A STUDY ON FACTORS INFLUENCING THE CUSTOMER PARTICIPATION THROUGH SNS PROMOTION EVENT

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Abstract— SNS (Social network service) now became a big part of everyday life. Among the services, Facebook takes the major part of the total SNS usage, and the users get various types of information from the brand fan page of each company on Facebook. Since it can be used as the attractive marketing channel for a company which has to spread information through SNS, especially Facebook, the research needs for effective advertising event type have been rising.
Therefore, this study aims at defining the promotional event on Facebook, and it also aims for empirically analyzing types and categories of the prize items. The overall research frame is based on the prospect theory. To analyze the influencing factors of promotion event for the integrated approach, we separate the prize payment type into two different classes; simple payment and multiple graded payment. Also, we analyze the SNS promotion event features with variables such as anevent period, the total number of fans, and description length of the events. As a result, it was found out that event period, total number of fans, payment type, and prize type effect on customer participation. We expect that this study could lead the industry field through providing the appropriate SNS marketing strategies.

Index Terms— Facebook fan page, Prospect theory, SNS promotion event, Social network service.

I. INTRODUCTION

Nowadays, SNS(social network service) take the major part of modern people's life. According to the Global Web Index's research about SNS in 4Q, 2013, the average amount of an SNS consumed was 72.8 minutes per day which refers more than an hour. Also, Facebook turned out to be the SNS that has the biggest market share worldwide.The 56% of the users log in Facebook more than once in a day, and show non-geographically high usage rate, so Facebook users has a higher loyalty to the SNS. As the Facebook usage has grown, firms are utilizing brand fan pages as effective marketing channels for consumers who have been obtaining variable information about products or services from the pre-existing mass media.
There are various ways for companies to deliver messages to consumers, and the most representative one is the information exposure through the mass media. This is the one-way method to send messages to unspecified individuals without targeting a certain audience for advertising. However, this method requires a sizable amount of budget, and it makes small and medium-sized businesses to have to take risks to perform marketing.
The online advertising strategy in late 2000s has been generated from Facebook, and basically it is the way that deliver information to the users who are indicated as the fans of the brand fan pages. It can manage the marketing audience more accurately than the existing ways, and it can raise the effectiveness of information conveyance and forming the relationship between a brand and its consumers. Since Facebook has the unique and simple features like 'like' button, 'comment', or 'share' function, it has the characteristic that makes the responses of the users spread to other users. The users who obtained secondary information receive advertisement as a message of their friend or the user with certain relationships, and it can positively affect the consumer response to the brand [30]. Based on the Facebook characteristics, companies can expect higher marketing effect compared to the advertisement spending, and small and medium-sized companies are using Facebook with small amount of budget. According to Mediabistro (professional website for the media) research result in 2014, about 82% of the small-sized firm are operating Facebook brand fan pages, and 71% of the users purchase products of the fan page brands that they belong to us the fans.
Since Facebook takes important role as a marketing channel, the needs for study for examining the effectiveness factors have been raised. Most of the previous studies have found the explorative results such as advertisement usage condition, analyzed the effectiveness by types of advertising, or revealed their limitations by integrating Facebook and Twitter marketing effect to explain the characteristics of SNS marketing without separating Facebook effect to extract its own effectiveness [21], [25], [33].Also, the major studies about promotion events are remaining analyzing the effect of event characteristics to the customer behavior and measuring the performance by specific brand levels [2], [17]. In other words, the existing literatures only examined the data that arecomparatively easy to format for analyze, it indicates that there isa lack of empirical studies with actual data in SNS.
Therefore, this study selected Facebook which is most broadly using SNS in the world to extract the results. We chose Facebook because this platform has the indisputable feature that it can utilize it as a marketing channel, and it also has web crawling advantage through offering API. Research objective is to find effect of SNS promotion event types and characteristicson promotion event participation.

We begin with literature reviews for research background to explain the key theories this study uses. Then we develop the research model with fivehypotheses. Further, we draw the results of the study, and finally present discussions with important findings and implications.

