**			**Japan2: Instagram**		
Path	**Estimate**	**Std.Error**	**Std.Est.**	**Estimate**	**Std.Error**	**Std.Est.**
Coefficients						
H1 Enduring Involvement HED → Familiarity	0.446	0.051	0.401 ***	0.435	0.056	0.394 ***
H1 Enduring Involvement SE → Familiarity	-0.093	0.048	-0.087 †	-0.101	0.053	-0.096 †
H2 Enduring Involvement HED → Customer Orientation	-0.111	0.047	-0.110 **	-0.120	0.052	-0.118 **
H2 Enduring Involvement SE → Customer Orientation	0.373	0.046	0.388 ***	0.394	0.051	0.403 ***
H3a Familiarity → Number of Followers	0.093	0.040	0.093 *	0.052	0.044	0.052
H3a Familiarity → Frequency of Transmission	0.196	0.037	0.200 ***	0.179	0.042	0.182 ***
H3b Customer Orientation → Number of Followers	0.140	0.045	0.128 **	0.207	0.049	0.193 ***
H3b Customer Orientation → Frequency of Transmission	0.301	0.042	0.277 ***	0.329	0.046	0.309 ***
CV Age→ Number of Followers	-0.253	0.042	-0.255 ***	-0.222	0.046	-0.224 ***
CV Age→Frequency of Transmission	-0.276	0.039	-0.281 ***	-0.214	0.044	-0.218 ***
CV Gender (female =1) → Number of Followers	-0.091	0.042	-0.092 **	-0.065	0.046	-0.065
CV Gender (female =1) → Frequency of Transmission	-0.093	0.039	-0.095 **	-0.072	0.044	-0.073 †
Correlations						
Enduring Involvement HED ↔ Enduring Involvement SE	0.358	0.041	0.423 ***	0.380	0.046	0.445 ***
Customer Orientation ↔ Familiarity	0.101	0.035	0.111 **	0.143	0.039	0.155 ***
Number of Followers ↔ Frequency of Transmission	0.394	0.039	0.404 ***	0.403	0.043	0.414 ***
Overall Fitness						
GFI	0.925			0.916		
AGFI	0.894			0.880		
RMSEA / 5% / 95%	0.066	0.059	0.073	0.071	0.063	0.079
CFI	0.965			0.961		
N	567			469		

Case2: Chinese Sample	**China1: Weibo**			**China2: WeChat**		
Path	**Estimate**	**Std.Error**	**Std.Est.**	**Estimate**	**Std.Error**	**Std.Est.**
Coefficients						
H1 Enduring Involvement HED → Familiarity	0.120	0.060	0.072 *	0.077	0.062	0.044
H1 Enduring Involvement SE → Familiarity	0.124	0.042	0.105 **	0.090	0.042	0.074 *
H2 Enduring Involvement HED → Customer Orientation	0.002	0.036	0.002	-0.018	0.035	-0.018
H2 Enduring Involvement SE → Customer Orientation	0.382	0.031	0.544 ***	0.371	0.029	0.535 ***
H3a Familiarity → Number of Followers	0.095	0.043	0.066 *	0.046	0.035	0.040
H3a Familiarity → Frequency of Transmission	-0.011	0.031	-0.012	0.035	0.029	0.035
H3b Customer Orientation → Number of Followers	0.906	0.087	0.375 ***	0.632	0.071	0.310 ***
H3b Customer Orientation → Frequency of Transmission	0.504	0.060	0.306 ***	0.712	0.062	0.412 ***
CV Age→ Number of Followers	-0.721	0.350	-0.060 *	-0.068	0.294	-0.007
CV Age→ Frequency of Transmission	0.366	0.249	0.045	-0.034	0.244	-0.004
CV Gender (female =1) → Number of Followers	-0.668	0.122	-0.161 ***	-0.500	0.103	-0.143 ***
CV Gender (female =1) →Frequency of Transmission	-0.263	0.087	-0.093 **	-0.053	0.085	-0.018
Correlations						
Enduring Involvement HED ↔ Enduring Involvement SE	0.118	0.034	0.137 ***	0.106	0.034	0.122 **
Customer Orientation ↔ Familiarity	0.143	0.033	0.142 ***	0.164	0.034	0.154 ***
Number of Followers ↔ Frequency of Transmission	0.270	0.068	0.113 ***	0.231	0.059	0.108 ***
Overall Fitness						
GFI	0.929			0.933		
AGFI	0.893			0.899		
RMSEA / 5% / 95%	0.078	0.072	0.084	0.076	0.070	0.082
CFI	0.886			0.892		
N	978			1038		

Note: HED: Hedonic; SE: Self-Expression; CV: Control Variables;†: p<0.1; *: p<0.05; **: p<0.01; ***: p<0.001

5.2. Hypothesis Testing

Table 4 shows the summary results of the hypotheses testing based on the result shown in Table 3. Considering these four cases, first, H3b is perfectly supported. The customer orientation construct affects both the quality and quantity aspects of user innovation. This implies that customer orientation is a key factor to generate valuable content. On the other hand, H3a is only partially supported. Familiarity with smartphones does not always affect user innovation.

In the cases of Instagram and Weibo, the result of H3a presents that familiarity has a positive and significant effect on the frequency of transmissions, while for Twitter and WeChat, the effects are not significant. However, in the cases of Twitter and Instagram, familiarity positively affects the frequency of transmission, while for Weibo and WeChat, the effects are not significant. On the other hand, customer orientation positively affects both the number of transmissions and the number of followers (H3b). These results imply that customer orientation plays a more important role in the creation of valuable content than does the amount of time using smartphones.

Since the hedonic and self-expression factors of involvement are substantially different, the relationships between involvement and familiarity (H1) and between involvement and customer orientation (H2)are not straightforward. However, some relationships are supported or partially supported. For example, all four cases support the positive impact of the self-expression factor on customer orientation; therefore, the relationship is supported. The impact of the hedonic factor on familiarity is partially supported. Positive relationships are observed in three of four cases.

Table 4: Results of Hypotheses Testing

Coefficients	Japan1: Twitter	Japan2: Instagram	China1: Weibo	China2: WeChat	Overall Evaluation
H1 Enduring Involvement HED → Familiarity	Positive	Positive	Positive	N.S.	Partially Supported
H1 Enduring Involvement SE → Familiarity	Weakly Negative	Weakly Negative	Positive	Positive	Not Supported
H2 Enduring Involvement HED → Customer Orientation	Negative	Negative	N.S.	N.S.	Not Supported
H2 Enduring Involvement SE → Customer Orientation	Positive	Positive	Positive	Positive	Supported
H3a Familiarity → Number of Followers	Positive	N.S.	Positive	N.S.	Partially Supported
H3a Familiarity → Frequency of Transmission	Positive	Positive	N.S.	N.S.	Partially Supported
H3b Customer Orientation → Number of Followers	Positive	Positive	Positive	Positive	Supported
H3b Customer Orientation → Frequency of Transmission	Positive	Positive	Positive	Positive	Supported

Note: N.S.: Not Significant

6. Discussion

From the results of the empirical study, H3b is supported and H3a is partially supported, H2 is supported for the self-expression dimension, and H1 is partially supported for the hedonic dimension. In addition, these results provide several unexpected findings. We hypothesized that the self-expression dimension of enduring involvement would have a positive effect on familiarity; however, the result was not significant in the Japanese cases of Twitter and Instagram. The finding for this relationship may be attributable to the nature of the self-expression dimension. The concept of self-expression is similar to symbolism, which refers to expressing personal values and dispositions to form one's own identity (Creusen and Schoormans 2005). In this study, familiarity refers to smartphone use time, which is not highly related to the attitude toward users' expression of their own identity.

Further, contrary to expectations, the results show that the hedonic dimension of enduring involvement has a negative effect on customer orientation in the cases of Twitter and Instagram, while the effect is not significant for Weibo and WeChat. We can guess the reason that hedonic dimension does not have a positive impact on customer orientation by reconfirming the definition of customer orientation. Customer orientation is defined as a tendency to try to meet customer needs (Brown, Mowen, Donavan, and Licata 2002), not the user's own needs or pleasure. Therefore, the hedonic dimension does not affect customer orientation.