II. THEORETICAL BACKGROUND

A. Prospect Theory

In decision making research field, the expected utility theory takes the major role as the theoretical background. Expected utility theory is a typical normative theory, and it has been studied for numerous variations, but most of them are proposing risk aversion phenomenon asthe most important thesis in common. Which is that decision makers prefer the definite alternative to the uncertain alternative if the expected utilities are the same [9].

Theoretically the expected utility theory does not set a limit on the form of a utility function, but it prescribes risk-seeking behavior as the form of irrational utility function. Also, most of the empirical studies related to the expected utility theory suppose the general risk aversion tendency.

Reference [12] proposed prospect theory under uncertainty. They substituted this theory for the expected utility theory, and suggested empirical results that decision makers' process of choice violate the expected utility theory. The main difference between prospect theory and expected utility theory is characteristic of decision-weighting function. In prospect theory, the position of the reference pointand the method to perceive decision making problem are the main factors to analyze the decision making process. According to this theory, there are three phenomena as follows: certainty effect, reflection effect, and isolation effect.

Prospect theory is mainly presented in researches related to risk aversion, and variously defined. This explains how people make decisions by illustrating the choices between the alternatives that can cause financial loss. Reference [22]contended that the customers' mentality from the managed event promotion winning rate can be divided into risk aversion and planning error, and expected to be added up to the conclusion omission effect theory, etc.Reference [15]argued that prospect theory and risk aversion phenomenon are more appropriate than a mean reverting phenomenon. Also, Reference [19]found out that asymmetric consumer proneness can be affected from prospect theory, and can be motivated by the expected value of the uncertain mean reversion.

B. Uncertainty Aversion and Certainty Preference

Loss aversion is a typical phenomenon of consumer that their psychological shock from the loss is bigger than that of the advantages even though the amount of both loss and advantage is same. However, the circumstances that the loss aversion exists, and consumer heterogeneity suggests a specific condition that loss aversion does not occur. Certainty effect indicates the phenomenon that users overestimate the certain result compared to the probabilistic value even though both of the expected value are the same.This phenomenon takes effect from value function, and based on the inflection point, users' response when they confront risk changes. Users avoid risks in advantage field because they prefer certainty for the benefit, but they prefer risks in loss field. In other words, compared to the psychological satisfaction from the advantage, the same amount of financial loss makes the mental effect even bigger.In this study, we examine the key factors that affect event participation which can be explained as the responses such as like, comment, and share based on the prospect theory as well as the uncertainty aversion and certainty preference.

III. HYPOTHESES

For the concept of time constraint, reference [28] defined it as the 'subjective psychological status of consumer who feel time poverty'. As the individual circumstances are differ from each other, the perceived time constraint for each one is different. Since the online network spread over the world, the information sharing through SNS has been significantly increased. Therefore, the time constraint can affect the individual's decision making process because of their limitation of recognition ability for the information [24]. We assumed that the period of the Facebook promotion event will affect the users' response to the event, and this assumption is reflected in hypothesis 1.

H1. The shorter period of event will affect more positively on event participation in the Facebook promotion event.

Facebook fan page as an online brand community has unique features compared to the other general brand communities. SNS users can be a fan of Facebook fan pages spontaneously by simply clicking the 'like' button on the web pages. Since the SNS especially Facebook has a powerful networking system that can spread information about the individual's status, if a user click 'like' on a particular brand page to become a fan his/herself, his/her friends can see it through newsfeed. Therefore, we assumed that this characteristic can affect the event participation as the response to the event posting based on network effects.

H2. The bigger number of fans will affect more positive effect on event participation in the Facebook promotion event.

The users participate SNS promotional event with the

tendency of choosing the certain alternatives to avoid uncertainty, risk of financial loss [26], [31]. On the contrary to this, users participate multiple or the other promotion events because the loss of not winning the prize form certain event is not that big compared to the effort to participate the event [3], [4],[13]. If the prizes of the event are designed as multiple graded payment, loss can affect more than advantage because the lower price becomes reference price. This can cause loss aversion phenomenon, thus we assumed hypothesis 3 as below.

H3. The effect of the single payment type for event winner will be bigger than that of the multiple graded payment in the Facebook promotion event.

The forms of event prize that a company gives to the customer and the methods that companies to deliver to the customers are regarded as the important parts that lead to the successful promotional event for marketing [7],[16],[17]. The stimulus to customers represents the added stimulus after purchase, and the forms (types) of stimulant have been studied as the important factor that extract consumer behavior. Therefore the prize type can be the main factor to raise participation rates in Facebook, thus we set the gift certificate type in the prize categories as the cashable prize, and the other as the non-cashable prizes to see the effect on the event participation at the Facebook promotion event.

H4. The effect of the cashable prize for event participation will be bigger than that of the non-cashable prize in the Facebook promotion event.

The attentively described information attract users' attention. Among the factors that decide the information availability in people's memory, some literatures propose the amount of the information as the main factor for that. Well illustrated delineation is very appealing, and it can be stored in one's memory longer [29]. Especially in e-commerce field, the product description significantly affects the consumer decision making process. It represents that the description speaks for the output of information system, and consumers present themselves the responses of satisfaction through the output [20]. Thus, we presuppose that giving detailed information to the users helps them to get the information what they wanted, and positivelyaffects on the participation ina Facebook promotion event through gratifying them from it [8].

H5. The longer description length of the event introduction will positively effect on the participation for Facebook promotion event.

IV. METHOD

This study collected Facebook open information data. Among this information, we distributed promotion event postings to reach our goals. The data collection and research procedure are illustrated as below (see Fig. 1).

We collected Facebook fan page and posting data from November 1st, 2014 to March 9th, 2015 using the Facebook open Graph API. Also, we developed Crawler to select the promotion event information which is uploaded in the online event curation website F.eventhouse.kr and collected fan page event data (①). Then we extracted the brand list from the collected data (②), and utilized search function in Facebook by Facebook open Graph API to get the list information (③). After moving to the brand pages that were searched by the search function, we collected the information about the brand as well as the postings (④), processed matching the two types of data (⑤). From the integrated data that is matched in fifth procedure, we have extracted types of the event prizes and the payment information to define single payment if the event host gives only one prize for a winner, and multiple graded payment if the host gives two or more prizes for the winners (⑥). Finally, we analyzed the total number of 20,323 data that has promotion event information with econometric modeling method (⑦), and then analyzed the data to evaluate payment and prize types (⑧).

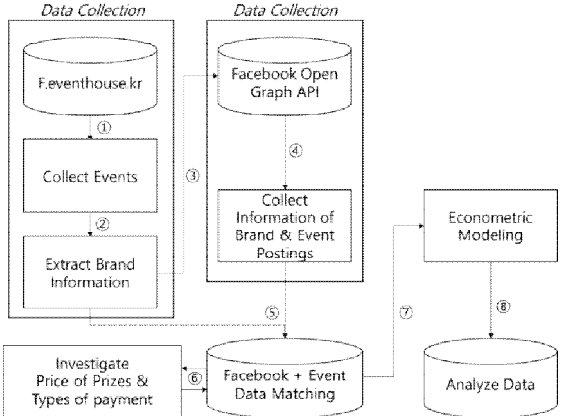


Fig. 1 Research Methods and Procedure

We assumed the reactions that can be seen in Facebook promotion events (such as Like, Comment, and Share) is $\mathcal{D}_i$, and the econometric model that explains demand can be defined as an equation (1) below [1]. This study brings in the participation scale as a dependent variable which represents the sum of the users' event responses (like, comment, share). $\beta_0$is a constant term for evaluating fixed effect, and $\beta_1$means price elasticity. Also, $\beta_1$through $\beta_7$represent the effect variable for each factor (Total Amount, Grade Bonus, etc.). To minimize the exogenous effect from a particular event, we set the number of brand fan page fans as a moderating variable (γ), and supposed that the error term ε_i follows normal distribution [32]. i means each of the promotional event posting, and $j$means electronics, movie ticket, food, beauty product, and gift certificate in prize categories.

$$Ln(D_i) = \beta_0 + \beta_1 Ln(Total\ Amount_i) + \beta_2 Grade\ Bonus_i + \beta_3 Single\ Bonus_i + \beta_4 Number\ of\ Winners_i + \beta_5 Event\ period_i + \beta_6 Desc_{Length_i} + \beta_7 Bonus\ category_{i,j} + \gamma Total\ fans_i + \varepsilon_i$$

The total number of promotion event postings that we used is 14,242, and the number of brands that hosted events is 2,218. Therefore, this study used the total number of 20,323 postings, including collected data described above and additional 6,081 general postings. The descriptive statistics of data are illustrated in Table 1 below.