In this research, we would like to emphasize the importance of customer orientation in user innovation behavior. In the case of social media, the quality of content created by users is judged by other users: the so-called "followers." Thus, the number of followers could be a criterion to measure valuable content. According to the results, we can find that customer orientation is a more significant preceding factor of user innovation than is familiarity. In particular, for the quality dimension of user innovation, customer orientation has a more significant effect on the number of followers than does familiarity.

7. Conclusion

7.1. Implications

This study suggests several preceding factors of user innovation behavior. It is identified that enduring involvement, customer orientation, and familiarity indirectly or directly affect user innovation. This study attempts to measure the quality dimension of innovation. Previous research has mainly focused on the quantity of user innovation behaviors. Usage and innovation behavior on the mobile Internet were measured by surveying the amount of uploaded/downloaded information (Ghose and Han 2011). However, this research attempts to measure both the quality and quantity dimensions of user innovation by measuring the number of followers on social media and the frequency of information uploading. This study emphasizes the quality of information because

high-quality content is a key to success in the user-generated content business.

These findings have managerial implications for the user-generated content business, suggesting that users' customer orientation plays an important role in the creation of valuable content because while the quantity of content is important, the quality of content is more important in the user-generated content business model. Therefore, the results of this study suggest that companies should secure highly customer-oriented users to make their businesses a success.

Moreover, this study contributes to consumer behavior research by extending the field of research. Previous research on customer orientation has been limited to only the service industry and salespeople. This study attempts to apply the construct of customer orientation to users who use online platforms to transmit their own information. This might be totally new and meaningful in terms of extension of the field of study.

7.2. Limitations and Research Directions

There are several limitations inherent in this research. First, the structural model needs to be re-examined. It is impossible for the model to estimate the direct effects of enduring involvement on user innovation behaviors. Further, the model does not include any managerial variables. The results show the importance of customer orientation; however, the study does not propose how firms can procure highly customer-oriented users. Future research may consider managerial factors to directly contribute to business management.

Second, additional examinations of other industries are required. This research particularly focuses on the smartphone industry and user-generated content business, investigating only two cases. However, to increase universality of the model, it is necessary to examine the possibility of application in various industries and product categories. Therefore, addressing these limitations would provide further extension of the research.

Appendix A. Items and Measurement Equations

	Japan	China
EISHED: Enduring Involvement Scale (Hedonic)		
EIS1: Fun/Not fun	0.859	
EIS2: Unappealing/Appealing	0.921	0.858
EIS3: Boring/Interesting	0.921	0.648
EIS4: Not exciting/Exciting	0.870	0.658
EIS5: Dull/Fascinating	0.899	
α: Cronbach's alpha	0.951	0.760
CR: Composite reliability	0.952	0.769
AVE: Average variance extracted	0.800	0.529
EISSE: Enduring Involvement Scale (Self-Expression)		
EIS6: Shows nothing/Tells me about a person		
EIS7: Says nothing about me/Says something about me		
EIS8: Not part of my self-image/Part of my self-image	0.858	0.779
EIS9: Does not tell others about me/Tells others about me	0.940	0.862
EIS10: Does not portray an image of me to others/Portrays an image of me to others	0.943	0.715
α: Cronbach's alpha	0.938	0.827
CR: Composite reliability	0.939	0.830
AVE: Average variance extracted	0.837	0.620
COS (Customer Orientation Scale)		
COS1: I try to help other users achieve their goals		
COS2: I achieve my own goals by satisfying other users	0.862	0.739
COS3: I get other users to talk about their product needs with me	0.919	0.754
COS4: I take a problem-solving approach with other users	0.952	0.716
COS5: I keep the best interests of other users in mind	0.919	0.670
COS6: I am able to answer users' questions		
α: Cronbach's alpha	0.953	0.811
CR: Composite reliability	0.953	0.812
AVE: Average variance extracted	0.837	0.519

Notes: EIS6, EIS7, COS1, and COS6 are omitted in the Japan sample. EIS1, EIS5, EIS6, EIS7, COS1, and COS6 are omitted in the China sample.

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