Table 1. Descriptive Statistics

Variable	Mean	Std. Dev	Min	Max
Facebook AD Level Data				
Event Participation	466.472	1,716	1	11,111
Total Price of Prize(KRW)	178,156	828,326	0	46,500,000
Multiple Graded Payment	0.20897	0.40658	0	1
Single Payment	0.47286	0.49927	0	1
Event Characteristics				
Number of Winners	13.4388	82.409	0	7,000
Event Period	4.22009	4.86586	0	62
Total Number of Fans	161,499	968,647	102	47,887,278
Description Length	318.502	174.192	60	6,227
Reward Category				
Electronics	0.01048	0.10184	0	1
Movie Ticket	0.08202	0.27441	0	1
Food	0.10716	0.30933	0	1
Beauty Products	0.07567	0.26448	0	1
Gift Certificate	0.14166	0.34871	0	1
Observations	20,323			

V. RESULTS

This study uses R studio to analyze the Facebook promotion event. Through the multi-regression analysis, we conducted hypothesis testing for the results to reach our goal. First of all, we examined the effect of the promotional event period on the SNS event participation. Second, we also inspected the effect of the total number of brand fans on the participation. Third, we compared the effectiveness between payment types. Among the single payment type and multiple graded payment, we evaluated which payment type has the better effectiveness for raising the event participation. Lastly, we investigated the effect of the cashable prize for event participation as well as that of the non-cashable prize in the Facebook promotion event.

Table 2. Results

	Main Model	Model without Category
Constant	3.3028*** (0.0292)	3.3046*** (0.0292)
Total Price of Prize(KRW)	0.0155* (0.0068)	0.0248*** (0.0067)
Multiple Graded Payment	0.7552*** (0.0744)	0.7843*** (0.0741)
Single Payment	0.8611*** (0.0725)	0.9210*** (0.0722)
Number of Winners	0.0917** (0.0156)	0.0881*** (0.0156)
Event Period	-0.1406*** (0.0329)	-0.1042*** (0.0325)
Description Length	-0.0666*** (0.0076)	-0.0680*** (0.0076)
Electronics	0.3598** (0.1238)	
Movie Ticket	0.3983*** (0.0492)	
Food	0.1978*** (0.0443)	
Beauty Products	0.1861*** (0.0503)	
Gift Certificate	0.3200*** (0.0405)	
Total Number of Fans	0.0049*** (0.0012)	0.0050*** (0.0012)
R-squared	0.0816	0.07696
Observations	20,323	20,323

The above table shows the result of the econometric model. It verifies the first hypothesis that the shorter period of event will affect more positively on event participation in the Facebook promotion event (path coefficient=-0.1406***). This result represents that limited time period pressure makes users to have not enough time to consider rather participate or not, and reduce the chance of selection delay. Also, since SNS has a unique feature that can make users simply participate in a quick amount of time, it makes users to be possible to join in the online events [6], [14], [23].

The result also shows that the bigger number of fans effects more positively on participation in the Facebook promotion event (path coefficient=0.0049***). Despite the unique characteristic of SNS which can users share valuable information by clicking 'likes' or using 'comment' or 'share' function, it is still important to raise the number of fans. In Facebook context, fans take an important role in business by interacting with firms in online brand communities like fan pages [11]. Also, fans are self-presenting their image as a fan, so they are more engaged and committed to the brand fan pages [18]. It indicates that it is more important to manage fan pages for a firm to enhance their marketing strategy by raise fans and activate SNS events.

This result table also represents the effectiveness on the event participation by the payment types. Both payment types, single and multi-graded payment turned out to be significant. However, the third hypothesis that assumed single payment type for the participation will be bigger than that of the multiple graded payment in the Facebook event revealed as significant. The path coefficient of single payment is 0.8611, and that of multiple graded payment is 0.7552. This result indicates that the single payment has the higher effectiveness of the difference amount, 0.1059. The reason of it can be illustrated as follows. In multiple graded payment cases, the one exposed prior to the other will be perceived as having a worthy brandvalue. Therefore, in this case, the lower price advantage effects strongly to customers. This makes the loss effect bigger between the loss and benefit, and causes the typical loss aversion phenomenon [31].

From the result table, we can find out that hypothesis 4 describing the prize type is not significant. The most effective prize category is movie ticket in the main model which has 0.3983 as the path coefficient. Gift certificate turned out not to be the most effective prize for the event participation. Although it is not the best prize, but still has relatively high path coefficient compared to food or beauty products.

Lastly, the fifth hypothesis that the long description length of the event introduction will positively effect on the participation turned out to be not significant (path coefficient=-0.0666***).In previous studies, if firms give more information to the customers through the product reviews or introductions, this positively affects the purchase decisions of customers by eliciting satisfaction of the products [8], [20]. However, most of the users who participate in the Facebook promotion events use mobiles, and the unique features that mobiles seem the length of description affect negatively on the participation ratio. With the small mobile screen, the relatively short description length should be presented in limited space on it, and even with abridged description, it can cause insufficient delivering information to users because of the operational difficulties [10].

Table 3. Hypothesis Verification

		Hypothesis	Result
H1	Event Period	The shorter period of event will affect more positively on participation in the Facebook promotion event.	*Significant*
H2	Total Number of Fans	The bigger number of fans will affect more positive effect on participation in the Facebook promotion event.	*Significant*
H3	Payment Type	The effect of the single payment type for the winner will be bigger than that of the multiple graded payment in Facebook promotion event.	*Significant*
H4	Prize Type	The effect of the cashable prize for participation will be bigger than that of the non-cashable prize in Facebook promotion event.	*Not Significant*
H5	Description Length	The longer description length of the event introduction will positively effect on the participation for Facebook promotion event.	*Not Significant*

VI. DISCUSSION AND IMPLICATIONS

This study invested about the Facebook promotion event, and verified the effect on the Facebook event participation by types of the payment. From the result, we could get to know how to design the promotional events for marketing to induce online users or fans to participate the SNS events.

The literatures related to SNS marketing and events are remaining as the empirical studies that are using a survey method or analyzing with the small amount of online data before this study. To overcome the existing limitations, we developed an econometric model to analyze and evaluate relatively large amount of data that is crawled from the web pages. We used data from 2,218 brand pages in total, and categorized the brand event postings for further analyzation as well as evaluation.

From the overall research result, we extracted the meaningful factors to successfully manage Facebook events to draw more participations for marketing. The key findings are that shorter period of event is more effective for drawing participation, and the bigger the total number of fans, the more effective in leading participation. Also, the single payment type for the winner is more effective than the multiple graded payment type for participation because of the loss aversion phenomenon. However, the cashable prize for participation turned out not to be more effective than non-cashable prize in the Facebook promotion event. Instead of the gift certificate, movie ticket effects more on the event participation positively. Additionally, the description length turned out to be not significant for the participation ratio. In future studies, the effectiveness of prize type and description length can be analyzed with detailed scale section settings.

There are several implications of this study. First of all, we draw out the opposite e result from the actual large amount of data. According to the previous researches, there is tendency that users prefer taking risks without risk aversionin promotion event occasions [9], [13], [27]. This study finds out that the two types of payment are both significant, but unlike the other literatures, simple payment effects more on event participation [31]. A second implication is that the features of online SNS events such as event period, total number of fans, and prize type take an important role in managing Facebook events. As seen in the studies related to the events, typical factor of the event effectiveness is the number of winners [5]. By verifying the effectiveness of the key factors, this study gives some new insights to the manager in firms which want to get an advantage using SNS.We expect that the result of this study will help administrators in small and medium sized companies with limited amount of marketing budget to effectively manage SNS events.

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